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Dietary intake and nutritional status of children and adolescents in Europe

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The objective of this project was to collect and evaluate data on nutrient intake and status across Europe and to ascertain whether any trends could be identified. Surveys of dietary intake and status were collected from across Europe by literature search and personal contact with country experts. Surveys that satisfied a defined set of criteria – published, based on individual intakes, post-1987, adequate information provided to enable its quality to be assessed, small age bands, data for sexes separated above 12 years, sample size over 25 and subjects representative of the population – were selected for further analysis. In a small number of cases, where no other data for a country were available or where status data were given, exceptions were made. Seventy-nine surveys from 23 countries were included, and from them data on energy, protein, fats, carbohydrates, alcohol, vitamins, minerals and trace elements were collected and tabulated. Data on energy, protein, total fat and carbohydrate were given in a large number of surveys, but information was very limited for some micronutrients. No surveys gave information on fluid intake and insufficient gave data on food patterns to be of value to this project. A variety of collection methods were used, there was no consistency in the ages of children surveyed or the age cut-off points, but most surveys gave data for males and females separately at all ages. Just under half of the surveys were nationally representative and most of the remainder were regional. Only a small number of local surveys could be included. Apart from anthropometric measurements, status data were collected in only seven countries. Males had higher energy intakes than females, energy intake increased with age but levelled off in adolescent girls. Intakes of other nutrients generally related to energy intakes. Some north–south geographical trends were noted in fat and carbohydrate intakes, but these were not apparent for other nutrients. Some other trends between countries were noted, but there were also wide variations within countries. A number of validation studies have shown that misreporting is a major problem in dietary surveys of children and adolescents and so all the dietary data collected for this project should be interpreted and evaluated with caution. In addition, dietary studies rely on food composition tables for the conversion of food intake data to estimated nutrient intakes and each country uses a different set of food composition data which differ in definitions, analytical methods, units and modes of expression. This can make comparisons between countries difficult and inaccurate. Methods of measuring food intake are not standardised across Europe and intake data are generally poor, so there are uncertainties over the true nutrient intakes of children and adolescents across Europe. There are insufficient data on status to be able to be able to draw any conclusions about the nutritional quality of the diets of European children and adolescents.

Dietary intake: Nutritional Status: Children: Adolescents: Diet surveys

Introduction

There is little good, evidence-based information on the nutritional needs of healthy children and adolescents over the age of 2 years. Numerous dietary surveys to assess nutrient intake have been conducted across Europe at both national and local level, which could help establish nutrient needs, especially if measurements of status are also carried out. However, estimation of dietary intake is fraught with difficulties (Biro *et al.* 2002) and it is now

Abbreviations: RE, retinol equivalents; SFA, saturated fatty acids.

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accepted that many published surveys do not accurately reflect true intakes. For this report, as part of an exercise to review data available in Europe that could be used to help develop dietary guidelines, information on nutrient intake and status across Europe was collected and evaluated to ascertain whether any trends could be identified.

Methodology

To gain insight into the dietary intake and nutritional status of children and adolescents, the first step was to collect data and to highlight the measurement tools used and biological parameters investigated for each data set individually, before a final selection of the most relevant surveys for further analysis was made. For this purpose, the information listed below was collected for each survey;

- Quality of the document and whether published.
- Dietary assessment method used.
- Range of intakes (mean values, standard deviations or other distribution characteristics).
- Food composition databases used for the conversion of food intakes to estimated nutrient intakes (national food composition databases, other country databases and/or manufacturer's database, duplicate portion technique with chemical analysis data; nutrient calculations inclusive or exclusive of the contribution of food supplements).
- Year and type of the survey, e.g. longitudinal or cross-sectional.
- Age ranges and cut-off ages, sex and sample size.
- Assessment of status: anthropometric data (measured or self-reported) and biochemical parameters.
- Geographical distribution: national, regional or local study; rural or urban.

Next, each member of the Working Group looked for the above-defined survey information and data on the energy and nutrients listed in Table 1 from their specified countries. Surveys to be assessed were collected between April and December 2001 by literature search and/or by contacting experts in this field. Once the available surveys were collected and related information was incorporated into the template by country, a selection of relevant surveys was made according to the criteria listed in Table 2.

Originally we aimed to focus also on fluid intake (e.g. water, other fluids, juices, soda) and meal pattern. However, only a few studies provided information about the intake of water and other fluids. Sometimes these figures were related to total water (including water from food), whereas in other studies figures seemed to refer only to drinks including or excluding tap water. Furthermore, although some information on meal pattern was available, the kind of information was difficult to compare. Since the information on fluids and meal pattern could not be interpreted unequivocally we decided not to include this type of data.

In a final stage the results of the selected surveys were incorporated in tables by nutrient, using units according to the SI system, and each nutrient was reviewed.

The age group classification of the EU was used as guidance: 1–3 years, 4–6 years, 7–10 years, 11–14 years and 15–17 years (Reports of the Scientific Committee on Food, 1993). Data were collapsed if relevant (weighted means when only a small amount of data was available). When age categories were combined this was clearly indicated. Data of specific groups within countries, e.g. urban/rural, were collapsed in the case of minor differences.

For describing regional trends in dietary intake of children and adolescents, Europe was divided into four regions: Northern countries (Denmark, Finland, Norway, Sweden), Western countries (Austria, Belgium, France, Germany, Ireland, The Netherlands, Switzerland, the UK), Central and Eastern countries (Bulgaria, Czech Republic, Estonia, Hungary, Poland, Russia, Yugoslavia) and Southern countries (Greece, Italy, Portugal, Spain).

Table 1. Nutrients included in the inventory

Energy
Carbohydrates (total sugars, sucrose, starches, total available carbohydrates) and NSP/fibre
Lipids (total fat, saturated fatty acids, MUFA, PUFA, *trans* fatty acids, polyunsaturated fats:saturated fats, cholesterol)
Protein
Alcohol
Vitamins (biotin, folic acid, niacin, pantothenic acid, retinol equivalents, riboflavin, thiamin, vitamin B_{12}, vitamin B_6, vitamin C, vitamin D, vitamin E, vitamin K)
Minerals and trace elements (Ca, Mg, P, K, Na, chloride, iron, Cr, Cu, fluoride, I, Mn, Mo, Se, Zn)

Table 2. Inclusion and exclusion criteria

Unpublished surveys were included only if relevant (e.g. no published documents were available)
Control groups from studies of children with medical conditions were not used, even for rare nutrients or for nutrients for which no other data were available in the country
To assess nutrient intake, only surveys based on the individual level were included. Therefore only data obtained with a record method (weighed or estimated), 24 h recall, food frequency questionnaire and/or dietary history method were included
Surveys before 1987 were excluded unless specific information on food status was available
If too much information was missing in a document the survey was excluded, except if there was only a small number of surveys available for a specific country or a specific nutrient
Nutritional status data were included only if they could be linked to dietary intake data in the same or a similar study. In this particular case, a randomised selection of children should be ensured
Surveys with too broad age categories (e.g. 2–24 years) were excluded
Data were excluded when genders were mixed in children above 12 years of age
Surveys with a very small sample size (n = 10–25) were excluded

Results

Eighty surveys from twenty-three countries, which satisfied the selection criteria, were selected for inclusion in the review. These are listed by country in Table 3. Only surveys from the UK used 7 d weighed records. Most surveys gave data for males and females separately for all ages.

Table 3. Surveys included in the dietary intake and status review

Country	Survey no.	Year of survey	Reference	Dietary methodology	Gender	Age (years) Range	Age (years) Cut-off points	Sample size	Geographic distribution
Austria	A1	2002	Elmadfa & Wasserbucher (2002)	7 d record, 1 × 24 h recall	m + f	4–18	4–6, 7–9, 10–12, 13–15, 15–18	2234	national
Belgium	B1	1992	Guillaume *et al.* (1998)	3 d record	m + f	6–12	8, 10	1028	regional
	B2	1991	De Henauw *et al.* (1997)	FFQ	m + f	6–12	–	1321	local
	B3	1995	Paulus *et al.* (2001)	1 d record	m + f	12–17	–	1526	regional
	B4	1997	De Henauw & Matthys (1998), De Henauw *et al.* (2001)	7 d record	m + f	13–18	–	341	local, urban/rural
Bulgaria	BG1	1998	Petrova *et al.* (2000)	1 × 24 h recall	mix: 1–10; m + f:11 +	1–18	3, 6, 10, 14	362	national
Czech Republic	CZ1	1998	Brazdova *et al.* (2000)	1 × 24 h recall, FFQ	f	6–9, 11–15	–	1564	national
	CZ2	N/A	Brazdova *et al.* (1992)	1 × 24 h recall	mix	3–6, 9–11	–	100	local
Denmark	DK1	1995	Andersen *et al.* (1996)	7 d record	m + f	1–18	3, 6, 10, 14	1413	national
	DK2	1995	Lyhne (1998)	7 d record	m + f	14–19	–	245	national
Estonia	EE1	1993–95	Grünberg *et al.* (1997)	1 × 24 h recall, FFQ, OCD	m + f	11–12, 14–15	–	341	regional
Finland	SF1	1996	Räsänen *et al.* (1991)	2 × 24 h recall	m + f	9–24	12, 15, 18	902	regional
	SF2	N/A	Rankinen *et al.* (1995)	4 d record	m + f	9–12	–	170	local
	SF3	1989	Ylönen *et al.* (1996)	3 d record	mix	1–7	3	77	regional
	SF4	1996/97	Lehtonen-Veromaa *et al.* (1999)	4 d record	f	9–15	–	191	national
France	F1	1988	Hercberg *et al.* (1991*a*)	DH	m + f	2–20	6, 10, 14, 18	207	local
	F2	1988	Hercberg *et al.* (1991*b*)	DH	m + f	2–20	6, 10, 14, 18	207	local
	F3	1988	Hercberg *et al.* (1994)	DH	m + f	2–20	6, 10, 14, 18	207	local
	F4	1988	Preziosi *et al.* (1994)	DH	m + f	2–20	6, 10, 14, 18	207	local
	F5	1993/94	Rigaud *et al.* (1997)	1 d WR	m + f	2–20	6, 12, 17	271	national
	F6	1993/94	Couet *et al.* (2000)	1 d WR	m + f	2–20	6, 12, 17	271	national
	F7	1989/90	Volatier (2000)	1 d WR	m + f	3–14	6, 8, 11	1018	national
	F8	1985–93	Deheeger *et al.* (1994)	DH	m + f	2–20	4, 6, 8	278/112	local
	F9	1985–93	Deheeger *et al.* (1996)	DH	m + f	2–20	4, 6, 8	278/112	local
Germany	D1	1998	Deutsche Gesellschaft für Ernährung eV (2000)	1 d WR, DH	m + f	4–19	7, 10, 13, 15	38 924	national
	D2	1985–88	Adolf *et al.* (1995)	7 d record	m + f	4–18	6, 9, 12, 14	24 632	national
	D3	1985–95	Kersting *et al.* (2000)	3 d record	m + f	1–18	3, 6, 9, 12, 14	627	local
	D4	1985	Kersting *et al.* (1998*a*)	3 d record	m + f	1–18	3, 6, 9, 12, 14	627	local
	D5	1985	Kersting *et al.* (1998*b*)	3 d record	m + f	1–18	3, 6, 9, 12, 14	627	local
Greece	GR1	1993/94	Roma-Giannikou *et al.* (1997)	1 d WR, OCD	m + f	2–14	3, 5, 7, 9, 11	1936	national
	GR2	1994	Kafatos *et al.* (2000)	1 × 24 h recall, OCD	m	12	–	98	regional
	GR3	1999	Moschandreas & Kafatos (2002)	1 × 24 h recall	m + f	9–16	9–12, 14–16	1054/799	regional
	GR4	1997	Hassapidou *et al.* (2001)	3 d WR, 1 × 24 h recall, OCD, FFQ	m + f	11–14	–	582	regional
	GR5	1987–88	Hassapidou *et al.* (1996)	3 d WR	m + f	13–14	–	20	local
Hungary	H1	1995	Gábor (1998)	3 × 24 h recall	m + f	13–14	13–14	414	regional
Ireland	IRL1	1988	Lee & Cunningham (1990)	DH, OCD	m + f	8–25	12, 15, 18	643	national

Table 3. *Continued*

Country	Survey no.	Year of survey	Reference	Dietary methodology	Gender	Age (years) Range	Age (years) Cut-off points	Sample size	Geographic distribution
Italy	IT1	1996	Bellù *et al.* (1996)	FFQ	m + f: 7; mix: 10	7, 10	–	35 072	national
	IT2	1992	Ratsch *et al.* (1992)	4 d record	mix	3, 7, 10	–	93	national
	IT3	1991	Leclercq & Ferro-Luzzi (1991)	1 × 24 h recall	mix	10–11	–	178	national
	IT4	1988	Agostoni *et al.* (1998)	1 × 24 h recall	m + f: 11; mix: 15	11, 15	–	120	local
The Netherlands	NL1	1997/98	Hulshof *et al.* (1998)	2 d record	m + f	2–19	3, 6, 9, 12, 15	1538	national
	NL2	1984	Meulmeester (1989)	1 × 24 h recall	m + f	8	–	135	local
	NL3	1999	Brussaard *et al.* (1999)	1 × 24 h recall	m + f	7–9	–	202	local
Norway	N1	N/A	Frost Anderson *et al.* (1995)	1 d WR, FFQ	m + f	18	–	1564	national
	N2	N/A	Frost Anderson *et al.* (1997)	FFQ	m + f	13	–	1705	national
	N3	N/A	Johansson *et al.* (1997)	1 d WR	m + f	16–29	–	845	national
Poland	PL1	1991–94	Szponar & Rychlik (1996*a*)	1 × 24 h recall	m	11–14	11, 12, 13, 14	401	national
	PL2	1991–94	Szponar & Rychlik (1996*b*)	1 × 24 h recall	f	11–14	11, 12, 13, 14	725	national
	PL3	1996–98	Hamułka & Gronowska-Senger (2000)	1 × 24 h recall, FFQ	m + f	9–11	9, 11	224	regional
	PL4	1996–98	Hamułka & Gronowska-Senger (1999)	1 × 24 h recall FFQ	m + f	9–11	9, 11	224	regional
	PL5	1996/97	Hamułka *et al.* (1998)	1 × 24 h recall, FFQ	m + f	13–15	13, 15	104	urban, rural
	PL6	N/A	Hamułka *et al.* (2000)	1 × 24 h recall	m	17–18	17, 18	215	local
	PL7	N/A	Smigiel *et al.* (1994)	1 × 24 h recall	m	17–18	17, 18	236	local
	PL8	1990/91	Rogalska-Niedźwiedź *et al.* (1992)	1 × 24 h recall	m + f	11–15	11, 15	7562	local
	PL9	N/A	Czeczelewski *et al.* (1995)	1 × 24 h recall	m + f	13–15	13, 15	76	local
	PL10	N/A	Ilow *et al.* (1999)	1 × 24 h recall	mix	3–7	3, 7	822	national
	PL11	N/A	Werker (2000)	1 × 24 h recall	m + f	15–18	15, 18	600	regional
	PL12	N/A	Stopnicka *et al.* (1998)	1 × 24 h recall	m + f	15–18	15, 18	600	regional
	PL13	N/A	Charzewska *et al.* (1992)	FFQ	m + f	9–14	9, 14	672	regional
Portugal	P1	1995	Amorim Cruz (2000)	1 × 24 h recall	m + f	13–18	–	78	local
Russia	Rus1	2000	B Popkin (unpublished results)	1 × 24 h recall	m + f	1–20	2, 3, 4, etc.	2779	national
Spain	E1	1989/92	Aguilera *et al.* (1994)	FFQ	mix	2–7	3, 6	264	local
	E2	N/A	Gonzalez *et al.* (1994)	1 × 24 h recall, OCD	m + f	6–14	7, 8, 9, etc.	2608	local
	E3	1988	Vàzquez *et al.* (1996)	1 × 24 h recall	m + f	6–16	7, 12	164	local
	E9		Aranceta & Pérez (1996)						
Sweden	S1	1989/90	Bergström *et al.* (1993)	7 d record	m + f	14–17	17	731	regional
	S2	1993/94	Samuelson *et al.* (1996*a*)	7 d record	m + f	15	–	398	regional
	S3	1993/94	Samuelson *et al.* (1996*b*)	7 d record	m + f	15	–	398	regional
	S4	N/A	Samuelson *et al.* (2001)	7 d record	m + f	15	–	93	regional
Switzerland	CH1	1994/95	Societe Suisse de la Nutrition (1998)	7 d record	m + f	13–21	15, 19	1862	regional
UK	UK1	1988	Nelson *et al.* (1990)	7 d WR	m + f	7–12	11	227	local
	UK2	1989	McNeil *et al.* (1991)	7 d WR	m + f	12	–	61	local
	UK3	1990	Adamson *et al.* (1992)	2 × 3 d record	m + f	11–12	–	379	local
	UK4	1988/90	Payne & Belton (1992*a*)	7 d WR	m + f	2–5	3, 5	153	local
	UK5	1988/90	Payne & Belton (1992*b*)	7 d WR	m + f	2–5	3, 5	153	local
	UK6	1986/87	Crawley (1993)	4 d record	m + f	16–17	–	4760	national

Table 3. *Continued*

Country	Survey no.	Year of survey	Reference	Dietary methodology	Gender	Age (years) Range	Cut-off points	Sample size	Geographic distribution
	UK7	1989	Davies *et al.* (1994)	4 d WR	m + f	1·5–4·5	2·5, 3·5	81	local
	UK8	1990	Strain *et al.* (1994)	DH	m + f	12, 15	–	1015	regional
	UK9	1986/87	Crawley & White (1995)	4 d record	m + f	16–17	–	3288	national
	UK10	1992/93	Gregory *et al.* (1995)	4 d WR	m + f	1·5–4·5	2·5, 3·5	1675	national
	UK11	1990	McNulty *et al.* (1996)	DH	m + f	12–15	–	1015	regional
	UK12	1991/92	Ruxton *et al.* (1996)	7 d WR	m + f	7–8	–	136	local
	UK13	1997	Gregory & Lowe (2000)	7 d WR	m + f	4–18	6, 10, 14	1701	national
Yugoslavia	YU1	1998	Pavlovic *et al.* (2001)	1 d record	mix	10	9, 11	5834	national
	YU2	1998	Pavlovic *et al.* (1999)	1 d record	mix	9–10	9, 11	492	local
	YU3	1994/95	Pavlovic (1999)	1 d record	mix	4–6	4, 6	123	local
	YU4, YU4b	1998	Pavlovic (2000)	1 d record	mix	9–10	9, 11	375	local

N/A, not available; FFQ, food frequency questionnaire; OCD, other country food composition database; DH, diet history; WR, weighed food record; m, male; f, female; mix, genders not separated.

There was no consistency in the ages of the children surveyed or the age cut-off points. Thirty-four of the selected surveys were nationally representative and most of the remainder were regional. Only a small number of local surveys could be included. Thirteen (16 %) surveys provided data on children and adolescents living in Northern countries of Europe, fourteen (18 %) provided data on those living in Southern Europe, twenty-nine (37 %) on those in Western Europe and twenty-three (29 %) on those living in Central and Eastern Europe, although many of the surveys from the latter region were local surveys or surveys using 1 d records or 24 h recalls. All intake data are presented as a mean daily intake, unless otherwise stated. In some surveys, only a daily median was provided.

Apart from anthropometric data, some surveys provided additional information on status. Data from the UK were given for individuals for age groups between 1·5 and 18 years and for Austria for 6–18 years. For France and The Netherlands, status data were available only for the nutrients folic acid, vitamins A, E and C, β-carotene, riboflavin, thiamin, pyridoxine and Fe. Status data for vitamin B_{12} and some lipid parameters were also available for The Netherlands but these data related only to a small age group. Greece discussed status data on lipids and vitamin E only. Sweden provided status data for Fe and cholesterol and Finland for vitamin D.

Appendix B tabulates the intake data by nutrient for children and adolescents across Europe. For brevity, in the appendix tables, the surveys reviewed are given a survey number; Table 3 links the survey numbers and sources. The latter are given in the reference list of the present paper.

Energy

Data were obtained from sixty-seven surveys for males and fifty-nine for females. Most surveys provided data on energy intakes for a number of age categories. Making allowances for the different age categories used in the surveys, the intake of energy was consistent within the European countries. Approximately half the surveys provided data on children and adolescents living in Western Europe, while a further third reported on the intakes of those living in Southern Europe. Children (2–10 years) and adolescents (11–18 years) were equally represented in terms of the number of surveys.

There were fewer data sets available on the energy intakes of 2- to 3-year-olds compared with the other age categories.

When expressed in absolute terms, reported energy intakes (kJ/d) increased with increasing age in both males and females; when the data were expressed relative to body weight (kJ/kg per d), the opposite trend was apparent. Within each age category there was a wide range in reported energy intake (kJ/d) and this variability increased in magnitude with increasing age. Energy intakes of males were in the following ranges: 4200–6900 kJ/d (2–3 years); 5300–7700 kJ/d (4–6 years); 7000–10 100 kJ/d (7–10 years); 7740–15 000 kJ/d (11–14 years); and 9000–16 500 kJ/d (15–18 years). The corresponding intakes for females were: 4100–5400 kJ/d (2–3 years); 5100–9600 kJ/d (4–6 years); 6700–9600 kJ/d (7–10 years); 6800– 10 900 kJ/d (11–14 years); and 6800–10 600 kJ/d (15–18 years). Overall, while energy intakes appeared to increase during adolescence in males, no further increases were apparent from the age of 11 years in females.

On the other hand, the magnitude of the variability in energy intakes decreased with increasing age when intakes were expressed relative to body weight. In children (2–10 years) relative energy intakes were similar in males and females and typically these were in the range of 315–480 kJ/kg per d (2–3 years), 250–380 kJ/kg per d (4–6 years) and 210–340 kJ/kg per d (7–10 years). In adolescents there was greater divergence between males and females in relative intakes. The range of values for males was 175–290 kJ/kg per d in 11- to 14-year-olds and 140–255 kJ/kg per d in 15- to 18-year olds. The corresponding values for females were 150–225 kJ/kg per d (11–14 years) and 115–190 kJ/kg per d (15–18 years). In general, the variability in energy intakes was greatest in children and adolescents from Western Europe but this may simply be a reflection of the greater number of data sets available. Otherwise, there were no clear differences in intake across the different regions of Europe.

Carbohydrate and dietary fibre

Data for absolute intakes (g/d) and percentage of total energy were collected for total carbohydrate, total sugars, sucrose and starch. Only the percentage energy from each is presented as this corrects for any differences due to total energy intake and to some extent for misreporting, assuming misreporting is not macronutrient-specific.

Where the percentage energy was not provided, it was calculated from the absolute intake and total energy per day. The energy value used for 1 g carbohydrate was either 16 or 17 kJ, depending on which provided the nearest to 100 % when added to the percentage energy from fat (37 kJ/g) and protein (17 kJ/g). This calculation was required for most of the surveys and hence only a limited number of values for standard deviations are available. The surveys provided data on fibre intakes as g dietary fibre/d or, in the case of most UK surveys, NSP. This was converted to g/MJ.

Boys ate more carbohydrate and fibre than did girls in absolute amounts, but relative to energy intakes they were very similar. Data for both are given, but the descriptions below refer to data for males, unless specified, for simplicity. Within surveys there were large differences between individuals in absolute intakes, but much of this can be explained by variations in energy intake.

Total carbohydrate. Data were obtained from sixty-four surveys for males and sixty-three for females. Carbohydrate energy ranged from 40·3 to 61·6 % of total energy for males and from 39 to 60 % for females. In both cases the lowest values were from a Spanish survey (Gonzalez *et al.* 1994) and the highest from the Russian survey (B Popkin, unpublished results). These represented the geographical trend. The lowest intakes tended to be in the Southern European countries, ranging from 40·3 % of energy in Spanish 8-year-olds to 53 % in Italian 11- to 12-year-olds (Agostini *et al.* 1998), and the highest in the Central and Eastern countries, ranging from 44·6 % of energy in Yugoslavian 9- to 10-year-olds (Pavlovic, 2000) to 61·6 % in Russian 8-year-olds. In Northern countries, intakes ranged from 46·1 % of energy, in Finnish 12-year-olds (Rankinen *et al.* 1995), to 55·1 %, in Norwegian 13- to 15-year-olds (Frost Anderson *et al.* 1997). Intakes in Western countries were from 42·7 % of energy in German 10- to 12-year-olds (Adolf *et al.* 1995) to 55 % in Dutch 2- to 3-year-olds (Hulshof *et al.* 1998).

In the surveys where a number of age groups were included, the majority demonstrated a decline in percentage energy from carbohydrate with age. However, in Russia where intakes were the greatest, the survey indicated that the lowest intakes were in the under-sevens and over-sixteens. A reduction with age was also less likely in Southern European countries where intakes were already low at a young age.

Total sugar. Data were available from twenty surveys for males and females. Some UK surveys could not be included as they provided only non-milk extrinsic sugars, which excludes lactose and sugars in fruits and vegetables, and therefore are not comparable with the data from the rest of Europe. There were no data for Scandinavian countries.

Intakes tended to be lowest in Southern European countries. There was a clear trend of declining intake with age, except in Spain (Aranceta & Pérez, 1996) where intakes were mostly less than 12 % of energy. Intakes in 2- to 3-year-olds ranged from 22·9 % of energy in Greece (Roma-Giannikou *et al.* 1997) to 33·2 % in The Netherlands (Hulshof *et al.* 1998). Intakes among older children ranged from 10·9 % of energy in Spanish 6- to 7-year-olds to 27 and 24·9 % of energy in Dutch adolescents aged 13–15 and 16–19 years, respectively (Hulshof *et al.* 1998).

Sucrose. Data were provided by fifteen surveys for males and females. As with total sugars the lowest intakes were found in Southern European countries, but there were no obvious geographical trends amongst the other regions. Similarly, there was a decline in intake with age. The smallest intakes were 6 % of energy by a group of UK 7- to 8-year-olds (Ruxton *et al.* 1996) and 7·1 % by Italian 7-year-olds (Leclercq & Ferro-Luzzi, 1991). However, it should be noted that, of the many UK surveys included in this review, this was the only one that provided data on sucrose. Other UK surveys only provided non-milk extrinsic sugars, which include glucose and fructose found in fruit juices. Greatest sucrose intakes were 19 % of energy by 4- to 6-year-old Austrians (Elmadfa & Wasserbacher, 2002) and 17·6 % of energy amongst Finnish 4- to 7-year-olds (Ylönen *et al.* 1996).

Starch. Data for males came from twenty-one surveys and for females from twenty surveys. Intakes were greatest in the Spanish, Russian and Polish surveys and smallest in the Finnish surveys. There was a clear trend of increasing intake with age, except in the Spanish survey (Aranceta & Pérez, 1996). In younger children, intakes ranged from 18 % of energy in Finnish 2- to 3-year-olds (Ylönen *et al.* 1996) to 28 and 28·8 % in Russian 2- and 3-year-olds, respectively, and 35 % in Spanish 4- to 5-year-olds.

For the older children, they ranged between 22·8 and 34·6 % of energy in Finnish (Räsänen *et al.* 1991) and Russian 18-year-olds, respectively. There were no clear differences in intakes between those Southern and Western European countries that reported intakes.

Fibre. Data were obtained from fifty-four surveys for males and fifty-two for females. Intakes ranged from 0·9 to 3·5 g dietary fibre/MJ, with no discernible trends between countries or ages. Differences in methodology for determining fibre may partly explain why regional differences were not apparent. Values for NSP within the UK surveys ranged from 1·1 to 2·2 g/MJ.

Fat

Total fat. Data originated from sixty surveys for males and females. Males' and females' intakes of fat, when expressed as percentage of total energy, were similar, although some values were lower in females when compared with their male counterparts from the same survey. The lowest fat intakes were recorded in the Norwegian and Swedish surveys. Mediterranean countries, particularly Spain and Greece, and some surveys from the UK recorded the highest fat intakes; that is, more than 40 % of energy. Fat intake and age of children did not seem to be associated.

Saturated fatty acids. Data were provided for males and females by twenty-nine surveys. Reported consumption of saturated fatty acids (SFA) in Belgium and France was quite high (about 17 % of energy), while Finland reported the highest intake, i.e. 20 % of energy. Southern Mediterranean countries (Greece, Spain and Italy) reported intakes of 12–13 %. Yugoslavia reported the lowest SFA intakes at 10 % of total energy, and similar values were found in Poland (10–11 %).

MUFA. Data for the intake of MUFA were available from thirty surveys for males and twenty-nine surveys for females. In Southern European countries where intakes of SFA were low, the reported consumption of MUFA was greatest. Reported consumption in Spain was 16–17 % and in Greece up to 18 % of total energy. For the other countries, 11–13 % of energy seemed to be the most common range of consumption. Low intakes of MUFA were found in Denmark, Norway and Sweden, and also in Hungary, where the intake of MUFA was 10 % of energy.

PUFA. Data for males were obtained from thirty surveys and for females from twenty-nine surveys. In most countries, intakes of PUFA ranged from 4 to 6 % of energy. Poland showed some peculiarities since two surveys (Smigiel *et al.* 1994; Hamułka *et al.* 2000) reported high intakes of PUFA (9 % of energy), while others (Szponar & Rychlik, 1996*a,b*) reported the lowest of all the surveys (3 % of energy). Yugoslavian surveys also reported a wide range of PUFA intakes (5–8 % of energy). On the whole, surveys from Central and Eastern Europe reported the greatest intakes of PUFA; for example, the reported consumption of PUFA in Estonia was almost 10 % of energy.

Some differences in the composition of high-fat diets between Mediterranean countries and other regions were evident. Hyperlipidic diets in Mediterranean countries were associated in general with high intakes of both SFA and MUFA, while high-fat diets in Central and Eastern and Northern Europe showed quite high levels of SFA with relatively lower levels of both MUFA and PUFA.

Cholesterol. Data were reported in thirty-one surveys for males, twenty-four for females and eight for males and females together. There was a relatively homogeneous pattern of cholesterol consumption within all European countries. Within both Northern and Southern Europe there are countries with dietary intakes in the higher and lower ranges. Some surveys reported an intake of up to 400 mg/d for males in Northern, Central and Eastern and Southern European countries. The highest intakes were reported for Spain (Aranceta & Pérez, 1996; Vázquez *et al.* 1996). Lower intakes were reported in surveys from The Netherlands, Poland, the UK and Denmark.

Status data for cholesterol were available from five countries (Austria, Greece, The Netherlands, Sweden and the UK). Lipid status data were given as the parameters plasma total cholesterol, HDL-cholesterol, LDL-cholesterol, triacylglycerols and more for different age groups.

Protein

Data for protein intake were available from sixty-four surveys for males and fifty-eight surveys for females. Most surveys provided data on protein intakes for a number of age categories. Approximately half of the surveys provided data on children and adolescents living in Western Europe, while a further third reported on the intakes of children living in Southern Europe. Although children (2–10 years) and adolescents (11–18 years) were equally represented in terms of the number of surveys, there were fewer data sets available on the protein intakes of 2- to 3-year-olds compared with the other age categories. Northern countries (especially Sweden) and some surveys from France and Spain showed the highest protein intakes, more than 16 % of energy. Otherwise, protein intake (percentage energy) was generally very similar within each country.

There was an approximately twofold difference between the reported protein intakes of both males and females in the youngest age categories (2–6 years) and of males in the older age groups (7–18 years). The magnitude of the variability in intake decreased slightly in females in the older age groups. In absolute terms, the range in protein intakes (g/d) was broadly similar in both males and females aged 2–10 years. Typically, the range was 32–64 g/d in 2- to 3-year-olds, 38–72 g/d in 4- to 6-year-olds and 53–85 g/d in 7- to 10-year-olds. Thereafter, intakes increased with age in males, from 61–118 g/d (11–14 years) to 71–127 g/d (15–18 years). However, the intake ranges in females aged 7–18 years were similar (53–88 g/d).

When expressed relative to body weight, protein intakes decreased from 2·3–4·5 g/kg per d in 2- to 3-year-olds to 1–1·9 g/kg per d in 15- to 18-year-olds. In all age categories, the range in protein intakes (g/kg per d) was broadly similar in males and females. Protein ranged from 11 to 16·6 % of energy and from 11 to 17·8 % for energy in males and females, respectively. In general, the lowest intakes of protein were reported in the German and UK studies while the Spanish studies reported the highest intakes, particularly in the youngest age categories.

Alcohol

Alcohol intakes were reported in sixteen studies, of which the majority were from countries in Western Europe (eleven studies) and the remainder from countries in Scandinavia (four studies) and Central Europe (one study). The surveys provided data on alcohol intakes for a number of age categories. Overall, alcohol intakes were highly variable both within and between studies. The only clear trends were an increase in alcohol intakes from 11 years, with males consuming more alcohol than females. Typically, alcohol intakes increased from 1·5 g/d (0·5 % of energy) in 11-year-old males and females to 10 g/d (3·3 % of energy) in 15- to 18-year-old males and 6 g/d (1·8 % of energy) in 15- to 18-year-old females. In general, the highest intakes were reported in studies from Germany, The Netherlands and the UK, while studies from Norway and Sweden reported the lowest intakes.

Water-soluble vitamins

Biotin. Intake data were obtained from five surveys for males and six surveys for females. No status data were available. In general, biotin intake increased with age and was very similar within a country. Highest biotin intakes were observed in Austria and Germany; in comparison, intakes in UK and Yugoslavian boys and girls were approximately 40 % less.

Intakes in 2- and 3-year-old boys were 17 μg/d (UK), while intakes in 4- to 14-year-old boys ranged from 15 to ~40 μg/d. The three surveys in the age category 15–18 years reported intakes of between 29 and 45 μg/d. Intakes of girls in all age categories ranged from 12 to 39 μg/d. The biotin intake of Austrian girls in the age category of 15–18 years was the lowest observed in the country survey for Austria and thus presented an exception that biotin intakes increase with age.

Folic acid. Intake data for male and female children and adolescents were obtained from twenty-eight surveys. Intake data refer to free folic acid (older surveys) as well as to dietary folate in the more recent surveys of Austria and Germany. The dietary folate (and folic acid) equivalent (DFE) was developed to take into account the differences in absorption of naturally occurring dietary folate and the more bioavailable synthetic folic acid: 1 μg DFE = 1 μg dietary folate = 0·5 μg synthetic folic acid. Accordingly, intake data and recommended daily allowances for dietary folate are twice as high as for folic acid. As most of the literature gives values for free folic acid, the following narrative refers to free folic acid.

There were no clear geographical trends in folic acid intake. The greatest intakes were observed in Danish, Irish and some UK surveys, whereas the lowest intakes were reported for Bulgaria, Spain, Sweden and also for some UK surveys.

In general, folic acid intake increased with age. Intakes in 2- and 3-year-old boys ranged from 95 to 190 μg/d. Intakes in 4- to 6-year-olds ranged from 120 to ~200 μg/d. Among boys aged 7–10 years, intakes of 100–250 μg/d were reported. For 11- to 14-year-old boys, intakes varied from 105 to 300 μg/d. In 15- to 18-year-olds, low intakes of about 140 μg/d were reported for Germany, Sweden and Hungary. The highest intakes, of ~300 μg/d, were reported in Denmark, Ireland and the UK.

Folic acid intakes of 2- to 6-year-old girls ranged from 100 to ~200 μg/d. In 7- to 10-year-old girls, intakes ranged from 130 to 250 μg/d. For girls aged 11–14–years, the lowest levels of ~100 μg/d were reported in the UK, Sweden and Hungary. Other surveys reported intakes from about 140 μg/d in Spain and the UK (Nelson *et al.* 1990) to about 250 μg/d in Denmark (Andersen *et al.* 1996) and France (Volatier, 2000). In 15- to 18-year-olds, low intakes of ~105–120 μg/d were reported for Sweden, Hungary and one UK survey (Crawley, 1993). Most surveys report intakes of 200–240 μg/d. The greatest intakes, of about 260 μg/d, were reported in Denmark (Andersen *et al.* 1996) and the UK (Gregory *et al.* 1995).

Status data from four countries (Austria, France, UK and The Netherlands) for folic acid were also available. Most status data were in the range of 3·8–6·8 ng serum folate/ml (Austria) and 2·3–23·4 ng serum folate/ml (France) and about 11 nmol folic acid/l (The Netherlands). Status data for the UK were given as red-cell folate (573 (SD 203·9) nmol/l for females and 626 (SD 209·5) nmol/l for males) and serum folate (20·6 (SD 8·16) nmol/l for females and 21·7 (SD 7·64) nmol/l for males).

Niacin. Intake data for male and female children and adolescents were obtained from thirty-eight surveys. No status data were available. There were no obvious geographical trends. The highest niacin intakes were reported in Ireland and Spain, whereas the lowest intakes were reported in Belgium, France, The Netherlands, Poland and Russia. In general, niacin intake increased with age.

Intakes in 2- and 3-year-old boys and girls ranged from 7 to 20 mg/d and in 4- to 6-year-old boys and girls from about 10 to 25 mg/d. For boys and girls aged 7–10 years, the lowest intakes of about 6–10 mg niacin/d were reported in Belgium, The Netherlands, Poland and Russia. Most reported intakes were in the range of 20 to 25 mg niacin/d. Intakes of about 35 mg/d were reported for Ireland and Yugoslavia (Pavlovic, 2000).

In 11- to 18-year-olds a difference between genders was noticeable, which is probably a reflection of an overall increase in food and energy intake. Intakes among 11- to 14-year-old boys varied from 12 to 49 mg niacin/d. Most intakes were in the range of 25–33 mg/d. In boys aged 15–18 years the lowest intakes were reported for Belgium (8 mg/d) and Russia (13–16 mg/d). The highest intakes of 52 mg/d were observed in Ireland. Most intakes in 15- to 18-year-olds were between 30 and 40 mg niacin/d. Intakes in 11- to 14-year-old girls varied from 10 mg/d (Russia) to 36 mg/d (Spain). Most intakes were in the range of 24–27 mg/d. In girls aged 15–18 years the lowest intakes were reported for Belgium (6 mg/d) and Russia (10–11 mg/d). The greatest intakes of 32–34 mg/d were observed in the UK and Ireland. Most intakes in this age group were between 23 and 27 mg niacin/d.

Pantothenic acid. Data for male and female children and adolescents were obtained from eight surveys. No status data were available. Highest intakes were observed in Yugoslavia, whereas lowest intakes were reported in France and Germany. In general, intakes increased with age (except Austria) and were very similar within a country. There was no obvious geographical trend between the European regions.

Intakes among 2- and 3-year-old boys and girls were investigated in only one UK survey, which reported mean intakes of 2·7 mg/d. Intakes in 4- to 6-year-old female and male children ranged from 2·7 to 5 mg/d. In 7- to 10-year-old-girls and boys, the lowest intakes of about 3·3 mg/d were observed in Germany. Most reported intakes were in the range of 4–4·8 mg/d. The highest intakes of 5·1 and 6·9 mg/d were reported for Yugoslavia (Pavlovic, 2000).

Among boys aged 11–14 years intakes varied from 4 to 5·8 mg/d. In 15- to 18-year-old male adolescents intakes were between 4·9 mg/d in Germany (Deutsche Gesellscahft für Ernährung eV, 2000) and 6 mg/d in Austria (Elmadfa & Wasserbacher, 2002). Intakes among 11- to 14-year-old females varied from 3·5 to 5 mg/d. One Polish survey reported the highest intake for girls of this age category of about 10 mg/d. In girls aged 15–18 years, intakes were in the range of 4 mg/d in one UK survey (McNulty *et al.* 1996) to 4·4 mg/d in Austria.

Riboflavin. Data were obtained from forty-two surveys for males and forty-four surveys for females. In seven surveys the data for boys and girls were combined. The highest riboflavin intakes were recorded in Ireland and the lowest in Russia. In general, riboflavin intake increased with age. The data were very homogeneous within a survey and a country. There were no obvious geographical trends.

Intakes in 2- and 3-year-old boys and girls ranged from about 0·8 to 1·7 mg/d. Intakes among 4- to 6-year-olds ranged from about 1·0 to 1·9 mg/d. Most intakes were in the range of 1·0–1·7 mg riboflavin/d. For girls and boys aged 7–10 years, the lowest reported intakes were about 1 mg/d. Most reported intakes were in the range of 1·2–1·8 mg/d. The highest intakes of ~2·6 mg/d were reported for Irish males and in Yugoslavia (Pavlovic, 2000).

Intakes in 11- to 14-year-old boys varied from 1 mg/d in Russia to 2·9 mg/d in Norway. Most reported intakes were in the range of 1·3–1·9 mg/d. In 15- to 18-year-old boys, the lowest intakes were reported for Greece and Russia (1·3 mg/d). The highest intakes of about 3 mg/d were observed in Ireland, Norway and Sweden. Most intakes in this age group were between 1·6 and 2·3 mg/d.

Riboflavin intakes in girls aged 11–14 years varied from 0·9 mg/d in Russia to 1·9 mg/d for Finland, Ireland and Sweden. Most intakes were in the range of 1·2–1·7 mg/d. In 15- to 18-year-old females the lowest intakes were reported for Greece and Russia (1 mg/d). The highest intakes of about 2 mg/d were observed in Norway. Most intakes in this age group were between 1·3 and 1·8 mg/d.

Status data from four countries (Austria, France, The Netherlands, UK) for riboflavin were available. Most status data were in the range 1·1–1·5 erythrocyte glutathione reductase activation coefficient.

Thiamin. Data were obtained from forty-one surveys for males and forty-three surveys for females. Seven surveys included data for males and females combined. There were no clear geographical trends in intakes between those Southern, Northern and Western European countries with reported intakes. The highest thiamin intakes were observed in Norway, Poland, Estonia and Ireland, whereas the lowest intakes were reported for Bulgaria. In general, thiamin intake increased with age.

Intakes among 2- and 3-year-old girls and boys ranged from about 0·5 to 1 mg/d. Mean daily intakes were in the range of 0·6–0·8 mg. Intakes in 4- to 6-year-olds ranged from about 0·7 to 1·4 mg/d and most reported intakes were in the range of 0·8–1·2 mg/d. For girls and boys aged 7–10 years, daily intakes ranged from 0·9 to 2·7 mg, and most reported intakes were in the range of 1·0–1·4 mg.

Intakes in 11- to 14-year-old boys varied from 0·9 mg/d in Hungary to 2·1 mg/d in Norway and Spain. Greece reported intakes of about 2·9 mg/d for 9- to 12-year-old boys. Most intakes in boys aged 11–14 years were between 1·2 and 1·5 mg/d. In 15- to 18-year-old boys, the lowest intakes were reported for Bulgaria (1·2 mg/d). The highest intakes of about 2·4–2·5 mg/d were observed in Greece and Poland. Most intakes in this age group were between 1·4 and 1·8 mg/d.

Intakes among 11- to 14-year-old girls varied from 0·8 to 2·1 mg/d. Most intakes in this age group were between 1·1 and 1·4 mg/d. In girls aged 15–18 years, intakes ranged from 0·9 to 2·5 mg/d and most intakes were between 1·2 and 1·5 mg/d.

Status data from four countries (Austria, France, The Netherlands, UK) for thiamin were available. Most status data were about 1·1 erythrocyte transketolase activation coefficient.

Vitamin B_{12}. Data for male and female children and adolescents were obtained from twenty-nine surveys, of which three represented data for both genders combined. The highest vitamin B_{12} intakes were observed in Austria, Spain and Sweden, whereas the lowest intakes were reported for Hungary, The Netherlands and by some UK reports. In general, vitamin B_{12} intake increased with age but was consistent within an age group and each survey considered. There was no evidence for any geographical trend.

Intakes in 2- and 3-year-old girls and boys ranged from about 2·4 μg/d in the UK (Payne & Belton 1992*b*; Crawley 1993) to 5·6 μg/d in France. Intakes in 4- to 6-year-olds ranged from about 2·5 μg/d in the UK to 7·5 μg/d in France. Most intakes ranged between 3·0 and 4·3 μg/d. For 7- to 10-year-old girls and boys, the lowest intakes of about 2·6 μg/d were observed in the UK. Most intakes were reported were in the range of 3·5–5 μg/d. The highest intakes, of 6·1 μg/d (females) and 9 μg/d (males), were reported in a French survey (Hercberg *et al.* 1991*b*, 1994).

Intakes in 11- to 14-year-old boys varied from 2·8 to 11 μg/d. Most intakes in this age group ranged between 3·5 and 5·3 μg/d. For 15- to 18-year-old boys, the lowest intakes were reported for Hungary (3·2 μg/d). Intakes of about 8·7 μg/d were observed in the UK, but the greatest intake was 11 μg/d by 16- to 29-year-olds in Norway. Most intakes in this age group were in the range of 5–7 μg/d.

Intakes in 11- to 14-year-old girls varied from 2·6 μg/d in a UK survey (McNulty *et al.* 1996) to 9·6 μg/d in

Spain (Vázquez *et al.* 1996), but most intakes were between 3·3 and 5·5 µg/d. The lowest intakes in 15- to 18-year-old girls were reported for the UK and Hungary (~2·5 µg/d). The highest intake of about 7·1 µg/d was observed in Norway (16- to 29-year-olds) but most intakes in this age group were between 3·4 and 5 µg/d.

Status data for vitamin B_{12} were available from three countries (Austria, The Netherlands, UK). Most status data were in the range of 400–560 pg serum cobalamin/ml (Austria) and 290–410 pmol/l (The Netherlands). Status data from the UK also averaged about 400 pmol/l.

Vitamin B_6. Data for male and female children and adolescents were obtained from thirty-six surveys, of which four surveys presented combined data. No particular pattern of intake of vitamin B_6 was apparent. The highest intakes were observed in France, Ireland and Poland, whereas Germany reported the lowest intakes. In general, the vitamin B_6 intake increased with age.

Intakes in 2- and 3-year-old girls and boys ranged from ~0·6 mg/d in Germany to ~1·1 mg/d in the UK and France. Among 4- to 6-year-olds intakes ranged from ~0·7 mg/d in the Czech Republic and Germany to ~1·7 mg/d in the UK (Gregory *et al.* 1995). Most intakes were between 1·0 and 1·4 mg/d.

In 7- to 10-year-old girls and boys the lowest intakes of about 0·8 mg/d were observed in the Czech Republic. Most intakes were between 1·1 and 1·4 mg/d, and the highest intake of about 2·4 mg/d was reported in a Yugoslavian study (Pavlovic, 2000).

Intakes in 11- to 14-year-old boys ranged from 1·1 mg/d in Germany to 2·2 mg/d in Ireland and the UK. Most intakes by this age group were in the range of 1·3–1·9 mg/d. For 15- to 18-year-old boys, the lowest intakes were reported in Germany (1·4 mg/d) and the highest in the UK, Ireland and Poland (2·6 mg/d). Most intakes by the older group were between 1·6 and 2·2 mg/d.

Intakes among 11- to 14-year-old girls ranged from 1·0 mg/d in Germany to 1·9 mg/d in the UK, but most intakes were between 1·3 and 1·4 mg/d. For 15- to 18-year-olds, the lowest intakes were reported in Germany (1·3 mg/d) and the highest intake of ~2 mg/d was observed in the UK (McNulty *et al.* 1996). Most intakes in this age group were between 1·4 and 1·6 mg/d.

Status data were available from four countries (Austria, France, The Netherlands, UK) for vitamin B_6 and were in the range of 1·3–2·0 for erythrocyte aspartate aminotransferase activation coefficient.

Vitamin C. Data were obtained from fifty-six surveys for males and fifty-three surveys for females, of which seven included data for males and females combined. In general, vitamin C intake increased with age. No geographical trends were apparent and intakes among children and adolescents appear to be very heterogeneous within Europe.

For 2- and 3-year-old girls and boys, intakes ranged from ~35 mg/d in Russia and one UK survey (Payne & Belton, 1992*b*) to ~95 mg/d in France and Spain (Aguilera *et al.* 1994). Most reported intakes were between 50 and 70 mg/d.

Intakes among 4- to 6-year-olds ranged from about 30 mg/d in the Czech Republic to 115 mg/d in Austria and Finland, and most intakes were between 50 and 90 mg/d. For 7- to 10-year-old girls and boys, the lowest intakes, of about 50 mg/d, were observed in Russia. The highest intakes of about 125 mg/d were reported for Yugoslavia (Pavlovic, 2000). Most reported intakes were between 60 and 100 mg vitamin C/d. Intakes among girls and boys aged 11–14 years ranged from 30 to 185 mg/d and most were in the range of 60–90 mg/d.

Among 15- to 18-year-old male and female adolescents, the lowest intakes were reported for Estonia (50 mg/d) and the highest were observed for Switzerland (males 163 mg/d, females 146 mg/d). Most intakes in this age group were between 70 and 100 mg/d.

Status data for vitamin C were available from four countries (Austria, France, The Netherlands, UK). Values were 15–17 mg ascorbate/l plasma (Austria), 1–18 µg ascorbic acid/ml serum (France), ~50 µmol vitamin C/l (The Netherlands), and 56 µmol vitamin C/l plasma for boys and 5 µmol vitamin C/l plasma for girls (UK).

Fat-soluble vitamins

Vitamin A. Surveys presented data on vitamin A intake, retinol, β-carotene or retinol equivalents (RE). The majority (fifty-four for girls, forty-seven for boys and one for both sexes combined) reported RE. In nine surveys β-carotene and retinol intakes were presented from which RE were calculated. Data on RE and β-carotene only are reported in this review.

Mean daily RE ranged from 0·39 mg in Yugoslavia (Pavlovic, 2000) to ~2·00 mg. Low intakes were found in Belgium, The Netherlands, Austria, Germany (>12 years), the UK and Yugoslavia, and high intakes in Norway, Sweden and Denmark (early childhood and 7–12 years). The lowest intakes tended to be in the Western European countries and the highest in Northern European countries. There were wide variations in intakes reported from different surveys within Germany and Poland. Differences in intake between the age groups in the surveys were slight. Intakes tended to be higher in boys, but the differences between the two sexes were not great.

Intakes in 4- to 6-year-old boys ranged from about 0·5 mg RE/d in Germany to about 1·4 mg RE/d in Poland. In 7- to 10-year-old boys, the lowest intakes of about 0·39 mg RE/d were observed in Yugoslavia. The greatest intakes of ~1·4 mg RE/d were reported for Denmark. Among boys aged 11–14 years, mean daily RE varied from 0·4 mg in the UK to 1·6 mg in Denmark. In 15- to 18-year-olds the lowest intakes were reported in Germany and the UK (~0·6 mg RE/d) and the greatest of 1·8 mg RE/d (median) was reported in Norway.

Intakes in 4- to 6-year-old girls ranged from about 0·4 mg RE/d in Germany to 1 mg RE/d in Denmark. In 7- to 10-year-old girls, lowest intakes of about 0·5 mg RE/d were reported in Yugoslavia, Germany and the UK. The greatest intakes of ~1·3 mg RE/d were reported for Denmark. Intakes in girls aged 11–14 years varied from 0·48 mg RE/d in Germany to 1·25 mg RE/d (median) in Norway. Among 15- to 18-year-olds the lowest intakes were reported for the UK and Germany (~0·5 mg RE/d).

The highest intake of 1·32 mg RE/d (median) was observed in Norway.

Status data from four countries were available. The values were 280–360 µg retinol/l serum (Austria), 0·75–1·16 µmol retinol/l serum (France), 0·84 µmol retinol/l serum (The Netherlands) and 1·0–1·29 µmol/l plasma (UK).

β-Carotene intake of boys was recorded in nineteen surveys, of girls in fourteen surveys and of both sexes combined in five surveys. Mean reported daily β-carotene intake ranged from 0·35 mg in one UK survey (Ruxton *et al.* 1996) to 8·4 mg in one Yugoslavian survey (Pavlovic, 2000). A very high intake of β-carotene was found in Yugoslavia in comparison with other countries. Low intakes were reported in Belgium. Some large differences were noted between surveys in Germany (*Ergebisse der nationalen Verzehrsstudie*, 1995; Deutsche Gesellschaft für Ernährung eV, 2000), France (Hercberg *et al.* 1991*b*, 1994; Volatier, 2000) and the UK (Ruxton *et al.* 1996; Gregory & Lowe, 2000). Relatively high intakes were found in Denmark and relatively low intakes in France. There did not appear to be any geographical trend.

Within each survey, intakes were similar in all age groups, indicating that the younger, smaller children had greater intakes relative to their body weight. No large differences in β-carotene intake between sexes were observed, with three exceptions: one Danish survey where intakes were greater in females aged 7–10 years and 15–18 years (Andersen *et al.* 1996), one French survey where intakes were greater in males aged 15–18 years (Hercberg *et al.* 1991*b*, 1994) and one Greek survey where intakes were greater in females aged 11–14 years (Hassapidou & Fotiadou, 2001).

β-Carotene intakes in 4- to 6-year-old boys ranged from about 1·1 mg/d in the UK to 2·9 mg/d in Denmark. In 7- to 10-year-old boys the lowest intakes of about 0·35 mg/d were reported for the UK and the greatest intakes of about 2·9 mg/d were reported for Denmark. For boys aged 11–14 years, intakes varied from 0·85 mg/d in France to 3·2 mg/d in Denmark. In 15- to 18-year-olds the lowest intakes were reported in Belgium (0·9 mg/d) and the highest in Poland (2·5 mg/d).

Intakes of β-carotene among 4- to 6-year-old girls ranged from about 1·1 mg/d in the UK to 2·6 mg/d in Denmark. In 7- to 10-year-old girls the lowest intakes of about 0·1 mg β-carotene/d were observed in France. The highest intakes of about 4·1 mg/d were reported for Denmark. For girls aged 11–14 years, intakes varied from 0·9 mg/d in France to 2·9 mg/d in Denmark. In 15- to 18-year-olds the lowest intakes were reported from Belgium (0·8 mg/d) and the highest intakes from Denmark (3·6 mg/d).

Status data for β-carotene were available from four countries (Austria, France, The Netherlands, UK). The values were about 22–40 µmol/l serum in Austria and France, total carotenoids of 1·53 (SD 0·69) µmol/L plasma in The Netherlands and 0·312–0·626 µmol/l plasma in the UK.

Vitamin D. Vitamin D intake was recorded in twenty-two surveys for boys and girls separately, and in five for both sexes combined. Mean vitamin D intake ranged from 0·7 µg/d in Spain (boys) to 6·5 µg/d in Sweden (Bergström *et al.* 1993). The highest intakes were found in Northern European countries (Sweden, age >12 years), Estonia and The Netherlands. The lowest intakes were recorded in Spain (age <8 years), Austria (age >12 years), Ireland and the UK. Intakes increased with age and, in most surveys, were higher in boys than in girls.

Boys aged 2–3 years were investigated in only two surveys and these reported intakes of 1·7 and 2·0 µg/d. Intakes in 4- to 6-year-old boys ranged from ~0·7 µg/d in Austria to ~3 µg/d in Germany. In 7- to 10-year-old boys the lowest intakes of about 1·7 µg/d were observed in Austria. The highest intakes of about 3·5 µg/d were reported for Germany. For boys aged 11–14 years, intakes ranged from 1·7 µg/d in Spain to 5·8 µg/d in Sweden; Spanish boys aged 13–14 years had similarly high intakes. Among 15- to 18-year-old boys the lowest intakes were reported for Germany and Austria (~1·8 µg/d) and the highest intakes for Sweden (6·5 µg/d).

Intakes in 2- and 3-year-old girls were reported in two Northern European surveys only and were 1·8–2·2 µg/d. Intakes of 4- to 6-year-old girls ranged from about 1·2 µg/d in Austria to 2·9 µg/d in Germany. The lowest intakes among girls aged 7–10 years were about 1·3 µg/d, reported by Austria and one UK survey. However, another UK survey reported the highest intake of 5·9 µg/d. Intakes of 11- to 14-year-old girls ranged from 1·2 µg/d in the UK to 4·4 µg/d in Sweden. For girls aged 15–18 years, the lowest intakes were reported by Austria (~1·4 µg/d) and highest intakes by Sweden (4·6 µg/d).

Vitamin E. Vitamin E intake was recorded in twenty-five surveys for boys, twenty-one surveys for girls and six surveys for both sexes combined. These provided data for fourteen countries. Most of the studies expressed the data as tocopherol equivalents and only three surveys used α-tocopherol (Deheeger *et al.* 1994, 1996; Kafatos *et al.* 2000; Moschandreas & Kafatos, 2002). The mean α-tocopherol equivalent intake ranged from 3·2 mg/d (Kersting *et al.* 1998 *a,b*, 2000) to 32·4 mg/d (Smigiel *et al.* 1994). The greatest intakes were found in Bulgaria, a Polish survey (Szponar & Rychlik, 1996*a*) and Yugoslavia, and the lowest in the Czech Republic, France, Sweden, the UK and Denmark. Girls tended to consume less than boys and intakes increased with age.

Vitamin E:PUFA (mg/g) was calculated where data for both values were available. The lowest ratios were found in Hungary (0·41) and the highest in Yugoslavia and Bulgaria (2·06). In most of the countries the ratios did not change with age, except in Bulgaria where ratios increased with age. The ratios were also very similar in both sexes.

Vitamin K. Data were provided only by Yugoslavia, which recorded vitamin K intake in both sexes combined for children aged 9–10 years.

Minerals

Calcium. Data were obtained from forty-five surveys for males, fifty for females and eight surveys for males and females together. In general, Ca intake increased with age.

In boys and girls aged 2–3 years, mean daily Ca intake ranged from about 500–600 mg in Bulgaria, Italy and

Russia to about 1000 mg in France and Spain. The UK average intake was about 650 mg/d whereas intakes between 700 and 1000 mg/d were observed in Denmark, Finland, Greece and The Netherlands. There were no obvious geographical trends across Europe. Intakes of children aged 4–6 years hardly differed from those of younger children. In this age category data were also available for the Czech Republic and Germany, where mean intakes were in the range of 600–700 mg/d.

Among children aged 7 years and over and among adolescents, the daily Ca intake of males was often about 100–200 mg higher than that of females. In boys aged 7–10 and 11–14 years, Ca intake ranged from ~500 mg/d (Russia) to ~1200 mg/d (Denmark, Finland, France, Ireland, Sweden, Yugoslavia) or more (Norway: 1624 mg/d). Intakes of between 800 and 1000 mg/d were reported in Austria, Germany, Greece, The Netherlands and the UK. Among girls aged 11–14 years intakes below 600 mg/d were mostly found in Central and Eastern European countries whereas the greatest intakes (~1000 mg/d and higher) were recorded in Ireland, Northern European countries, Greece and one French study. Although the Ca intakes of males aged 15–18 years were mostly slightly higher than of those aged 11–14 years, the general picture regarding lower and higher ranges was roughly the same. Intakes in 15- to 18-year-old female adolescents were more or less comparable with intakes of the younger age group.

Only Austria provided information on Ca excretion in urine as a status parameter. The mean values varied from 0·9 (SD 0·85) mmol/g creatinine (boys 13–14 years) to 2·01 (SD 1·23) mmol/g creatinine (girls aged 6 years), and all mean values were within the normal range (0·5–6·6 mmol/g creatinine).

Magnesium. Data were collected from thirty surveys for males, twenty-nine for females and four for males and females combined. Across Europe there were no obvious geographical trends. In general, Mg intake increased with age.

For boys aged 2–3 years mean daily Mg intake ranged from 123 mg (Bulgaria) to about 320 mg (Russia). In most surveys the mean intake figures for children aged 2–6 years and 7–10 years were between 175 and 275 mg/d and 225 and 300 mg/d, respectively. Older boys generally had higher intakes than did older girls. For males, mean intakes were mostly in the range of 300–325 mg/d (11–14 years) and 350–375 mg/d (15–17 years). For females, intakes were mostly in the range of 250–275 mg/d. In five studies, from Norway (Johansson *et al.* 1997), Yugoslavia (Pavlovic, 2000), Estonia (Grünberg *et al.* 1997), Poland (Smigiel *et al.* 1994) and Russia (B Popkin, unpublished results), values exceeded 400 mg/d in some male groups, some of which had a large standard deviation.

Data on Mg as a status parameter was available for Austria. Excretion in urine ranged from 6·26 (SD 2·8) mg/g creatinine (boys aged 15–18 years) to 10·8 (SD 16·1) mg/g creatinine (girls aged 10–12 years); normal range is 4–11 mg/g creatinine.

Phosphorus. Data were obtained from twenty-four and twenty surveys for males and females, respectively, and from four surveys where no distinction was made between genders.

For children aged 2–6 years, mean intake of P ranged from about 700 to 1200 mg/d in the youngest and from 700 to 1400 mg/d in those aged 4–6 years. Most values fell between 700 and 1000 mg/d. Similar intakes were reported for children aged 7–10 years, but in this group the overall range was broader. The highest intakes were found in Denmark and Yugoslavia. In 11- to 14-year-old boys average intakes were mostly between 1400 and 1600 mg/d. Among girls most values fell in the range of 1200–1400 mg/d. In male adolescents mean intakes above 1800 mg/d were not exceptional, whereas in female adolescents the highest intakes were between 700 and 1200 mg/d. The highest values were often observed in Northern European countries.

Potassium. Data were obtained from fifteen surveys for males, thirteen for females and three for males and females combined. In most countries the intake of K by males was slightly higher than by females and intakes increased with age. No obvious geographical trends were seen across Europe.

In boys and girls aged 2–6 years, most mean values fell in the range of 2200–2400 mg/d and 2000–2200 mg/d, respectively. The range of intakes among 7- to 10-year-olds was broader, but still most values were in the same range as for the younger children. Studies in Yugoslavia recorded the highest figures (>3000 mg/d). In boys aged 11–14 years, mean intakes were mostly between 2400 and 2600 mg/d, although in several studies values between 2600 and 3200 mg/d were found, whereas intake figures for 15- to 17-year-old boys were mostly between 3200 and 3800 mg/d. For females, mean intakes were mostly in the range of 2000–2800 mg/d (11–14 years) and 2200–3000 mg/d (15–17 years). Highest intakes were observed in Denmark, Sweden and The Netherlands.

Information on K status was available only for Austria. The excretion in urine ranged from 45·9 (SD 36·9) mmol/g creatinine (boys aged 15–18 years) to 80·6 (SD 40·2) mmol/g creatinine (boys aged 6 years). Mean values were within the normal range of 30–84 mmol/g creatinine.

Sodium. Data were provided for males by nine surveys, for females by nine surveys and for males and females combined by three surveys. Among young children data for average intakes ranged from about 1400 mg/d to nearly 2600 mg/d and increased with age. In adolescents the intake ranged from about 1800 to 4800 mg/d. In most surveys, Na intake was higher among males than among females. Generally, the lowest intake figures were observed in the UK and the highest in Russia and Yugoslavia. No general geographical trend was obvious.

Chloride. Two surveys in the UK and one survey in Germany presented intakes of chloride. Mean intakes ranged from 2000 to ~3150 mg/d for young children, from ~3600 to nearly 5500 mg/d for males aged 7–18 years, and from ~3200 to 4130 mg/d for females aged 7–18 years.

In Austrian boys the excretion in urine varied from 245 (SD 153) mmol/g creatinine (boys aged 7–9 years) to 497 (SD 429) mmol/g creatinine (boys aged 10–12 years). In all age groups mean values exceeded the upper value of the normal range (135–150 mmol/g creatinine).

Fluoride. In only two countries were intake figures for fluoride reported. In Finland, young children had a mean intake of 255 μg/d (2- to 3-year-olds) and 313 μg/d (4- to 6-year-olds). In Germany, mean values varied among males from 434 μg/d (4- to 10-year-olds) to 642 μg/d (15- to 18-year-olds) and among females from 369 μg/d (4- to 6-year-olds) to 548 μg/d (15- to 18-year-olds).

Iron. Data were available from forty-seven surveys for males, forty-six for females and four for males and females combined. Intakes were highest among boys in Finland, urban regions of Estonia and Sweden. Among adolescents, the Fe intake of males was often much higher than that of females and adolescent girls had lower intakes than did their younger compatriots. There was a clear trend of increasing intake with age in males. There were no clear differences in intakes between Southern and Northern European countries.

Intakes in 2- to 3-year-olds ranged from about 5 to 10 mg/d and those of 4- to 6-year-old boys and girls from about 6 to 13 mg/d. Among boys aged 7–10 years, the lowest intake of about 8·7 mg/d was observed in France. The greatest intake of Fe by girls aged 7–14 years was reported in Russia, and the greatest intake by 15- to 18-year-old girls (15·2 mg/d) was reported in Sweden.

Status data for Fe were available from five countries (Austria, France, The Netherlands, Sweden, UK). In Austria, Fe in serum varied from 651 (SD 420) μg/l (boys aged 6 years) to 1078 (SD 400) μg/l (boys aged 15–18 years) and from 700 (SD 420) μg/l (girls aged 6 years) to 972 (SD 449) μg/l (girls aged 15–18 years). In France and the UK, Fe status data were available as Hb, mean corpuscular volume, serum Fe, transferrin saturation, erythrocyte protoporphyrin and serum ferritin. For The Netherlands and Sweden status data were also described differently (mean corpuscular volume, serum ferritin, haematocrit %).

Zinc. Data were obtained from twenty-eight surveys for males and twenty-seven surveys for females. Three surveys combined the data for girls and boys. Zn intake increased with age. The Zn intakes across Europe appear very inconsistent. There are no clear differences in intakes between the South, West, East or North. The highest intakes were recorded for boys (19 mg/d) and girls (15 mg/d) in Finland (age 11–17 years). The lowest intakes for both sexes within this age category (~ 11–18 years) were reported for The Netherlands and the UK.

Zn intakes for 2- and 3-year-old boys and girls were reported only for The Netherlands (5·8 mg/d males, 5·5 mg/d females). Intakes in girls and boys aged 4–6 years ranged from about 5·6 to 8·5 mg/d.

Status data for Zn were available for Austria and the UK. This was in the range of 0·97–1·13 mg Zn/l serum (normal range 0·8–1·6 mg/l) for Austria and about 54 μmol Zn protoporphyrin/mol haem for the UK. The UK also described the status data as μmol Zn/l plasma.

Copper. Data were available from eleven surveys for males, twelve for females and two for males and females combined, but these represented only six countries. Cu intakes increased with age in males and females. The Cu intake of the children and young people appeared to be quite uniform within a country and was about 1–2 mg/d.

Status data for Cu were available only for Austria and the value was in the range of 0·94–1·28 mg Cu/l serum (normal range 0·8–1·2 mg/l).

Iodine. Data were available for males and females from five countries. These was obtained from nine surveys for boys and girls separately and from three surveys for both genders combined. Intakes varied within the countries. Recorded intakes were the highest (330–470 μg/d) in Finland (Rankinen *et al.* 1995) and the lowest in German male and female children and adolescents (62–92 μg/d).

Status data for I were only available for Austria, where the range was from 206 to 85 μg/g creatinine (I excretion/urine).

Chromium. Data for males and females were available only for two countries. Data for boys and girls were obtained from two surveys and two surveys showed results for both genders combined. Cr intake increased with age. In Yugoslavia the daily Cr intake was very low (1–2 μg) and in Finland the mean daily intake ranged from about 17 to 40 μg.

No status data for Cr were available.

Selenium. Data for Se intakes were obtained from seven countries, from fifteen surveys for boys, thirteen surveys for girls and two surveys for both genders combined. Se intake of children and adolescents varied from country to country and seemed generally low. The lowest intakes were found in Eastern European countries, e.g. Yugoslavia. Within countries intake increased with age. The highest intakes were 90 (SD 20) μg/d by Finish children (12-year-old athletes) and 80 (SD 20) μg/d among British adolescent boys.

Status data for Se were available only from Austria; values were in the range of 55–89 μg Se/l serum (normal range 50–130 μg Se/l serum).

Molybdenum. No data for Mo intake or status were available.

Manganese. No data for Mn intake or status were available.

Discussion

Availability of the data

The aim of this project was to obtain information on dietary intakes of children and adolescents across the whole of Europe. Our particular interest was to have data from different regions of Europe to make some comparisons between countries and regions. The geographical regions were chosen for their likely similarity in eating patterns. They are large and not all parts of each country will necessarily fit the region. However, with so much variation in nutrient intakes recorded for children and adolescents between and within countries, the use of regions is a helpful tool for examining trends in nutrient consumption.

We tried to find publications through literature searches, but many publications did not appear in databases such as Medline. Most publications were harvested through contacts with local experts in each country. Each author was responsible for selecting the surveys from his or her allotted countries and the use of the pre-set criteria in Table 1 limited selection bias by authors. However, we did include some exceptions, where selection was more subjective, if it was felt the survey would make a useful contribution to our review. We looked for published surveys, but in the case of Russia (B Popkin, unpublished results) we included recent good-quality data that should be published soon. One pre-1987 survey from The Netherlands was included as it contained data on nutritional status. Many surveys were published in local languages but were still assessed according to the set quality criteria.

Our aim was to obtain information not only on energy and macronutrient intakes, which was available in most of the surveys, but also on micronutrient intakes, some of which was included only in selected publications. This was one reason for including some small surveys. We would have preferred to include nationally representative studies only, but chose to widen the net to regional and local studies in order to obtain a good spread across Europe. Despite our efforts, some of the smaller local studies may be of lower quality. Ideally, we would have only included surveys for which there were anthropometric data, so that we had something against which to check reliability of reporting. However, children were weighed in an insufficient number of studies for us to insist on this criterion for inclusion.

By literature search and personal contacts of the authors, we believe all suitable surveys have been included in this paper. Finding the surveys involved a considerable amount of effort, especially for Central and Eastern European countries and for countries in which none of the authors resided, but we acknowledge that some useful ones could have been missed. Nevertheless, we have managed to survey the breadth of Europe so there are few countries for which we have no data.

We are aware that there are limitations to all surveys however good the methodology appears to be. We have attempted to reduce these as much as possible by our selection process, but have not been so restrictive as to end up with no surveys at all.

A particular problem was the comparison of data from different studies according to age categories, as these varied from survey to survey and rarely matched the age group classification of the EU.

In the end we collected a large number of surveys, which enabled us to analyse dietary intakes of almost all nutrients and attempt to make comparisons between countries and European regions. For most of the macronutrients we obtained a large volume of data which added to their value. We also found a relatively large number of surveys on vitamin intake, although for some individual vitamins there were few studies (vitamin K, biotin, pantothenic acid). There were other micronutrients that were reported in only a few surveys (Cu, Se, fluoride, Cr, chloride), which did not allow many conclusions to be drawn. Another problem was the comparison of nutrient intake with status, as hardly any studies included status data. These were selected surveys from Austria, France, Greece, The Netherlands, Sweden and the UK, which described the micronutrient status together with micronutrient intake (we did not include studies on status alone).

Quality of data

As demonstrated in Table 3, there is large diversity in the methodologies used to assess the individual dietary intakes of children and adolescents. Overall these fall into four main classes: 24 h recalls (retrospective); food frequency questionnaires (retrospective); dietary history (retrospective); and dietary records of 1, 2, 3, 4 and 7 days (prospective). Because the different methods apply to different time frames, this inevitably resulted in variance in both the quality and the quantity of available data and hampered comparisons within and between countries.

Moreover, evaluation of the data sets is necessarily complicated by another phenomenon. In all studies, food composition tables were used for the conversion of food intake data to the estimated nutrient intakes. Most European countries have their own national food composition databases, which are compiled using country-specific procedures and traditions. Recent comparisons and evaluations of national food composition tables have shown that nutrients differ in definition, analytical methods, units and mode of expression, all of which could potentially result in different nutrient values between tables (Deharveng *et al.* 1999). In turn, these differences may have an impact on the precision of nutrient estimations and make between-country comparisons difficult and inaccurate (Ireland *et al.* 2002). In studying the comparability of food composition tables, Deharveng *et al.* (1999) distinguished three groups of nutrients. The first group is those that can legitimately be compared even though the definition and analytical method may be slightly different. This group includes N, lactose, alcohol, water, cholesterol, fat, fatty acids, retinol, vitamin D, tocopherols, tocotrienols, thiamin, riboflavin, vitamin B_6, vitamin B_{12}, Ca, Fe and K. The second group is those that are not readily comparable due to discrepancies in the calculation or mode of expression, and comprise protein, carbohydrates, starch, sugars, energy, carotenes, vitamin A and vitamin E. Finally, there are nutrients that are not comparable at all due to the analytical method or definition used, namely folate and fibre.

In addition, dietary studies tend to overestimate true intakes of Na, primarily due to the inability to account precisely for added salt and the fact that much salt is discarded with the cooking water. Salt may also be lost when manufactured foods are cooked. Therefore, to assess the intake of Na, it is recommended that measurements of Na excretion are made (Ovesen & Boeing, 2002). However, none of the surveys reporting Na intake included Na excretion as a status parameter.

Consequently, in the present paper these issues were taken on board in the evaluation of the information on nutrient intake. For instance, in the reviewed papers the modes of expression for vitamin A, vitamin E and folate were not always made explicit in the source documents. Therefore, for vitamins A and E only, data that specifically referred to RE and α-tocopherol were used. For Austria and Germany dietary folate was converted to free folic acid. However, despite these precautions, differences such as the conversion factors used to assess the intakes of protein, carbohydrates and energy and the analytical quality of the data (possible use of outdated analytical methods) cannot be excluded, and prudence is called for in the interpretation of the figures given.

In general, the present findings are in line with earlier observations that there is a lack of internationally comparable food consumption data (Löwik & Brussaard, 2002) and support the need for better data for the evaluation of dietary intake on a European level.

Most dietary intake studies of children and adolescents have, at least until recently, tacitly assumed that the data are representative and valid measures of habitual food consumption. Unfortunately, epidemiological studies of food habits and dietary intake in children and adolescents face a number of difficulties that are more-or-less specific to these age groups and which are highly likely to bias the outcome measurements (Livingstone & Robson, 2000; Livingstone & Black, 2003; Livingstone, 2004). On the basis of recent validation studies, it is now widely accepted that misreporting is a major problem in dietary surveys of children and adolescents. Consequently, the dietary data presented in this review need to be interpreted and evaluated with caution.

Trends

Despite the concerns mentioned above over the information obtained from the surveys included in this review, some observations on trends can be made. Data on energy-related intake (percentage of energy) were similar across the European countries. Reported energy intakes increased with age and when data were expressed in relation to body weight, the opposite trend was true. In children up to 10–12 years the energy intakes for both genders were quite similar. In adolescent males, the increase in absolute energy intake continued up until the age of 18 years. In girls, however, reported energy intakes began to level off in early adolescence and decline in late adolescence, suggesting that under-reporting and dietary restriction in this age group probably occurs across Europe. Within each age group there was a large range in reported intakes for all nutrients, which partly reflected differences in body weight, but also reporting errors, that are known to be a common problem in all dietary surveys. No surveys had attempted to exclude under-reporters.

The percentage of energy from carbohydrate, total sugars and sucrose tended to decrease and the percentage of energy from starch to increase with age. Boys ate more carbohydrate and fibre than did girls in terms of absolute amount (g); however, their intakes were very similar in relation to energy intake. Within surveys throughout Europe there were large differences between individuals in absolute carbohydrate intakes, but much of this can be explained by variations in energy intake. The intake of carbohydrate, total sugars and sucrose tended to be lowest in Southern European countries. Apart from some Southern European surveys, with increasing age there was a clear trend of declining intake of sugars and sucrose and increased intake of starch.

Children and adolescents in Southern European countries tended to report the highest intakes of total fat and MUFA (sometimes with cholesterol too, as in the case of Spain). Central and Eastern countries reported the greatest intakes of PUFA and lowest intakes of SFA. The lowest fat intakes were recorded in Northern Europe, except Finland where SFA intakes were greatest. As there is no information on food these differences cannot be explained from our data, although it is generally known that the consumption of olive oil, a major source of MUFA, is highest in Mediterranean countries. It should be noted that these are only general trends as there were large variations in reported intakes within countries and between countries of the same region.

Within countries, the protein intake (as a percentage of energy) was usually quite similar. There were some differences between the European regions. Intakes in some countries in the South and North of Europe reached about 17–19 % of energy, respectively. The Western European countries, like Austria, Germany, The Netherlands and the UK, reached more moderate protein intakes of about 11–15 % of energy.

Alcohol intakes were highly variable both within and between studies. Children up to the age of 11 years consumed hardly any alcohol. There was a clear trend of increasing alcohol intakes from 11 years of age onwards, with males consuming more alcohol than females.

Reported intakes of vitamins by children and adolescents were inconsistent across Europe. No clear regional trends could be described. In general, it can be said that intakes of most vitamins increase with age in both males and females, in parallel with energy intake. For some vitamins, such as folic acid, the intake is higher in some countries (UK and Ireland) than in others. Higher intakes of vitamins, especially within one country and/or within an investigation, may be explained by seasonal food patterns, by specific food-technological achievements such as micronutrient enrichment of cereal foods or by the use of supplements.

Some geographical trends were noted for vitamin A intake. Vitamin D intake was greatest in Northern countries and low in some Western countries. This may be related to a higher consumption of milk and milk products by children living in Northern regions, vitamin D fortification of food or the use of supplements. Vitamin E intake was highest in some Central and Eastern European countries, which may have reflected the higher consumption of PUFA.

Intake of minerals is also very variable across Europe. No clear regional trends were distinguishable. Like vitamins, the intake of minerals increases with age, which is related to increased food consumption. In the case of Ca, the variation in intake within the studied population groups differed considerably. Roughly, the coefficient of variation varied from 10 % to about 60 %. Also, there was a considerable variation in Fe intake. This might be due to inaccurate reporting and/or different eating patterns of children and adolescents within Europe. Adolescent girls therefore do not appear to consume more vitamins or minerals than their younger counterparts and, in the case of Fe, may consume less. Some countries of the North reported higher intakes of Fe than Western countries, which could be due to food fortification or higher meat intakes.

Nutritional status

The literature has shown that the correlations between blood analytes and dietary intakes are generally weak, and if a relationship between the analyte and intake data is found it may not necessarily be causal. Some factors, in particular the young person's health at the time of investigation, may affect the degree of correlation. Status values and normal ranges are dependent on assay method, which makes it difficult to compare values directly between different surveys conducted within Europe. In addition, the number of investigations and surveys published is too small to be able to describe and/or compare the nutritional status of children and adolescents within Europe.

The differences in information on measured status may have an impact on the precision of nutrient estimations and make comparisons imprecise. In the case of vitamin D, not only diet, but also endogenous synthesis under the influence of sunlight can influence status. Studies show that status during the winter is therefore lower than that during the summer (Lehtonen-Veromaa *et al.* 1999).

Moreover, it is also important to take into account that different technical equipment and statistical software packages were used to run the data analyses (status and intake). Not all data were expressed as mean (SD). In some cases medians or ranges (minimum and maximum) were used, making it difficult to compare status data.

Conclusions

Many surveys of food and nutrient intake in children and adolescents have been undertaken over the past ten to twenty years. Of those published, the data from many have no meaningful use due to small and/or unrepresentative samples, poor methodology and failure to provide sufficient details on subjects and methods. The studies that have been included in this review provide some useful information on energy and nutrient intakes of children and adolescents across Europe and suggest some interesting trends. However, their value for discovering average intakes of European children and adolescents, or making comparisons between countries or regions, is severely limited. The reported values for many nutrients varied widely both within and between surveys, so it was impossible to know how much of this was real and how much due to recording error. Apart from the inherent problems found in even the most carefully conducted dietary surveys, there were several other reasons why surveys could not easily be compared. These included: different methods for measuring intake; different age cut-off points; use of a variety of food composition tables based on different analytical techniques for measuring food composition; failure to exclude under-reporters; and few truly nationally representative samples.

The value of the surveys for assessing the nutritional adequacy of the diets of European children and adolescents was limited due to the lack of measurements of nutritional status, although this has been rectified in some more recent surveys. Comparisons with sets of country-specific Recommended Daily Amounts are of little value since the methods used to establish many of these have been called into question (Prentice *et al.* 2004).

A European Nutrient Database would be a useful first step towards being able to compare food intake data (Charrondiere *et al.* 2002). This would also help in defining analytical methodology and in the harmonisation of units for specific nutrients such as dietary fibre, folic acid and vitamins A and E. The routine collection of status data at the same time as food intake is assessed would help in comparisons of the status situation in different countries. Aligned methodologies for nutrient status would make a comparison at an international level more precise.

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NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr MBE Livingstone
NUTRIENT: Energy (kJ)
Male

	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				7700+/-1488		8335+/-2273		9173+/-2396		10253+/-3072		11543+/-3900			11,650+/-4358					mean +/-sd
Belgium	B1						9919+/-4899		10214+/-5139		11493+/-6361										
	B2								5690 +/- 2345												
	B3														15029 +/-6192						
	B4															11,102 +/-2160					
Bulgaria	BG1	5862 +/-948			7365 +/-3077			9533 +/-3768					11,133 +/-4484			11,639 +/-4078					m+f <=10 year
Czech Republic	CZ2				7574					9580											m+f
Denmark	DK1	6800/sem0.02			8100/sem0.01			9800/sem 0.02				10 900/sem 0.02				11,900/sem 0.07					
	DK2															12,400 +/-3800					
Estonia	EE1												9381					10176			weighted mean
Finland	SF1								8300+/-2400			10,200+/-3600			11,500+/-4300			12,500+/-3800			
	SF2														8400+/-3400						m+f
	SF3			5690+/-1300			6970+/-1300														
France	F1-4			7427 +/-1672				9985+/-2259					11,113 +/-1791			12,102 +/-2469					
	F5,6			6970 +/-2200					8560 +/-2200			10,540 +/-2200									
	F7			6600 (			7723			7946			8559								m+f
	F8,9	6056 +/-1128		6798 +/-900		7784 +/-1172		6627 +/-1122													
Germany	D1				7100			7000			8500			10,000		10,500					
	D2				7399			8653			9712			10.912		11.985					
	D3, D4, D5	4600	4600		5960			7570			9230			10.31		10.93					
Greece	GR1	5174		6727		7129		7907		8359			8809								median
	GR2											11,545									mean
	GR3									7765 +/-2764					9004 +/-2976						
	GR4											11567+/-5601									
Hungary	H1												10,319		11049						
Ireland	IRL1								9700 +/-3200				11,300 +/-3300			14,000 +/-4500			18-25yr 13,700 +/-4500		
Italy	IT1							6800 +/-2920			6600 +/-3021										7year m/10 year m+f
	IT2 kj/kg body weight		338+/-63kJ/kg					279+/-54kJ/kg			213 +/-50kJ/kg										m+f kJ/KG
	IT3										9200+/-2000; 10300+/-1800 ;9400+/-2100										m+f
	IT4										10358+/-2612					9775 +/-2825					11 year m/m+f
Netherlands	NL1	6058 +/-1460			9646+/-1365			6402 +/-1528			9394 +/-2280			10,935 +/-2664				11,567 +/-3301			
	NL2							8yr 9769 +/-2926													
	NL3							8yr 8402 +/-2014													
Norway	N1																		15,800		mean
	N2													15							median
	N3																	14,100+/-5200			15-29 year
Poland	PL1											9152+/-282; 9521+/-370; 10274+/-40 14yr 11392+/-4538									
	PL4								7919 +/-1265												
	PL5														11501						weighted mean
	PL7																	16515			weighted mean
	PL9													10,000+/-2000							
	PL11															15300					
	PL13										9350										
Portugal	P1														9410						
Russia	Rus1	5631	6070	7056	7540	7369	7710	7777	7958	8219	8249	8509	9337	9583	10956	9442	10987	10768			
		332	569	440	606	441	419	526	325	365	351	405	404	415	488	362	518	547			
Spain	E2	6607+/-1334		7272+/-1435		6109+/-2163															
	E3		6yr 8624+/-2079; 7yr10468+/-1891; 8yr 10,506+/-2113;9yr 11,100+/-2066; 10yr 11,180+/-2782; 11yr 11,502+/-2381;12yr 11,803+/-2548;13yr12,569+/-3494 14yr 12,510+/-3084																		
	E4					7184/510					8941+/-849			12,010 +/-1222							
	E9		4-5yr 6675+/-378			6-7 yr 7896+/-239	8-9 yr 8421+/-331			10-11yr 9299+/-244		>12yr 9538+/-281									
Sweden	S1													8900+/-2200			10500+/-2700				
	S2																	10046			weighted mean
	S4														10347+/-2067						
Switzerland	CH1												11983+/-3243			12560+/-4686			19-21y 11757+/-3527		
United Kingdom	UK1							7594+/-285			7740+/-132										
	UK2											1 8990+/-1180									
	UK3										8610+/-130										
	UK5			2yr 4504+/-755; 3yr 5009+/-888; 4yr 5300 +/-790																	
	UK6															1400+/600					
	UK7		2yr 4204+/-62 3yr 4635+/-740; 4 yr 5418+/-635																		m+f
	UK8											11,000			13,000						median
	UK9														16-17yr 13400						weighted mean
	UK10		2yr 4393+/-45; 3 yr 4682+/-41; 4 yr 5356+/-71																		m+f
	UK12						7780+/-960														
	UK13				6390 +/-1270			7470+/-1460				5260 +/-1830				9600+/-2300					
Yugoslavia	YU1									12,485											m+f
	YU2								9202												m+f
	YU3				10,427																m+f
	YU4a								9202												m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: J Lambert
NUTRIENT: Total carbohydrate (E%)
Male

Country	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				49.2		49.5		49.3		48.6		47.7			50					
Belgium	B1						49.9	47.3		46.7											
	B2								49.6+/-7.6												
	B3													47.6							
	B4														49.5+/-5						
Bulgaria	BG1	54			53.5			51				52.5				52					
Czech Republic	CZ2			56.3																	
Denmark	DK1	51 (0.08)			52 (0.05)			51 (0.05)				51 (0.04)				49 (0.00)					1-3yrs, se
	DK2															48.6+/-5.3					
Estonia	EE1, urban											52.8			51.2						
	EE1, rural											48.6									
Finland	SF1								49.8			47.5			47.5			46.8			
	SF2, controls											46.1+/-5.4									
	SF3	50.2			53.7																
France	F1-4		45.6				48.3				47.8				50.1						
	F5.8			46.4					41						47.4						
	F8.9	51.9		48.4		48.2		48.3													
Germany	D1				49.2			49.9			49.7		48.7			47.4					
	D2				44.6			44.6			42.7		43.6			41.4					
	D3, D4, D5	49.1	48		48.5			45.1			46.5		44.4			51.8					
Greece	GR1	43+/-3.9		44+/-6		44+/-8		45+/-8		44+/-9		45+/-9									
	GR2											42.8									
	GR3									48.9					47.2						
	GR4											45.9+/-7.2									
Hungary	H1											50.1		49.4							
Ireland	IRL1								50.1+/-4.7				50.3+/-4.8			49.3+/-4.8			45.6+/-6.1		18-20yrs
Italy	IT1								51.5												
	IT4										53										
Netherlands	NL1	55+/-6.1			54.3+/-6.6			52.7+/-6.6			51.5+/-6.4			51.3+/-5.8			49.5+/-5.8				1-3yrs
	NL2							49+/-8.1													
	NL3							54.3+/-8.2													
Norway	N1																	52.7			median
	N2												53.1								median
	N4																	52.6+/-6.3			16-29
Poland	PL1										54.3	55.9	54.8	54.2							
	PL2									54.4											Mean urban + rural
	PL5																51.3				
	PL11															49.6					
	PL13										50										
Portugal	P1														49.1						
Russia	Rus1	56.7	53.7	56.7	53.8	56.7	57.9	59.1	58	61.6	56.5	58.6	59	57.4	58.4	57.4	56.9	56.4	55.7		
Spain	E1	49.2			49		48.3														Al m+f combined
	E2					41.8	41.1	40.3	40.9	41.5	41.1	41.5	41.4	41.9							
	E3					49.9					51.6			47.7							
	E9			46		45.5		47.7		48.1			47.3								
Sweden	S1													52			52				
	S2														53+/-5						
	S4														52.8+/-4.4						
Switzerland	CH1												49.1+/-13.2			51.3+/-21			47.5+/-14.8		
United Kingdom	UK1							52.4			50.6										
	UK2											50									
	UK3										49										
	UK5	52+/-6	53+/-5	53+/-5																	
	UK6															44.9					
	UK8											50			50						median
	UK9															45					
	UK10	49.3(0.27)	51.5(2.4)	52.3(0.37)																	
	UK12						50.8+/-4.3														
	UK13				51.6+/-4.3			52.4+/-4.1				51.7+/-4.6				50.5+/-5.4					
Yugoslavia	YU1									49.1											M+F
	YU2									47.4											M+F
	YU3			47.1																	M+F
	YU4a								44.6												M+F

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: J Lambert
NUTRIENT: Total sugars (E%)

Male

Country	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Belgium	B2								27.4+/-7.9												
	B4														22.9+/-%.6						
	DK2															12.9+/-6.4					
France	F1-4		27.5				25.1				21.8				21.5						
	F5,6			21.1					16.5						16						
Greece	GR1	22.9		21		19.9		19.6		18.6			17.8								
	GR4											14.3									
Italy	IT3							17.4													
Netherlands	NL1	33.2+/-6.0			32.1+/-7.5			29.6+/-7			27.4+/-7.2			27+/-6.2			24.9+/-7.4				1-3yrs
	NL2							26.8+/-8.4													
	NL3							29.4+/-6.9													
Russia	Rus1	28.7	24.8	27.2	25.9	25.7	25	24.5	28.8	28.9	23	25	24.4	22.2	22.9	21	21.4	21.9	20.2		
Spain	E9			10.3		10.9		11.2		11			13.7								
United Kingdom	UK2											20.9									
	UK3										21.8										
	UK5	30+/-7	29+/-5	29+/-6																	
	UK6											20			20						median
	UK10	29.1	29.2	29.3																	
	UK12						25.5+/-5.72														
	UK13				24.5			24.6				23.6				21.5					

Female

Country	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Belgium	B2								27.9+/-8.1												
	B4														23.1+/-%.9						
	DK2															13.5+/-7.1					
France	F1-4		28.3				23				21.8				22.5						
	F5,6			20.2					17.8						16						
Greece	GR1	22.2		21.5		20.9		19.1		18.9			19.5								
	GR4											15.4									
Italy	IT3							16.2													
Netherlands	NL1	33.4+/-8.4			33.3+/-7.2			29.5+/-7.2			28.5+/-6.2			26.4+/-7.2			26.2+/-7				1-3yrs
	NL2							26.8+/-9.4													
	NL3							30.8+/-7.2													
Russia	Rus1	27.4	29	29.4	27	29.3	24.8	26	27.1	27.3	26.3	26	25.3	23.2	23.3	25.3	25	24.8	25.5		
Spain	E9			11.7		10.7		11		11.9			11.7								
United Kingdom	UK2											21.6									
	UK3										23.1										
	UK5	31+/-6	30+/-6	29+/-7																	
	UK8											21			20						median
	UK10	29.1	29.2	28.3																	
	UK12						118+/-30.2														
	UK13				25.9			24				22.5				21.6					

Dietary intake Survey Template - Nutrient by Nutrient

Name of Expert: J Lambert
NUTRIENT: Sucrose (g)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A 1			86+/-37			78+/-39		73+/-54		74+/-46		82+/-51		82+/-56						
Estonia	EE1 urban											52			59						
	EE1 rural											44			57						
Finland	SF1								67+/-45			66+/-48			71+/-45			75+/-40			
	SF3	47+/-19		72+/-31																	
France	F1-4	57+/-13.*					80.1+/-46.2				79.5+/-27.3			76.5+/-54.2							M+F 1-3yrs
	F5.8	53.7+/-43					48.4+/-21.9						62+/-40.8								
	F6.9	44.3+/-23		46.2+/-23.8		40.2+/-26.3		55.6+/-29.2													
Italy	IT3		32+/-13																		
Sweden	S1						32+/-13			35+/-16											
	S2													50.5+/-27.3			65.2+/-34.2				M+F
United Kingdom	UK12						23.3+/-13								64.7						Mean 74+/-41 & 58+/-28

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A 1			75+/-32			74+/-37		71+/-44		74+/-49		73+/-48		63+/-p38						
Estonia	EE1 urban											46			48						
	EE1 rural											62			47						
Finland	SF1								60+/-45			62+/-41			55+/-43			57+/-39			
	SF3	47+/-19		72+/-31																	
France	F1-4	53.3+/-38				66.6+/-36.7				53.5+/-25.6				54.2+/-45							M+F 1-3yrs
	F5.6	33.4+/-12.8					45.3+/-26.7						41.7+/-30.4								
	F8.9	39.4+/-20.5		42.8+/-21.5		54.7+/-23.2		45.6+/-20.9													
Italy	IT3		32+/-13																		
Sweden	S1						32+/-13			35+/-16											
	S2													46.7+/-20.9			46.8+/-23				M+F
	UK12						26.8+/-11.8								58						Mean 64+/-25 & 52+/-2?

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: J Lambert
NUTRIENT: Sucrose (E%)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				19		15.9		13.5		12.3		12.1			12					
Estonia	EE1, urban											8.7			10.5						
	EE1, rural											8.8			10.5						
Finland	SF1								13.7			11			10.2			10.2			
	SF3	14.1			17.6																
France	F1-4		13				13.7				12.2				11						
	F5,6			13.1					9.6						10						
	F8,9	12.4		11.6		10.7		11													
Italy	IT3		8.7				7.1			7.3											
Norway	N1																	10.6			M+F
	N2												12.9								median
	N4																	10.8+/-6.3			median
Sweden	S1													9.5			10.6				16-29
	S2														11						Mean 12+/-5 & 10+/-4
United Kingdom	UK12						6														

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				18		14.9		13.9		13.2		13.1			13.6					
Estonia	EE1, urban											9.9			9.5						
	EE1, rural											12.3			10.5						
Finland	SF1								13.1			13			12.8			13.1			
	SF3	14.1			17.6																
France	F1-4		13.8				12.1				10.3				10.1						
	F5,6			9.9					13.4						8.9						
	F8,9	12		11.2		13		10.1													
Italy	IT3		8.7				7.1			7.3											
Norway	N1																	11.2			M+F
	N2												12.2								median
	N4																	10.4+/-6.4			median
Sweden	S1													11.2			11.6				16-29
	S2														12.5+/-4						
	UK12						6														

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: J Lambert
NUTRIENT: Starch (E%)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				21		21.8		23		23.9		24.4				25.5				
Belgium	B2								22.1+/-6												
	B3																				
	B4													23.1							
Finland	SF1														23.7+/-4.4						
	SF3	18			18.5				20.1			20.7			21.8			22.8			
France	F1-4		21.2				23.2				26				28.5						
Greece	GR1	23+/-8		23+/-8		24+/-8		25+/-8		26+/-8			27+/-9								
	GR4											23.2									
Netherlands	NL1	21.5+/-4.4			21.8+/-4.1			25+/-4			24+/-4.8			24.1+/-8.7			24.5+/-4.8				1-3yrs
	NL2							22.1+/-5.3													
	NL3							24.9+/-6.6													
Poland	PL11																				
	PL17																33.7				
Russia	Rus1	28	28.9	29.6	30.9	31	33	34.6	31.2	32.7	33.5	33.5	34.5	35.2		29.7					
Spain	E9			35		34		40.9		36.1			33.8		35.5	36.3	35.5	34.6	35.5		
United Kingdom	UK2																				
	UK5	21+/-6	23+/-4	23+/-4								29.1									
	UK10	21.4	22.9	23.6																	
	UK12						23.1+/-4.5														
	UK13				27.6			28.5				25.6				26.7					

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				20.4		22.3		23.3		24.4		23.4			24.5					
Belgium	B2								21.6+/-5.7												
	B3																				
	B4													20.8							
Finland	SF1														23.0+/-4.7						
	SF3	18			18.5				18.5			20			19.6			20.7			
France	F1-4		19.2				24.6				26				24.5						
Greece	GR1	19+/-8		22+/-8		23+/-8		25+/-9		25+/-8			25+/-9								
	GR2											20.5									
Netherlands	NL1	21.7+/-6			21.4+/-3.9			22.4+/-4.3			23.6+/-4.2			23.8+/-4.6			24+/-4.9				1-3yrs
	NL2							22.1+/-5.3													
	NL3							23.6+/-5.1													
Poland	PL13																				
Russia	Rus1	30.3	28.4	30.6	30.5	30	32	31.5	30.9	29.6	33.7	33.7	33.7	31.8		28.9					
Spain	E6			32.7		34.1		36.9		36.5			36.7		33.5	32.8	29.1	32.6	31.3		
United Kingdom	UK2																				
	UK5	19+/-4	21+/-4	21+/-4								28.1									
	UK10	21.4	22.9	23.8																	
	UK12						22.6+/-3.3														
	UK13				26.2			27.9				29.4				28.6					

Female	J Lambert Fibre (g/MJ)	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				2.2		2.1		2.1		2.1		2.1								
Belgium	B1					1.7		1.7		1.7						2					
	B2								2.5												
	B4																				
Bulgaria	BG1	2			2.2			2.4				2.0			1.9						
Czech Republic	CZ2			1.3												2.5					
Denmark	DK1	2.1			2.1			2				2.1									Not use 9-11 yrs
	DK2															1.9					1-3yrs, s.e.
Estonia	EE1															1.9					
Finland	SF1											2.7			2.7						
	SF2								2.1			2.2			2.2			2.3			
	SF3	1.8			1.9						2.2										
Germany	D1				2.7			2.2			2.1		2.2			2.1					
	D2				2.5			2.6			2.5		2.4			2.4					
	D3, D4, D5	1.9	1.7		1.9			2			2.1		2			2.1					
Greece	GR1	1.6		1.8		1.8		1.8													
	GR3									1.9			1.9								DF/median MJ
	GR4									2.1					1.9						
Hungary	H1												1.8								
Ireland	IRL1												2.1	2							
Italy	IT1						0.9		1.7	0.9			1.9			1.9			1.5		
	IT3		1.6				1.6			1.5											
Netherlands	NL1	2			2			2			2			2.1			2.1				M+F
	NL2							2.2													1-3yrs
	NL3							2													
Norway	N1																				
	N2																	1.9			Median
	N4												1.9								Median
Poland	PL2																	2.3			16-20yrs
	PL4										2.9	2.9	2.8	2.6							
	PL11									2.4											
	PL13										2.5					1.9					
Spain	E4					1.7	1.5	1.7	1.7	1.6	1.7	1.9	1.7	1.6							
	E5					1.3					1.7			1.7							
	E6			1.7		1.8		2.1		1.8											
Sweden	S1												1.8								
	S2													2.7			2.9				NSP
	S4														1.9						Mean of 16+/-5 & 14+/-
United Kingdom	UK1														1.9						
	UK2							2.2			2.3										s.e.
	UK3										1.1										
	UK5	1.9	2.1	2																	s.e.
	UK6																				NSP
	UK8															1.4					NSP
	UK9											1.9			2.1						median NSP
	UK10	1.3	1.3	1.3												1.4					NSP
	UK12					1.1															s.e. NSP
	UK13				1.4			1.5													NSP
Yugoslavia	YU1											1.5				1.6					NSP
	YU2									1.3											M+F
	YU3			1						1.2											M+F
	YU4a								1.2												M+F
																					M+F

Female

Country	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				35.1		35.1		35		33.9		34.6			33.5					
Belgium	B1						39.2		39.3		35.5										
	B2								37.6												
	B3													37.9							
	B4														35.4						
Bulgaria	BG1	35.2			35.7			37.6				37				38					<10y m+f
	CZ2			32.9						36.6											m+f
Denmark	DK1		35			35			36			34				34					
	DK2																34.1				
Estonia	EE1 urban											37				36					
	EE3 rural											36			36						
Finland	SF1								37		36			37			37				
	SF2 control												34.5								
	SF2 athletes												34.4								
	SF3		36			34															m+f
	SF4 athletes											32									
	SF4 controls											31.9									
	F6, F7			39.2					38.7						38.9						
	F8			37.1			37.1			37.8			37.6								m+f
	F9,10	33.5		37.3		38.1		36.3													
Germany	D1				35.8			36.4			35.3		35.2			36.6					
	D2				35.5			36.1			39		39.3			39					
	D3, D4, D5	37.5	38		38.9			37.8			34.9		43			35.3					
Greece	GR1	42		41		40		40		41			41								
	GR4											43.5									
Hungary	H1											36.8		35.2							
Ireland	IRL1								35.8				36			37.1			36.4		
Italy	IT1							35.9													
	IT2			33.5				33.1						32.8							m+f
	IT4												37								
Netherlands	NL1		36.4			31.6			34.4			34.8			35.9			35.5			
	NL2							30													
	NL3							32.2													
Norway	N1															29.3					
	N2											28.9									
	N3																29.6				
Poland	PL2										34.5	34.7	34.7	34.8							
	PL3 urban									34.9											
	PL3 rural									34.6											
	PL4 urban									34.9/7.2											
	PL4 rural									34.4/7.8											
	PL5 Glogow																37.3				
	PL6 Lubin																36.2				
	PL9													35.2							
	PL11															35.9					
	PL13										39.1										
Portugal	P1														33.3						
Russia	RUS1	31.7	32.6	29.9	31.7	29.9	32	31.6	31.9	32.6	29.6	29.5	30.4	34.5	32.5	31.3	35.4	31.9	32.3		
Spain	E1	36		35.9			37														m+f
	E2					41.5	42.2	43.9	42.3	43.3	43.2	43.2	44.2	43.1							
	E3					38.9					33.4			39							
	E9			42.1		42.2		39.9		40.5			40.4								
Sweden	S1										32						17 y: 32				
	S2 Uppsala												32								
	S2 Trollhättan												30								
Switzerland	CH1												37.4			35.8			36.2		
United Kingdom	UK1							35				38.4									
	UK2										39.3										
	UK3										40.6										
	UK5										40.6										
	UK6													41.6							
	UK8										38						39				
	UK 11 regular smoker															41.6					
	UK 11 occ. smoker															41.0					
	UK 11 never smoker															41.8					
	UK10	36.4	35.8	35.5																	m+f; 3.5-5.5 y f
	UK12							37.8													
	UK13				35.9			35.9				36.1				35.9					
Yugoslavia	YU1								36.7												m+f
	YU2								40												m+f
	YU3			38.6																	m+f
	YU4a								40												m+f
	YU4b								38.7												m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2

Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Carlo Agostoni

NUTRIENT: Saturated Fatty Acids (E%)

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A 1				17.1		16.1		18.4		16		16.2			15.5					mean or mean
Belgium	B2								15.4												
	B3													17.5							
	B4														14.6						
Bulgaria	BG1	15.4+/-0.8			13.9 +/-7.1			13.7+/-5.4				13.5 +/-4.6				12.7 +/-4					<10y m+f
Denmark	DK1		17			16			15			15				15					
	DK2															14.4					
Estonia	EE1 urban											14			15						
	EE1 rural											15			15						
Finland	SF1									19		19			19			20			
	SF3		16			14															m+f
	F9			16.9			16.5			17.4			17.3								
Germany	D1				15.5			14.9			14.5		14			14.8					
	D2				15.1			16.2			15.9		16.2			15.9					
Greece	GR1	15.8		15.2		15.1		14.9		14.9			14.4								
	GR4											15									
	GR11											13.3									
Hungary	H1											14.3		11.4							12-13y m+f
Italy	I3							12.4 / 12.7													
Netherlands	NL1		1-3 yr 12.7			12.8			13.4			13.6			13.4			13.6			
	NL2							16.2													
	NL3							12.8													
Norway	N1																13.3				
	N3																12.7				
Poland	PL7 Glogow																11.2				
Poland	PL7 Lublin																10.8				
Spain	E2			17		16.7		16.6		16.3			17.4								
Sweden	S1											14.7				14.7					
	S4														14.1						
United Kingdom	UK8										16						15				
	UK10	16.9	16		15.4																m+f
	UK12							13.7													
	UK13				14.8			14.3				13.5				13.9					
Yugoslavia	YU1								11												m+f
	YU2								10.8												m+f
	YU3			9.7																	m+f
	YU4a								10.6												m+f
	YU4b								11												m+f

Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A 1				16.7		16.2		16.2		15.7		16.3			15.3					
Belgium	B2								15.5												
	B3													16.3							
	B4														14.4						
Bulgaria	BG1	15.4+/-9.6			13.9 +/-7.1			13.7+/-5.4				12.8 +/-5.1				13.9+/-5.8					<10y m+f
Denmark	DK1		17			16			16			15				15					
	DK2																14.6				
Estonia	EE1 urban											13			13						
	EE1 rural											14			15						
Finland	SF1								19		19			19			18				
	SF3		16			14															m+f
Germany	D1				15			14.9			13.9		14.4			14.9					
	D2				16.3			15.5			16		16.5			15.7					
	D3, D4, D5																				
Greece	GR1	14.4		15.2		15.2		15.1		14.8			15.8								
	GR4											13									
Hungary	H1											14.3		13							12-13y m+f
Italy	I3							13.1													
Netherlands	NL1		12.5			12.9			13.6			13.7			14.2			14			
	NL2							16.2													
	NL3							13													
Norway	N1																12.2				
	N3																12.2				
Poland	PL5 Glogow																11.1				
Poland	PL5 Lublin																10.9				
Spain	E4					12.7	12.6	13.4	12.7	12.6	12.6	12.4	12.6	12.6							
	E9			16.3		15.3		15.5		15.1			15								
Sweden	S1											14.2				14.2					
	S4														13.6						
United Kingdom	UK2										15						15				
	UK10	16.9	16		15.5																m+f
	UK12							14.2													
	UK13				15.3			14.5				14				13.8					m+f
Yugoslavia	YU1								11												m+f
	YU2								10.8												m+f
	YU3			9.7																	m+f
	YU4a								10.6												m+f
	YU4b								11												m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Carlo Agostoni
NUTRIENT: Monounsaturated Fatty Acids (E%)

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				13.3		12.9		13		13.5		13.0			13					mean or mean
Belgium	B2								14.2												
	B3													13.3							
	B4														13.6						
Bulgaria	BG1	8.5+/-6.1			10+/-3.1			10.5+/-4.2				10.7+/-3.6				10+/-3.2					
Denmark	DK1		10			10			13			10				10					<10y m+f
	DK2																11				
Estonia	EE1 urban											11			14						
	EE1 rural											12			12						
Finland	SF1								13		13			13			15				
	SF3		13			12															m+f
	F3			12.7			13.0			13.7			13.8								m+f
	F9_10																				
Germany	D1				13.5			13.5			13.4			13		13.5					
	D2				13.3			13.4			13.7			13.6		13.9					
Greece	GR1	15.9		16		17.3		17.1		17.1			17.6								
	GR2											15									
	GR4											15.2									
Hungary	H1											8.9		8.9							
Italy	IT1							11.5 / 11.9													m+f
Netherlands	NL1		10.5			11			11.8			12.6			12.9			12.4			
	NL2							14.7													
	NL3							11.1													
Norway	N1																10.7				
	N3																10.6				
Poland	PL7 Glogow																13.6				
	PL7 Lubin																13.4				
Spain	E9			17		16.7		17.9		16.9			19.2								
Sweden	S1											11.5				11.3					
	S4														11.3						
United Kingdom	UK8										13						13				
	UK10	11.2	11.1	11.1																	m+f
	UK12							11.1													
	UK13				11.5			11.5				11.7				12					
Yugoslavia	YU1								9.4												m+f
	YU2								9.6												m+f
	YU4a								9.6												m+f
	YU4b								9.4												m+f

Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				13		13.1		13		12.7		12.9			12.5					
Belgium	B2								14.5												
	B3													12.7							
	B4														13.3						
Bulgaria	BG1	8.5+/-6.1			10+/-5.1			10.5+/-4.2				10.4+/-4.2				10.5+/-4.4					<10y m+f
Denmark	DK1		10			10			11			13				10					
	DK2																15.0				
Estonia	EE1 urban											13			13						
	EE1 rural											12			12						
Germany	D1				13.4			13.2			12.8		12.9			13.3					
	D2				13.5			13.6			13.9		13.9			13.6					
Greece	GR1	17.3		16.1		18		17.5		16.9			19.6								
	GR4											15.7									
Hungary	H1											9.6		13.1							
Italy	IT1							12.2													
	NL1		10.3			10.9			11.9			12.3			12.5			12.6			
	NL2							14.7													
	NL3							11.1													
Norway	N1																9.9				
	N3																10				
	PL6 Glogow																13.7				
	PL6 Lubin																12.6				
Spain	E9			17.6		15.8		16		16			15.4								
Sweden	S1											11				11.1					
	S4														10.5						
United Kingdom	UK8										12						12				
	UK10	11.2	11.1	11.1																	m+f
	UK12							11.4													
	UK13				11.5			11.8				12				11.7					
Yugoslavia	YU1								9.4												m+f
	YU2								9.6												m+f
	YU4a								9.6												m+f
	YU4b								9.4												m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Carlo Agostoni
NUTRIENT: Polyunsaturated Fatty Acids (E%)

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				5.5		5.6		5.4		5.6		5.8			5.1					
Belgium	B2								6.2												mean or mean
	B3													5.8							
	B4														5.8						
Bulgaria	BG1	8+/-5,1			9,8 +/-5			11,1 +/-4,1				10,6 +/-3,6				11,1 +/-3,5					<10y m+f
Czech Republic	CZ2			4,5 +/-2,2						5,8 +/-2,3											
Denmark	DK1		4.7			4.4			4.6			4.7				4.9					
	DK2																4.8				
Estonia	EE1 urban						6									8					
Estonia	EE1 rural						7									6					
Finland	SF1								5		5			6			6				
	SF3		6			6															
France	F8			3.8			3.9			4.4			4.3								m+f
Germany	D1				5.7			6			6		5.9			5.7					
	D2				4.8			5			5.1		5.2			4.9					
Greece	GR1	5.6		5.7		6		6.1		6.4			5.5								
	GR2											5									
	GR4											4.1									
Hungary	H1											12.4		11.4							
Italy	IT1							5.6 / 5.6													m/m+f
Netherlands	NL1		5.7			6.2			5.4			6.7			7			7			
	NL3							6.2													
Norway	N1																5				
	N3																5.6				
Poland	PL1										2.7	2.9	2.9	3							
	PL7 Glogow																9.5				
	PL7Lublin																9.9				
Spain	E9			6.1		4.8		4.9		5.3			5.5								
Sweden	S1											4.3				4.3					
	S4														4.4						
United Kingdom	UK5										5.2						6.5				
	UK10	4.4	4.7		4.8																m+f 3,5-3,5
	UK12							5.1													m+f
	UK13				5.5			5.7				6.1				6.3					
Yugoslavia	YU1								7.6												m+f
	YU2								7.3												m+f
	YU3			8.2																	m+f
	YU4a								7.3												m+f
	YU4b								7.5												m+f

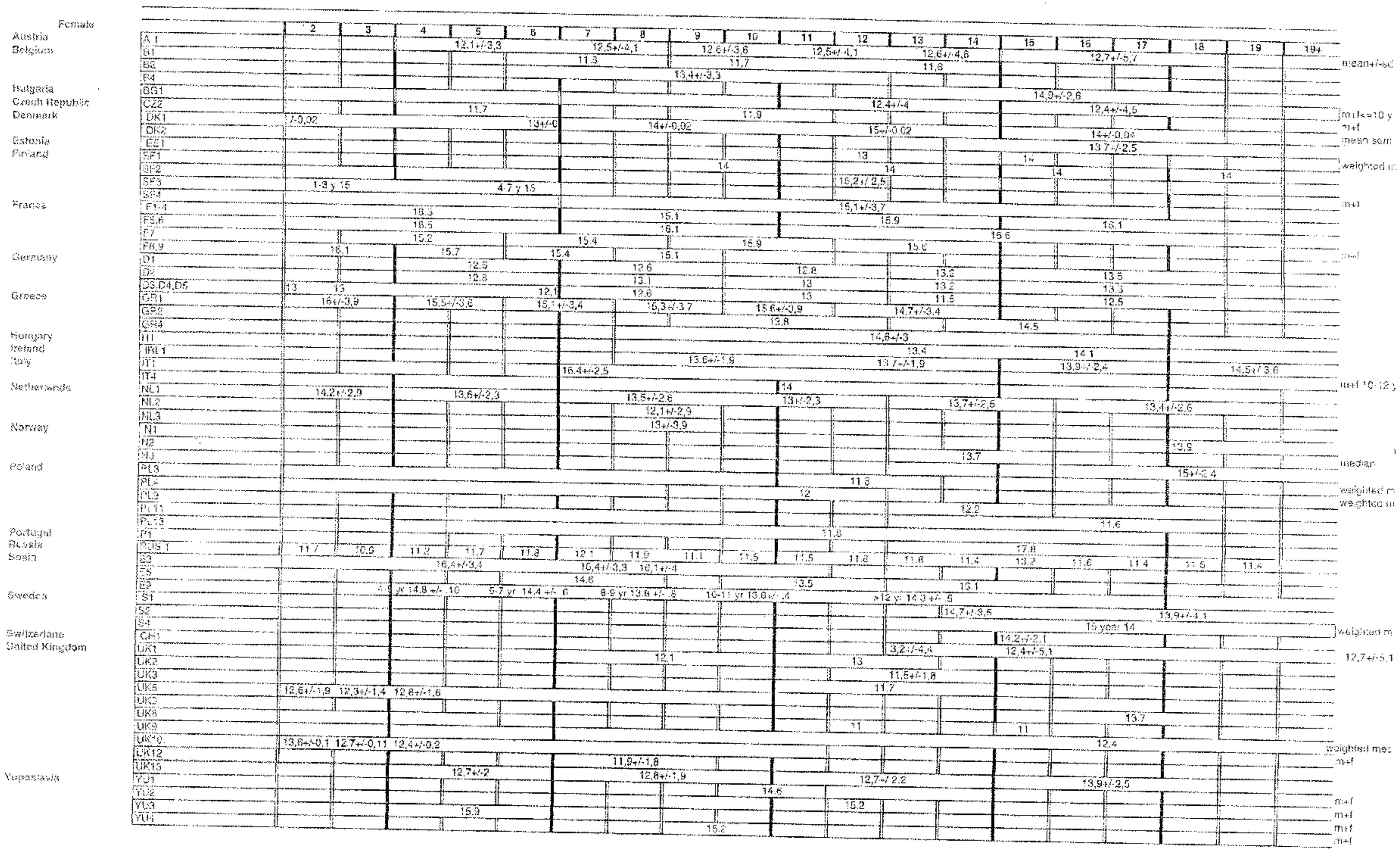
Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				5.4		5.8		5.8		5.5		5.4			5.7					
Belgium	B2								6.7												
	B3													6.7							
	B4														5.6						
Bulgaria	BG1	8+/-5,1			9,8 +/-5			11,1 +/-4,4				11,0 +/-4,7				11,4 +/-4,6					<10y m+f
Denmark	DK1		4.7			4.5			4.6			4.1				4.4					
	DK2																4.5				
Estonia	EE1 urban											7			7						
	EE1 rural											6			6						
Finland	SF1								5		5			5			5				
Germany	D1				5.9			5.8			6		5.8			5.9					
	D2				4.9			5			5.5		5.2			5.1					
Greece	GR1	5.9		6		5.3		6.2		5.5			6.8								
	GR4											4.5									
Hungary	H1											3.0		13							
Italy	IT1							7-10 y: 6													
	NL1		5.6			6			6.6			6.5			6.9			5.5			
	NL3							6.1													
Norway	N1																4.6				
	N3																5.1				
Poland	PL2										2.7	2.9	2.8	2.8							
	PL6 Glogow																9.7				
	PL6 Lublin																9.9				
Spain	E4					4.3	4.6	4.3	4.5	4.3	4.6	5.2	5.2	5.1							
	E9			5		4.6		4.9		4.7			5								
Sweden	S1											4.3					4.2				
	S4														4.1						
United Kingdom	UK8										5.9						6.3				
	UK10	4.4	4.7		4.8																m+f 3.5-3.5
	UK12							5.5													
	UK13				5.4			5.9				6.4				6.7					
Yugoslavia	YU1								7.5												m+f
	YU2								7.3												m+f
	YU3			8.2																	m+f
	YU4a								7.3												m+f
	YU4b								7.5												m+f

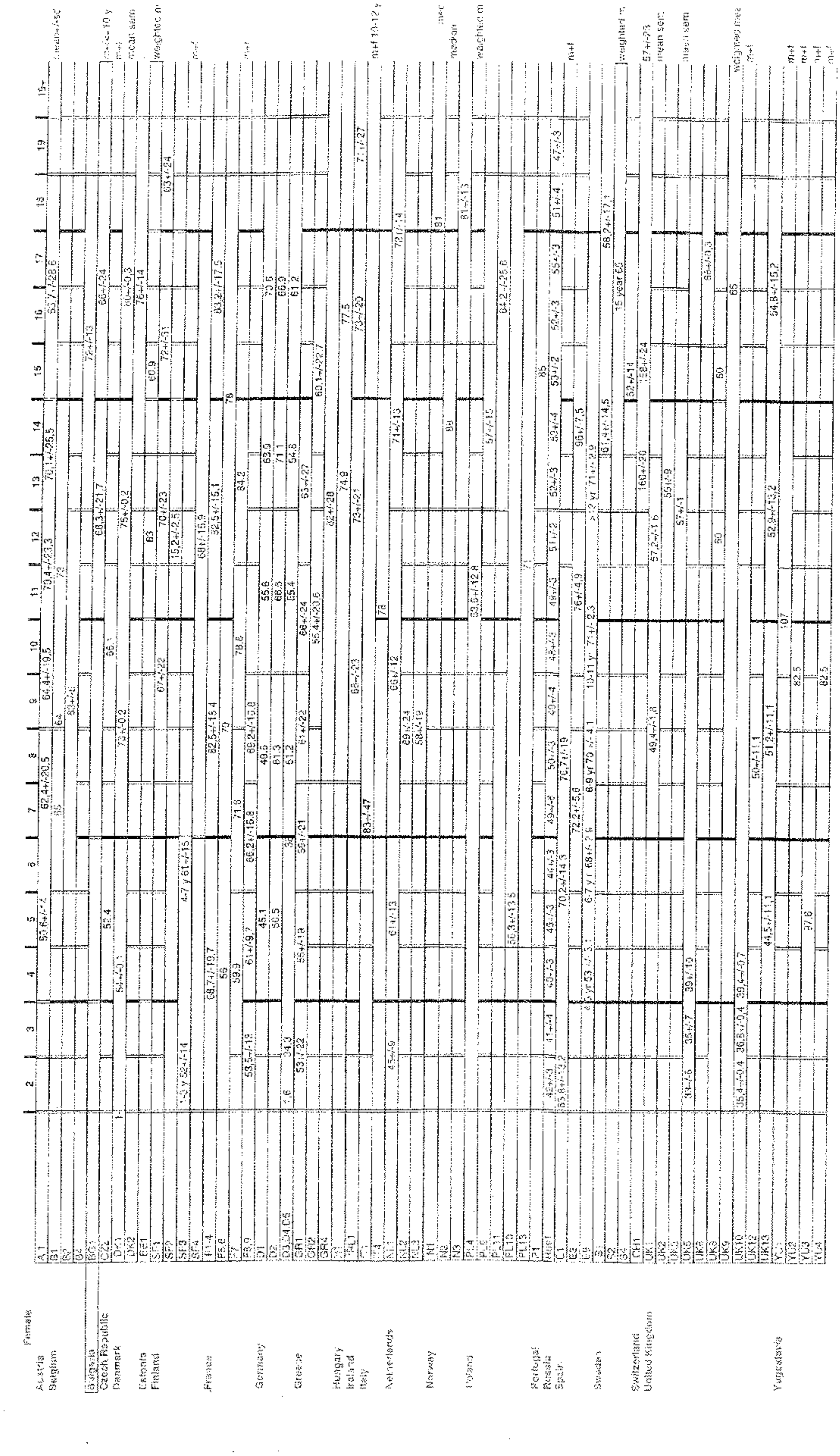
NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Carlo Agostoni
NUTRIENT: Cholesterol mg

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				305,9 +/- 106		359,3 +/- 210,3		401,5+/-219,0		393,3+/-227		447,3+/-240,6								
Belgium	B1						315 +/-222		345 +/ 234		385+/-233					365,3+/-214,2					
	B2								267 +/- 180												
	B3																				
	B4													602 +/-298							
Bulgaria	BG1	160 +/-115			203 +/-145			296 +/-215							268 +/- 72						
Denmark	DK1	307			265							332 +/-351				325 +/-225					
Estonia	EE1 urban							315				371				300					
	EE1 rural											263 +/-159			234 +/-138						sem
Finland	SF1							354 +/-275				254 +/-104			288 +/-105						
	SF3	217+/-66			255+/-112							453 +/-385				489 +/-325			518+/-280		
France	F6			306			364			397			404								m+f
Germany	D1				233,5			213,7			273,3		304,5			331					
	D2				310			336			365		421			482					
	D3, D4, D5	186	167		214			253			288		365			405					
Greece	GR1	352+/-109		335+/-194		350+/-194		337+/-178		353+/-207			358 +/-229								
	GR2											419									
Hungary	H1											359		394,4							
Italy	IT1							271,6 +/-118,6				305,4+/-185									
	IT2			244 +/-116				292 +/-100			340 +/-135										m+f 7-10 y
Netherlands	NL1	113+/-62			122+/-53			155+/-63				179 +/-87			205+/-59			221+/-96			m+f
	NL2							24													
	NL3							167 +/-92													
Norway	N3																				
Poland	PL1										332+/-158	360+/-226	385+/-259	404+/-272				380+/-160			16-29 y
	PL2										338+/-252	290+/-174	319+/-240	319+/-218							
	PL4 urban									79,5 +/-44,2											
	PL4 rural									66,2+/-46,6											
	PL5 urban												428+/-397								
	PL5 rural												437+/-316								
	PL5 Glogow																283+/-233				
	PL5 Lublin																247+/-193				
	PL6 Glogow																449+/-305				
	PL6 Lublin																477+/-292				
Spain	E7					470+/-107	490+/-123	497+/-116	525+/-133	537+/-156	544+/-137	550+/-135	585+/-153	595+/-147							
	E8			254		328		404		360			470								
Sweden	S1																				
	S4													300 +/-90			200+/-100				
United Kingdom	UK10		133/2,9			137/2,8			M 147/4,2					324+/-103							
	UK13				154 +/-71			181 +/-67				201+/-60				243 +/-85					m+f /se
Yugoslavia	YU1									226,69											m+f
	YU2								181,72												m+f
	YU3			216,17																	m+f
	YU4								181,72												m+f

Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				266,5 +/-108,7		364,2 +/- 229		356,2+/-162,3		342,3+/-167,5		345,1+/-197,7								
Belgium	B1						315+/-205		294+/-172		347+/-253					285,4 +/- 178,3					
	B2								245 +/-183												
	B3																				
	B4													400 +/-163							
Bulgaria	BG1														205 +/-66						
Denmark	DK1	221			234							243 +/-164				282 +/-190					
Estonia	EE1 urban							234				251				330					
	EE1 rural								264 +/-192						263 +/-116						sem
Finland	SF1								258 +/-147						285 +/-153						
	SF3	217+/-86			255+/-112				313 +/-177			295 +/-163			335 +/-203			315 +/-200			
Germany	D1				194,6			225,7			234		256,9			295,2					m+f
	D2				269			325			357		373			359					
	D3, D4, D6	165	163		228			251			263		254			270					
Greece	GR1	334+/-203		329+/-174		318+/-167		328+/-124		325+/-136			349+/-146								
Hungary	H1											317,1		319,5							
Italy	IT1							341,3+/-255,4				305,4+/-165									
	IT2			244 +/-116				292 +/-100			340 +/-135										m+f 7-10 y
Netherlands	NL1	97+/-58			120+/-58			147+/-72				172+/-84			179+/-87			185+/-84			m+f
	NL2							25													
	NL3							145 +/-75													
	PL4 urban									79,3+/-44											
	PL4 rural									73,6 +/-44,6											
	PL5 urban													200+/-133							
	PL5 rural													348+/-176							
Spain	E2					444+/-88	479+/-115	482+/-108	500+/-127	489+/-112	513+/-138	547+/-143	523+/-123	503+/-141							
	E3			257		327		306		295			331								
Sweden	S1																				
	S4													200+/-70			200+/-70				
United Kingdom	UK10		133/2,9			137/2,8			F 144/4,6						213 +/-79						
	UK13				156 +/-60			170 +/-67				159 +/-72				177 +/-80					m+f /se
Yugoslavia	YU1									226,69											m+f
	YU2								181,72												m+f
	YU3			216,17																	m+f
	YU4								181,72												m+f


Female
Austria
Belgium
Bulgaria
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Netherlands
Norway
Poland
Portugal
Russia
Spain
Sweden
Switzerland
United Kingdom
Yugoslavia
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 19+
A1 B1 B2 B4 BG1 CZ2 DK1 DK2 EE1 SF1 SF2 SF3 SF4 F1-4 F5,6 F7 F8,9 D1 D2 D3,D4,D5 GR1 GR2 GR4 H1 IRL1 IT1 IT4 NL1 NL2 NL3 N1 N2 N3 PL3 PL4 PL9 PL11 PL13 P1 RUS1 E3 E5 E6 S1 S2 S4 CH1 UK1 UK2 UK3 UK5 UK7 UK8 UK9 UK10 UK12 UK15 YU1 YU2 YU3 YU4
12,1+/-3,3
12,5+/-4,1
12,6+/-3,6
12,5+/-4,1
12,6+/-4,6
12,7+/-5,7
mean+/-sd
11.3
11.7
11.6
13.4+/-3,3
14,9+/-2,6
11.7
12.4+/-4
12,4+/-4,5
11.9
m+f<=10 y
7-0,02
13+/-0
14+/-0,02
15+/-0.02
14+/-0.04
m+f
13.7+/-2.5
mean sem
13
14
14
14
14
14
weighted m
1-3 y 15
4-7 y 15
15,2+/-2,5
15,1+/-3,7
m+f
16.3
15.1
15.9
16.1
16.5
16.1
15.2
15.4
15.9
15.6
16.1
15.7
15.4
15.1
15.6
m+f
12.5
12.6
12.8
13.2
13.5
12.8
13.1
13
13.2
13.3
13
13
12,1
12.6
13
11.8
12.5
16+/-3,9
15.5+/-3,6
15,1+/-3,4
15,3+/-3.7
15.6+/-0,9
14,7+/-3,4
13.8
14.5
14,6+/-3
13.4
14.1
13.6+/-1.9
13.7+/-1,9
16.4+/-2.5
13.9+/-2,4
14,5+/-3.6
14
m+f 10-12 y
14.2+/-2,9
13,6+/-2,3
13.5+/-2.6
13+/-2,3
13,7+/-2,5
13,4+/-2,6
12,1+/-2,9
13+/-3.9
13.9
13.7
median
15+/-2.4
11.8
12
12.2
weighted m
weighted m
11.6
11.8
11.7
10.9
11.2
11.7
11.8
12.1
11.9
11.1
11.5
11.5
11.8
11.6
11.4
17.8
13.2
11.6
11.4
11.5
11.4
16,4+/-3,4
16,4+/-3,3
16,1+/-4
14.6
13.5
13.1
4-5 yr 14.8 +/- .16
5-7 yr 14.4 +/- .6
8-9 yr 13.8 +/- .8
10-11 yr 13.6 +/- .4
>12 yr 14.3 +/- .5
14,7+/-3,5
13,9+/-4.1
15 year 14
weighted m
14.2+/-2,1
3,2+/-4,4
12,4+/-5,1
12,7+/-5,1
12.1
13
11.5+/-1.8
12,6+/-1,9
12,3+/-1,4
12.8+/-1,6
11.7
13.7
11
11
13,6+/-0,1
12.7+/-0,11
12,4+/-0,2
12.4
weighted mean
11,9+/-1,8
m+f
12.7+/-2
12,8+/-1,9
12,7+/-2.2
13,9+/-2,5
14.6
m+f
15.9
15.2
m+f
15.2
m+f
m+f


Female
Austria
Belgium
Bulgaria
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Netherlands
Norway
Poland
Portugal
Russia
Spain
Sweden
Switzerland
United Kingdom
Yugoslavia

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr MBE Livingstone
NUTRIENT: ALCOHOL (E%)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Belgium	B4															0.7 +/-1.8					
Denmark	DK1																2.1 +/-0.07				mean+/-sd
	DK2																3.3 +/- 4.4				
Ireland	IRL1										0.1					0.4+/-0.8			5.4+/-5.7		
Netherlands	NL1													0.3+/-1							
Norway	N1																	1.8+/-3.7			
	N3																	0.9			
Sweden	S4																	1.3 +/-1.9			median
Switzerland	CH1															0.1+/-0.4					
United Kingdom	UK9																0.93			2.24	
	UK10															1.9					
	UK13											SE 0.2									
												0+/-0.16					1.9+/-1.5				

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Belgium	B4															0.5 +/-1.1					
Denmark	DK1												0.1+/- 0.01								
	DK2																1.9+/-0.04				
Ireland	IRL1																2 +/-0.4				mean sem
Netherlands	NL1							0+/-0.4								0.1+/-0.4			5.4+/-5.7		
Norway	N1												0 +/-0.3			0+/-0.1					
	N3																		0.7+/-2		
	S4																		10-Apr		median
Switzerland	CH1																	0.9 +/-1.3			
United Kingdom	UK9															0.3+/-1.1					
	UK13													0			0.56		19-21y 1.07		
													0.1+/-0.4				1.4+/-3.0	1.4			weighted mean

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr MBE Livingstone
NUTRIENT: ALCOHOL (g)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				0.1+/-0.1		0.25+/-1.2		1.2+/-0.29		0.16+/-0.63		0.3+/-1.5			1.5+/-5.52					
Belgium	B4														3+/-6						
Bulgaria	BG1															2.3+/-9.2					mean+/-sd
Denmark	DK1															9+/-SFM					
Finland	SF1																				
Germany	D1				0.2			0.1			3.4		7.8					0+/-2			
	D2															9.8					
Ireland	IRL1															0.1					
Netherlands	NL1										10.1+/-0.8				1.9+/-4.3				22.6+/-21.6		
Sweden	S4													1+/-4			8+/-19				
Switzerland	CH1															0.5+/-1.6					
United Kingdom	UK4															4			9		
	UK13															6.7					
												0.1+/-0.5				6.8+/-18.1					w

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				0.2+/-0.3		0.2+/-0.3		0.2+/-0.5		0.5+/-0.2		1.3+/-1.2			1.5+/-7.8					
Bulgaria	BG1															0.5+/-2.6					
Denmark	DK1															0+/-0.1					
Finland	SF1																				
Germany	D1				0.1			0.1			4.9		6.6					0-/-3			mean sem
	D2															6.0					
Ireland	IRL1															0.1					
Sweden	S4															0.2+/-1.4			2.2+/-3.2		
Switzerland	CH1															0.9+/-3.1					
United Kingdom	UK9													0		1.5			19-21y 2.6		
																		4.2			weighted m.

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr. Edburga Krause
NUTRIENT: Biotin (µg)

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A 1			40+/-14			34.2+/-15		36.5+/-15		37.2+/-17		42.4+/-21		40.6±22.9						
Germany	D1			32.5			32.1			37.5			43.1		45.2						
United Kingdom	UK1																				
	UK10	17.1+/-0.3	17+/-0.3	17.7+/-0.4			14.9				15.8										
	UK13																				
Yugoslavia	YU4a			22+/-6			24+/-11				25+/-11				29+/-12						mean intake; 1.5-2.5 yrs -> 5yrs, 2.5-5.5 yrs
	YU4b								15.08												mean intake M+F
									21.05												M+F

Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A 1			34+/-23			33.7+/-16		33.2+/-15		30+/-19		39+/-25		31.1+/-17						
Germany	D1			28.1			30.9				33.2		36.8		39						
United Kingdom	UK1																				
	UK10	17.1+/-0.3	17+/-0.3	15.8+/-0.4			12.1				13.7										
	UK13																				
Yugoslavia	YU4a			19+/-6.6			21+/-12.5				21+/-12.7				2[illegible]+/-8.4						mean intake; 1.5-2.5 yrs -> 2yrs, 2.5-5.5 yrs
	YU4b								15.08												mean intake M+F
									21.05												M+F

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr. Edburga Krause
NUTRIENT: Folic Acid (µg) *Dietary Folate (µg)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A 1*				200 +/-76		202 +/-75		216 +/-44		214 +/- 93		244 +/- 139			247±134					
Bulgaria	BG1	96,1+/-56,7			118,8+/-54,4			155,5+/-68,7					191,2+/-79,7			205+/-86,2					
Denmark	DK1	189			209			279				334				295					
	DK2															312+/-111					
France	F7			184			239			250			283								
	F8,9	184.7		181.5		185.9		268.3													M+F
Germany	D1*				158.9			161.1			188.7		221.4			226.1					
	D2*				206			246			255		264			265					
	D3, D4, D5*	121µg			153			163			219		229			277					
Greece	GR2											294									
	GR3																				
	GR4									231+/-145					251+/-198						
Hungary	H1											226+/-192									
Ireland	IRL1											119		132							
Spain	E3								232+/-102				246+/-91			306+/-133			255+/-117		15-25yrs
	E9					97+/-18					128+/-18			169+/-26							
Sweden	S1			116+/-10		119+/-6.5		144+/-12		128+/-6,7		142+/-8,7									
	S2													115+/-43			138+/-50				
United Kingdom	UK1							125+/-8			155+/-6.9				240						weighted means
	UK2											105+/-35									
	UK5	95+/-28	116+/-31	130+/-38																	
	UK10	120+/-1.8	134+/-2	146+/-3.2																	
	UK11																				
	UK12						173+/-60					129			156						mean intake; 1,5-2,5 yrs -> 2yrs; 2,5-3,5 yrs
	UK17				192+/-61			213+/-61				247+/-61				309+/-124					
Yugoslavia	YU4a								182.4												M+F
	YU4b								252.8												M+F

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A 1*				181+/-73		214+/-85		211+/-92		214+/-93		220+/-107			201+/-113					
Bulgaria	BG1	96,1+/-56,7			118,5+/-54,4			158,5+/-68,7				161,8+/-75,7				151,7+/-70,1					
Denmark	DK1	183			189			229				238				266					
	F7			184			239			250			253								
	F8,9	184.7		181.6		185.9		268.3													M+F
Germany	D1*				158.7			157.4			185.7		194.3			207.5					
	D2*				197			233			249		249			223					
	D3, D4, D5*	115µg			131			185			195		187			209					
Greece	GR3																				
	GR4									204+/-115					217+/-171						
Hungary	H1											212+/-104									
Ireland	IRL1											109		110							
Spain	E3								191+/-68				198+/-76			182+/-59			169+/-82		13-25yrs
	E9					106+/-18					138+/-20			168+/-18							
Sweden	S1			130+/-8.3		128+/-9.3		154+/-20		124+/-9.4		135+/-12									
	S2													98+/-30			105+/-43				
United Kingdom	UK1							127+/-9.4			141+/-5.3				191						Weighted means
	UK2											80+/-22									
	UK5	97+/-27	103+/-33	113+/-31																	
	UK9																				
	UK10	120+/-1.8	134+/-2	143+/-3.1																	
	UK11															241					weighted means
	UK12						157+/-46					114			121						mean intake; 1,5-2,5 yrs -> 2yrs; 2,5-3,5 yrs
	UK17				171+/-55.6			190+/-57				210+/-63.5				215+/-81.9					
Yugoslavia	YU4a								182.4												M+F
	YU4b								252.8												M+F

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr. Edburga Krause
NUTRIENT: Niacin (mg)

Male

Country	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Belgium	B2																				
	B4								7.6+/-3.4												
Bulgaria	BG1	12+/-5.3			15.9+/-6.1			21.9+/-7.9					26+/-5.9			5.1+/-2.8					
Denmark	DK1	15			15											29.1+/-10.2					
	DK2							24					27			30					
Finland	SF2																				
	SF3	12.5+/-5.8			23.1+/-5.4							28+/-8				31+/-9.1					
	F7																				
	F8,9			11			14.5			15.4			17								Control group
Germany	D1	20.4		23		25.4		27.9													M+F
	D3, D4, D5	13.8			19.9			21			23.6			28.6							M+F
Greece	GR2				13			20.5			24.4			28.8		29.7					
	GR3											15				31					
Hungary	H1									15.1+/-3.7											
Ireland	IRL1												28.3		19.2+/-7.8						
Netherland	NL3								35.4+/-11.5				40.2+/-12.7		31.5						
Norway	N3							11.7+/-5								61.7+/-17.4			60.2+/-16.4		18-25yrs
Poland	PL4																				
	PL7									11.2								26+/-9			16-25yrs
	PL9																				
	PL10																23.8				weighted means
	PL12				10.4+/-3.3									12+/-4							weighted means
	PL13											11.8+/-0.7				24.2+/-11.2					M+F
Russia	Rus1	6.9+/-0.6	7.0+/-0.6	8.3+/-1.3	9.6+/-1.1	9.5+/-1.1	10.1+/-0.8	11+/-1.1	9.7+/-0.7	11.3+/-0.7	11.5+/-0.7	12.3+/-0.6	13+/-0.6	14+/-0.7	15.7+/-1	16+/-1.2	12.9+/-0.6	16.2+/-1.1	15.4+/-1.1		
Spain	E1	18+/-8			25+/-7																
	E2						21+/-8														
	E6					21+/-2.1					25+/-2.3			49+/-6.2							
Sweden	S1			18+/-1.1		23+/-0.8		24+/-1.1			26+/-0.8	28+/-0.9									M+F
	S2																				
United Kingdom	UK1													32+/-8			36+/-9				
	UK2							23.7+/-1			28+/-0.9				35						weighted means
	UK5	9+/-3.4	11+/-3.7	11.8+/-3.6								27+/-5.5									
	UK10	14.9+/-0.2	16.4+/-0.2	18.2+/-0.3																	
	UK11																				
	UK12																				
	UK13						24.2+/-5.5					33			39.9						mean intake: 1.5-2.5 yrs -> 2yrs, 2.5-3.5 yrs
Yugoslavia	YU4a				22.9+/-7			25.1+/-5.2					30+/-8.3			36.8+/-13.7					M+F
	YU4b								25.2 / 34												M+F

Female

Country	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Belgium	B2																				
	B4								6.2+/-3.6												
Bulgaria	BG1	12+/-5.3			15.9+/-6.1											6.2+/-2.2					
Denmark	DK1	16						21.9+/-7.9					21.4+/-7.6			21.5+/-8.1					
	DK2				16			22					23			23					
Finland	SF2																		25		
	SF3	19.5+/-6.8			23.1+/-5.4						24+/-6					23+/-7.9					
	F7																				
	F8,9			11			14.5			10.4			17								control group
Germany	D1	20.4		23		25.4		27.9													M+F
	D3, D4, D5	13.8			16.7			19.6			20.9		24.7			26.8					M+F
Greece	GR3				14			18.9			19.8		23.4			22.3					
Hungary	H1																				
Ireland	IRL1									13+/-6.5					13.2+/-5.5						
Netherlands	NL3								30+/-10			25.5		26.2							
Norway	N3							10.1+/-4.6					32+/-9			32+/-8			32+/-13		18-25yrs
Poland	PL4																				
	PL8									10.7								17+/-6			16-25yrs
	PL10																13.84				weighted means
	PL12				10.4+/-3.3																weighted means
	PL13										13.2					14.1+/-7.2					M+F
Russia	Rus1	7.1+/-0.5	7.2+/-0.6	7.7+/-0.6	8.9+/-0.7	7.8+/-0.6	6.4+/-1.1	9.4+/-0.9	9.5+/-0.5	9.4+/-0.6	9.6+/-0.6	10.1+/-0.5	10.3+/-0.7	10.6+/-1.0	10.3+/-0.6	11.1+/-0.7	11.2+/-0.7	11+/-0.7	9.4+/-0.6		
Spain	E1	18+/-6			20+/-7																
	E3						21+/-5														
	E9					24+/-2.4					25+/-1.9										
Sweden	S1			23+/-0.7		23+/-1		23+/-1.5		23+/-0.8		24+/-1		36+/-2.7							M+F
	S2																				
United Kingdom	UK2													24+/-5			23+/-6				
	UK5	8.5+/-2.6	10.3+/-3.2	11+/-3.1											25.7						
	UK10	14.9+/-0.2	16.4+/-0.2	17.5+/-0.3								24+/-4									weighted means
	UK11																				
	UK12																				
	UK13						22+/-4.7					27			27						mean intake: 1.5-2.5 yrs -> 2yrs, 2.5-3.5 yrs
Yugoslavia	YU4a				20.7+/-5.7			23.6+/-6.2					24.6+/-6.9			25.6+/-8.1					M+F
	YU4b								25.2 / 34												M+F

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2

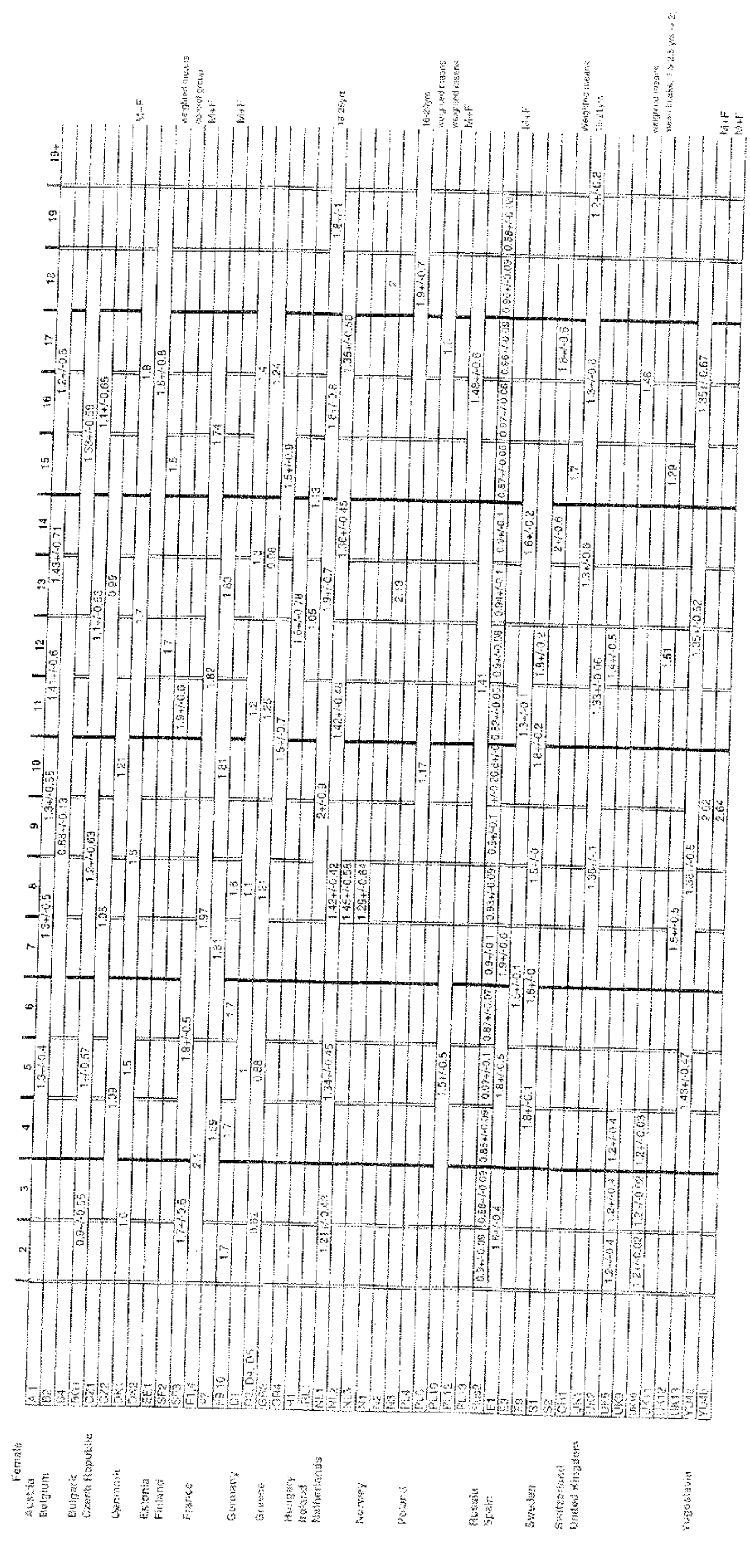
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr. Edbarga Krause

NUTRIENT: Pantothenic Acid (mg)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A 1			5 +/- 1			4.35 +/- 1.35		4.71 +/- 1.73		5.12 +/- 2.06		3.77 +/- 2.56		5.97±2.91						
France	F7		3.5			3.9			4.1			4.3									M+F
Germany	D1			3.4			3.4			4			4.7		4.9						
Greece	GR2											5.4									
United Kingdom	UK10	2.7+/-0.04	2.7+/-0.04	2.9+/-0.06																	mean intake; 1.5-2.5 yrs -> 2yrs; 2.5-3.5 yrs
	UK13			4.4+/-1.5			4.8+/-1.4				5.2+/-1.5				5.8+/-2.1						
Yugoslavia	YU4a								5.1												M+F
	YU4b								6.9												M+F

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A 1			4.5+/-2			4.5+/-2.1		4.55+/-1.7		5.0+/-1.9		5.0+/-2.3		4.4+/-2.5						
France	F7		3.5			3.9			4.1			4.3									M+F
Germany	D1			2.9			3.3			3.5			4		4.3						
United Kingdom	UK10	2.7+/-0.04	2.7+/-0.04	2.7+/-0.05																	mean intake; 1.5-2.5 yrs -> 2yrs; 2.5-3.5 yrs
	UK13			4.1+/-1.4			4.2+/-1.2				4.2+/-1.5				4.1+/-1.6						
Yugoslavia	YU4a								5.1												M+F
	YU4b								6.9												M+F



Female		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				0.93+/-0.29		0.98+/-0.49		1.07+/-0.5		1.15+/-0.58		1.11+/-0.55			1+/-0.58					
Belgium	B2								0.93+/-0.32												
	B4														1.17+/-0.9						
Bulgaria	BG1	0.46+/-0.24			0.66+/-0.26			0.91+/-0.39				0.92+/-0.44				0.88+/-0.42					
Czech Republic	CZ1						1.33						1.36								
	CZ2				0.74					0.91											M+F
Denmark	DK1	0.9			0.9			1.1				1.1				1.2					
	DK2															1.2+/-0.4					
Estonia	EE1											1.7			1.9						weighted mean
Finland	SF2										1.4+/-0.4										control group
	SF3	1+/-0.3			1.2+/-0.3																M+F
France	F1-4		0.75				1.09				1.03				1.17						
	F7			1.06			1.28			1.32			1.38								M-F
	F9,10	0.8		0.8		0.8		1													
Germany	D1				0.7			0.8			0.9		1			1.1					
	D2				0.86			1.04			1.12		1.22			1.09					
	D3, D4, D5	0.44			0.57			0.8			0.79		0.81			0.88					
Greece	GR2											2.2									
	GR3									2.1+/-2.1					2.5+/-2.9						
	GR4											1.36+/-0.52									
Hungary	H1											0.85		0.84							
Ireland	IRL1								1.3+/-0.5				1.4+/-0.5			1.3+/-0.4			1.2+/-0.8		16-25yrs
Netherlands	NL1	0.67+/-0.3			0.72+/-0.22			0.87+/-0.51			0.97+/-0.37			1.04+/-0.44			1.15+/-0.69				
	NL2							0.81+/-0.37													
	NL3							0.82+/-1.29													
Norway	N1																	1.5			
	N2												1.61								
	N3																	1.4+/-0.5			16-25yrs
Poland	PL4									0.97											weighted mean
	PL8																1.24				weighted mean
	PL10				1+/-0.3																M+F
	PL12															1.28+/-0.61					
	PL13										1.31										
Russia	Rus1	0.66+/-0.06	0.65+/-0.05	0.72+/-0.08	0.77+/-0.09	0.70+/-0.04	0.85+/-0.09	0.81+/-0.05	0.9+/-0.1	0.97+/-0.2	0.85+/-0.05	0.87+/-0.04	0.96+/-0.07	0.89+/-0.06	0.93+/-0.05	0.92+/-0.06	0.95+/-0.06	0.97+/-0.09	0.83+/-0.05		
Spain	E1	1.1+/-0.5			1.4+/-1.8		1.4+/-0.7														M+F
	E5					1.1+/-0.1					1.3+/-0.1			1.9+/-0.2							
	E6					1.1+/-0		1.1+/-0		1.2+/-0.1		1.1+/-0	1.1+/-0								
Sweden	S1													1.2+/-0.4			1.2+/-0.4				
	S5														1.5						Weighted mean
Switzerland	CH1												0.8+/-0.6			1.0+/-0.6			0.8+/-0.4		19-21yrs
United Kingdom	UK1							1.16+/-0.08			1.04+/-0.04										
	UK2											1+/-0.3									
	UK5	0.8+/-0.1	0.8+/-0.2	0.7+/-0.2																	
	UK9															1.33					weighted mean
	UK10	0.8+/-0.01	0.8+/-0.01	0.9+/-0.02																	mean intake
	UK11											1.09			1.04						
	UK12						1.04+/-0.32														
	UK13				1.17+/-0.49			1.29+/-0.42				1.42+/-0.78				1.41+/-0.86					
Yugoslavia	YU4a								1.95												M+F
	YU4b								2.67												M+F

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr. Edburga Krause
NUTRIENT: Vitamin B12 (µg)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				4.23+/-2.51		4.05+/-3.16		4.84+/-4.07		5.0+/-6.8		6.16+/-6.55			6.22+/-0.44					
Denmark	DK1	4.1			4.9			6.7				6.7				7.1					
	DK2																				
France	F1-4			7.5			9				11					7.3+/-3.3					
	F7			3.7			4.9			5.2			5.6		7						
	G,10	5.5		5.5		5.4		6.1													M+F
Germany	D1				3.5			3.5			4.3		5.2			5.7					
	D2				3.45			4.21			4.59		5.12			5.65					
Greece	GR2																				
	GR3											3.4									
	GR4									2.8+/-2.8					4.3+/-7.7						
Hungary	H1											5.05+/-6.69									
Ireland	IRL1											3.39		3.17							
Netherlands	NL1								5.5+/-3.9				4.9+/-2.8			7.2+/-5.2			6.6+/-5.5		16-25yrs
Norway	N3	3.37+/-4.75			3.3+/-3.09			3.29+/-1.49			3.52+/-1.54			3.86+/-1.58			4.41+/-3.37				
Spain	E3																	11+/-1.1			16-20yrs
	E9					4.3+/-1.3					4.7+/-1.8			7.2+/-0.9							
Sweden	S1			3+/-0.3		3.8+/-0.5		4.3+/-0.7		4.3+/-0.3		7+/-1.9									
	S2													7.2+/-3.5			8.7+/-4.6				
United Kingdom	UK1														5.9						
	UK2							2.9+/-0.3			3.3+/-0.5										weighted means
	UK5	2.8+/-1.7	2.7+/-1.3	2.7+/-3.6								2.8+/-0.9									
	UK9	2.9+/-0.09	2.8+/-0.06	2.8+/-0.09																	
	UK11																				
	UK12											3.4			3.9						mean intake: 1.5-2.5 yrs -> 2yrs; 2.5-3.5 yrs -> 3yrs; 3.5-4.5 yrs -> 4years
	UK13						3.5+/-1.4														
Yugoslavia	YU4a				4+/-1.7			4+/-1.5				4.5+/-2.7				5+/-2.7					
	YU4b								4.56												M+F
									4.99												M+F

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				3.5+/-1.9		3.9+/-3.2		5.04+/-7.8		4.8+/-5.05		5.09+/-5.17			3.98+/-3.98					
Denmark	DK1	4.7			4.1			5.2				5.1				5.5					
	DK2																				
France	F1-4			7.5			5				7.5					5+/-7.4					
	F7			3.7			4.9			5.2			5.6		7						
	F9,10	5.6		5.2		5.4		5.1													M+F
Germany	D1				3			3.2			3.7		4.2			4.7					
	D2				3.17			3.78			4.25		4.15			4.04					
Greece	GR3									2.5+/-2.2					3.2+/-4.5						
	GR1											4.06+/-4.11									
Hungary	H1											2.83		2.61							
Ireland	IRL1																				
Netherlands	NL1								4.2+/-2.9				3.9+/-2.1			4+/-3.5			5.7+/-5.3		16-25yrs
Norway	N3	2.75+/-1.33			2.87+/-1.37			3.52+/-3.29			3.23+/-1.52			3.44+/-1.05			3.36+/-1.72				
Spain	E3																	7.1+/-3.5			16-20yrs
	E9					3.3+/-0.5					7.2+/-1.8			9.2+/-5.5							
Sweden	S1			1.5+/-0.9		4.4+/-1.1		3.3+/-0.5		3.8+/-0.4		4.8+/-1.4									
	S2													5.5+/-2.5			5.5+/-4.6				
United Kingdom	UK1														4.3						
	UK2							2.5+/-0.5			2.9+/-0.4										Weighted means
	UK5	2.44+/-1	2.5+/-1	2.5+/-1								3+/-2									
	UK10	2.9+/-0.09	2.8+/-0.06	2.8+/-0.1																	
	UK11																				
	UK12											2.6			2.5						mean intake: 1.5-2.5 yrs -> 2yrs; 2.5-3.5 yrs -> 3yrs; 3.5-4.5 yrs -> 4years
	UK13						3.3+/-1.1														
Yugoslavia	YU4a				3.6+/-1.5			3.5+/-1.5				3.3+/-1.62				3.4+/-2					
	YU4b								4.75												M+F
									4.99												M+F

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Dr. Edburga Krause
NUTRIENT: Vitamin B6 (mg)

Male	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				1.18+/-0.3		1.2+/-0.41		1.32+/-0.51		1.39+/-0.53		1.56+/-0.71			1.6±0.68					
Belgium	B2								1.4+/-0.5												
	B4														1.6+/-0.52						
Bulgaria	BG1	0.92+/-0.5			1.11+/-0.52			1.48+/-0.62				1.71+/-0.71				1.85+/-0.72					
Czech Republic	CZ2			0.93						0.88											
Denmark	DK1	1			1.1			1.4				1.7				1.7					M+F
	DK2															1.8+/-0.5					
Estonia	EE1											1.9			2						
France	F1.4		1.25				1.65				1.73				2.04						weighted means
	F7			1.29			1.62			1.79			1.78								
	F8,10	1.1		1.2		1.2		1.3													M+F
Germany	D1				1.1			1.1			1.3		1.6			1.6					
	D2				1.1			1.27			1.42		1.58			1.67					
	D3, D4, D5	0.69mg			0.79			1.09			1.11		1.18			1.4					
Greece	GR2											1.5									
	GR3									1.5+/-0.9					1.5+/-1						
Hungary	H1											1.45		1.61							
Ireland	IRL1								2+/-0.8				2.2+/-0.8			2.6+/-1.1			2.5+/-1		18 yrs
Netherlands	NL1	0.94+/-0.33			1.05+/-0.38			1.31+/-0.45			1.42+/-0.46			1.64+/-0.58			1.22+/-0.72				
	NL3							1.25+/-0.49													
Poland	PL4									1.68											
	PL7																2.62				weighted means
	PL12															2.38+/-0.98					weighted means
Sweden	S1													1.9+/-0.5			2.2+/-0.7				
	S2														2						
United Kingdom	UK1							1.1+/-0.1			1.3+/-0.05										weighted means
	UK2											1.1+/-0.4									
	UK8	0.9+/-0.2	1+/-0.3	1.1+/-0.3																	
	UK9	1.1+/-0.02	1.2+/-0.02	1.4+/-0.03																	
	UK11											1.41			2.22						mean intake: 1.5-2.5 yrs -> 2yrs, 2.5-3.5 yrs -> 3yrs, 3.5-4.5
	UK12						1.4+/-0.5														
	UK13				1.7+/-0.5			2+/-0.6				2.2+/-0.7				2.7+/-1.1					
Yugoslavia	YU4a								1.79												M+F
	YU4b								2.41												M+F

Female	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comments
Austria	A1				1.1+/-0.37		1.22+/-0.48		1.27+/-0.48		1.35+/-0.55		1.3+/-0.61			1.18+/-0.56					
Belgium	B2								1.27+/-0.42												
	B4														1.21+/-0.48						
Bulgaria	BG1	0.92+/-0.3			1.11+/-0.52			1.48+/-0.62				1.45+/-0.56				1.45+/-0.64					
Czech Republic	CZ1							1.4					1.42								
	CZ2			0.89						0.85											
Denmark	DK1	1			1			1.3				1.4				1.5					M+F
	DK2															1.4+/-0.5					
Estonia	EE1											1.5			2.1						
France	F1.4		1.1				1.4				1.52				1.45						weighted means
	F7			1.29			1.62			1.73			1.79								
	F8,10	1.1		1.2		1.2		1.3													M+F
Germany	D1				0.9			1.1			1.1		1.4			1.5					
	D2				0.95			1.19			1.29		1.31			1.27					
	D3, D4, D5	0.64			0.76			1.04			1.03		1			1.77					
Greece	GR3									1.4+/-0.7					1.3+/-0.6						
Hungary	H1											1.37		1.39							
Ireland	IRL1								1.6+/-0.5				1.7+/-0.5		1.6+/-0.5				1.5+/-0.6		18-25 yrs
Netherlands	NL1	0.87+/-0.33			1.01+/-0.33			1.15+/-0.36			1.28+/-0.42			1.34+/-0.46			1.41+/-0.47				
	NL3							1.11+/-0.42													
Poland	PL4									1.53											
	PL6																1.63				weighted means
	PL12															1.47+/-0.68					weighted means
Sweden	S1													1.5+/-0.4			1.5+/-0.5				
	S2														1.5						
United Kingdom	UK1							1.1+/-0.1			1.2+/-0.04										Weighted means
	UK2											1+/-0.2									
	UK5	0.9+/-0.2	1+/-0.3	1+/-0.3																	
	UK9	1.1+/-0.02	1.2+/-0.02	1.3+/-0.03																	
	UK11											1.58			1.49						mean intake; 1.5-2.5 yrs -> 2yrs, 2.5-3.5 yrs -> 3yrs, 3.5-4.5
	UK12						1.3+/-0.4														
	UK13				1.6+/-0.5			1.8+/-0.3				1.9+/-0.7				2+/-1.33					
Yugoslavia	YU4a								1.79												M+F
	YU4b								2.41												M+F

Female		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				96+/-73		99.9+/-82		104+/-81		135+/-299		130+/-273			99.2+/-84					
Belgium	B2								90+/-87												
	B4														78+/-46						
Bulgaria	BG1	62.5+/-47.9			70.8+/-82.6			96.9+/-75.1				102.1+/-77.1				92.0+/-78.2					
Czech Republic	CZ1						47.7						40.5								2-10years:data applicable to
	CZ2			30.3						34.1											
Denmark	DK1	64			61			66								75					data applicable M+F
Estonia	EE1											72				79					
Finland	SF2										111+/-60	49			47						weighted means
	SF3	57+/-33			116+/-64																Control group
France	F1-4		65				92.8				98.8				111.9						data applicable M+F
	F7			73			82			88			91								
	F9,10	97		86.9		85.8		94.1													M+F
Germany	D1				71.3			90.6			86.7		97.6			106.7					
	D2				76.9			97.3			97.2		90			85.5					
	D3, D4, D5	52			60			72			77		108			85					
Greece	GR1	67+/-76		84+/-80		93+/-94		101+/-113		108+/-119			116+/-135								
	GR3									142+/-115					118+/-111						
	GR4										97+/-86+V41										
Hungary	H1											61.1		71.7							
Ireland	IRL1								59+/-32				76+/-41			73+/-52			67+/-43		18-25yrs
Netherlands	NL1	53+/-20			57+/-34			57+/-33			75+/-57			81+/-61			81+/-48				
	NL2							35													
	NL3							59+/-43													
Norway	N1																				
	N2																	136			
	N3												104								
Poland	PL4									41.6								93+/-62			16-29yrs
	PL6																83.2				weighted means
	PL9													41+/-15							weighted means
	PL10				60+/-27																
	PL12															67.7+/-71.3					M+F
	PL13										60.2										
Portugal	P1														99						
Russia	Rus1	39+/-6	43+/-5	62+/-7	46+/-9	49+/-8	55+/-6	59+/-5	62+/-8	62+/-9	58+/-5	43+/-4	62+/-8	54+/-6	50+/-5	64+/-7	64+/-6	66+/-7	54+/-7		
Spain	E1	95+/-43			99+/-42		121+/-68														
	E2					54+/-14					96+/-17			84+/-14							M+F
	E3			92+/-9		66+/-6.3		87+/-21		81+/-10		88+/-9.9									
Sweden	S1																				
	S2													59+/-38			77+/-54				
Switzerland	CH1														76						Weighted means
United Kingdom	UK1												110+/-77			146+/-130			136+/-92		19-21yrs
	UK2							73.5+/-9.8			68.4+/-4.6										
	UK3										55+/-2.4	25+/-11									
	UK5	46+/-39	38+/-32	53+/-41							55+/-2.4										
	UK6															77					
	UK10	50.7+/-1.8	52.2+/-1.8	50+/-2.2																	weighted means
	UK11											58			71						mean intake 1.5-2.5 yrs -> 2
	UK12						50+/-4.6														
	UK13				69.1+/-34.5			73.9+/-56.4				73.7+/-56.1				81.2+/-74.7					
Yugoslavia	YU4a									88.6											M+F
	YU45									125											M+F

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Piotr Socha
Nutrient: vitamin A (µg)

male

	Survey No.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	comment	
Bulgaria	BG	612,4+/- 598,7			706,6+/- 509,8			1028,4+/- 885,4				1151,2+/- 863,2				1163,4+/- 1064,?					m+f <10y	ean+/- sem
Czech Republic	CZ1							605					518								m+f	
	CZ2			900						1200											m+f	
Spain	E1	1014 +/- 553			1203 +/- 654		1311 +/- 1041														m+f	ean+/- sem
	E2					551 +/- 70					749 +/- 137			691 +/- 101								mean+/- sem
Hungary	H1											786		523								
Poland	PL10				1432+/- 794																	mean+/- sem
	PL12															1309+/- 845						mean+/- sem
United Kingdom	UK12						504+/- 288															mean+/- sem
Yugoslavia	Yu4a								394.88												m+f	
	Yu4b								471.36												m+f	

female

		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+		
Bulgaria	BG	612,4+/- 598,7			706,6+/- 609,6			1028,4+/- 885,4				895,8+/- 562,5				869+/- 657,5					m+f <10y	ean+/- sem
Czech Republic	CZ1							606					518								m+f	
	CZ2			909						1200											m+f	
Spain	E1	1014 +/- 553			1209 +/- 684		1311 +/- 1041														m+f	ean+/- sem
	E2					876 +/- 146					1098 +/- 235			982 +/- 278								mean+/- sem
France	F2,3,4,5			1200																		(5-95 centile)
Hungary	H1											578		473								
Poland	PL9													541+/-230								mean+/- sem
	PL10				1432+/- 794																	
	PL12															854+/-520						mean+/- sem
United Kingdom	UK13						556+/- 268															mean+/- sem
Yugoslavia	Yu4a								394.88												m+f	
	Yu4b								471.36												m+f	

Name of Expert: Piotr Socha

SURVEY Retinol (mg)

Male

Country	survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
Belgium	B4												0,572+/-0,277						
Germany	D1			0.5			0.6			0.7			0.8						
	D2			0.44			0.5			0.51			0.6						
	D3-4-5	0.276		0.319			0.338			0.462			0.512		0.514				
Denmark	DK1	0,593+/-0,002		0,638+/-0,003			0,928+/-0,006				1,066+/-0,010				1,014+/-0,017				
France	F7		0.472			0.602			0.577										
Greece	GR4											0.691							
Hungary	H1										0,898+/-1,928								
Finland	SF2 controls													0.523					
United Kingdom	UK9never smokers										0,770+/-0,460								
	UK10	0,46+/-0,04	0,43+/-0,03	0,4+/-0,03	0,44											0,809+/-0,024			
	UK11											0.386			0.465				
	UK13			0,248+/-0,327+/-			0,339+/-0,285				0,344+/-0,530				0,348+/-0,246				

Female

Country	survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19+
Belgium	B4												0,471+/-0,280						
Germany	D1			0.5			0.5			0.6			0.6						
	D2			0.30			0.44			0.47			0.5						
	D3-4-5	0.255		0.277			0.362			0.369			0.396		365				
Denmark	DK1	0,530+/-0,003		0,567+/-0,003			0,628+/-0,003				0,686+/-0,005				0,665+/-0,008				
France	F7		0.472			0.602			0.577										
Greece	GR4											0.691							
Hungary	H1										0,559+/-0,850								
Finland	SF2 controls											0.576		0.473					
United Kingdom	UK9never smokers										0,890+/-0,880								
	UK10	0,46+/-0,04	0,43+/-0,03	0,4+/-0,03	0,44											0,665+/-0,023			
	UK11											0.295			0.304				
	UK13			0,307+/-0,218			0,298+/-0,288				0,271+/-0,367				0,289+/-0,347				

Name of Expert: Piotr Szczig
SURVEY: Retinol equivalents

	Survey	comment	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
male	A1					0,8 ± 0,71		0,72 ± 0,73		0,84± 0,91		0,73 ± 0,91		0,83 ± 0,91								male and female
	B4																0,9±1,15					
	BG		0,6174/0,5987		0,7066/0,6093				1,0204/0,8854							0,730/0,335						
	CZ1							0,606					1,1312/0,8852				1,1534/1,0641					
	CZ2					0,9								0,516								m+f <10y
	D1					0,9mg		0,9			1,2	1,0		1,1								m+f
	D2					2,69mg		0,81				0,80		0,91								m+f
	D3-4-5		0,544			0,498		0,504				0,803		0,83								
	DK1	mean/SE	0,313/0,024			1,119/0,604			1,420/0,602								0,832					
	DK2												1,621/0,011				1,265/2,018					
	E3		1,014 +/- 0,527			1,203 +/- 0,684		1,311 +/- 1,041									1,359/0,938					
	E5						0,551 +/- 0,70					0,748 +/- 0,131			0,621 +/- 0,101							
	E6				549+/-103		850+/-123		778+/-149		794+/-96											m+f
	EE1 urban																1184+/-349					
	EE2 rural												1,1/0,66 0,99/0,56			1,2/0,65 1,5/0,86						
	F9				0,78			0,97			0,99			1,39								
	F2,3,4,5 (5-35)				2,6																	
	F10,11		1,255		1,255		1,27		1,191													
	Gr1		0,978/1,273		0,905/1,572		0,901/1,265		0,990/1,522													
	GR4										1,167/1,824			1,101/2,754								m+f
	GR11												655									
	H1												1,125/1,536									
	IRL1												1,1		0,81							
	N1, N2	median								1,000/0,917				0,947/0,859			1,431/1,303					
	PL11													1,573					1,777			
	PL13																1,49					
	PL15													0,937/0,644								
	PL16														0,738+/-0,233							m+f
	PL18					1,432/0,794																
	PL19																1,309+/-0,945					
	S1												0,855+/-0,0826									
	S2														1,5/0,7		1,6/0,9					
	SF9		0,754/0,569			0,77/0,422										1,3						
	NL10							0,514/0,440														
	NL2		0,852/0,721			0,671/0,710			0,682/0,509				0,634/0,350				0,776/0,018					m+f
	UK1										0,854/0,456					0,969/1,050			0,572/0,911			
	UK3												0,494/0,25 6									
	UK 4																					
	UK11											0,552/0,066										
	UK12		0,577167	0,565333	0,5495	0,545933											1,141333333					
	UK13																					
	UK14												0,650833			0,716833						
	UK15 England/Wales	mean/sem						0,504/0,289														
	UK15 Scotland	mean/sem															1,208/0,050					
	UK16	mean/se															0,979/0,045					
	UK17					0,535/0,320			0,559/0,341				0,577/0,553				2,163/0,022					
	Yu5	(min-max)															0,628/0,355					
	Yu7a										0,6719 (0,2025-5,50527)											m+f
	Yu7b									0,33458 0,47138												m+f
female	Survey	comment	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	m+f
	A1					0,66 ± 0,82		0,81 ± 0,8		0,9 ± 0,85		0,81 ± 0,79		0,85 ± 0,98								male and female
	B4																0,68±0,7					
	BG	Vitamin A	0,6124/0,5987		0,7066/0,6006				1,0204/0,8854							0,609/0,343						
	CZ1							0,606					0,6968/0,5625				0,669/0,6075					
	CZ2					0,9								0,516								m+f <10y
	D1					0,9mg		0,9			1,2	1,0		1,0								m+f
	D2					0,54mg		0,71				0,79		0,78								m+f
	D3-4-5		0,435			0,64		0,584				0,67		0,734								
	DK1	mean/sem	0,926/0,005			1,006/0,004											0,5??					
	DK2								1,313/0,606				1,161/0,008				1,263/0,512					
	E3		1,014 +/- 0,568			1,203 +/- 0,664		1,311 +/- 1,041									1,225/0,792					
	E5						0,876 +/- 0,146					1,068 +/- 0,236			0,682 +/- 0,276							m+f
	E6				909+/-190		725+/-209		808+/-115		897+/-166											
	EE1 urban															854+/-252						
	EE1 rural												1,1/0,7			0,83/0,7						
	F2,3,4,5	(5-35 (adults))			1,2								1/0,69			1,5/0,8						
	F10,11		1,265		1,265		1,27		1,191													
	Gr1		0,920/1,375		1,036/1,185		0,862/1,404		1,025/1,621		1,049/1,490											m+f
	GR11													0,922/1,352								
	H1												1,010/1,507									
	IRL1												0,98		0,75							
	N1,N2 (median)									0,791/0,743				0,804/0,573			0,937/0,821					
	PL3													1,254					1,324			
	PL13																0,95					
	PL15													0,9366/0,641								M+F
	PL16					1,432/0,794									0,841+/-0,330							
	PL18																					
	PL19																854+/-523					
	S1											0,992										
	S2														1,100/0,600			1,100/0,700				
	NL10								0,531/0,557							1,1						
	NL2		0,554/0,410			0,562/0,706			0,688/0,629				0,882/0,551			0,724/0,702						
	UK1										0,691/0,630				0,801/0,670				0,754/0,667			
	UK3												0,510/0,48 0									
	UK4																					
	UK10	mean/SE											0,585/0,050									
	UK11																1,1030,0/57					
	UK13																1,012666667					
	UK14							0,556/0,268					0,640833			0,54						
	UK17					0,502/0,289			0,615/0,333				0,482/0,419									
	Yu5	(min-max)										0,6719 (0,2025-5,30337)					0,852/0,464					m+f
	Yu7a									0,39483												m+f

Name of Expert: Piotr Socha
SURVEY b-carotene (mg/day)
Male

	country/survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				1,65±2,5		1,8±2,56		1,9±2,16		1,8±2,0		1,93±2,6			1,85±2,08					mean+/-se
Belgium	B4														0,950±0,569						mean+/-se
Germany	D1				1.9			1.6			1.9										
	D2				1.14			1.41			1.4			1.32							
Denmark	DK1	1,926±0,019			2,587±0,02			2,948±0,024				3,207±0,023				2,1±0,039					mean+/-se
France	F7			1.67			2.224			2.462			2.411								m+f
	F1-4							1,066(0,438-3,829)				0,654 (0,148-2,012)				1,560(0,458-2,677)					mean (5-95 perc)
Greece	GR4											1,741±2,014									mean+/-se
Poland	PL12															2,535+-2,829					mean+/-se
	PL13											1,422±0,140									mean+/-se
United Kingdom	UK9 never smokers															1,994±0,056					mean+/-se
	UK10	0,73±0,021	0,79±0,03	0,92±0,055	0,8±0,044																m+f
	UK11											1,59(0,73-2,66)			1,52 (0,707-2,664)						
	UK12						0,345±0,481														mean+/-se
	UK13				1,12±0,949			1,167±0,898				1,261±0,851				1,512±1,159					mean+/-se
Yugoslavia	YU4a								5.66												m+f
	YU4b								6.41												m+f

Female

		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				2±1		2,12±3,16		1,54±1,6		1,88±2,17		2,04±2,88			1,94±3,16					mean+/-se
Belgium	B4														0,829±0,595						mean+/-se
Germany	D1				1.6			1.8			1.8		2.1								
	D2				1.15			1.23			1.32		1.32								
Denmark	DK1	2,389±0,017			2,645±0,002			4,113±0,026				2,903±0,033				3,606±0,05					mean+/-se
France	F1-4							0,1058(0,375-1,917)				0,912(0,281-2,690)				1,056(0,303-2,393)					mean (5-95 perc)
Greece	GR4											2,705±5,988									mean+/-se
Poland	PL12															1,924±2,521					mean+/-se
	PL13											1,524									
United Kingdom	UK9 never smokers															2,092±0,053					mean+/-se
	UK10	0,727±0,02	0,794±0,02	0,92±0,055	0,8±0,04																mean+/-se
	UK11											1,475(0,865-2,454)			1,415(0,806-2,484)						mean+/-se
	UK12						0,537±0,709														
	UK13				1,06±0,634			1,176±0,685				1,148±0,884				1,46±1,58					mean+/-se
Yugoslavia	YU4a								5.66												m+f
	YU4b								6.41												m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Piotr Socha
Nutrient: vitamin D (µg)

Male

	survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1			1,38 ± 0,86			1,7 ± 2.22		1,89 ± 3.05		1.9 ± 3.11		2,07 ± 2.52		1.77±2.6						male and female
Germany	D1			2.3			2.1			2.3			3.7								
	D2			2.68			3.5			3.60			3.94								
Spain	E2					2.7 +/- 1.9				1.7 +/- 0.9			5.8 +/- 1.6								
	E6			0.7+/-0,1		0,9+/-0,1		2,2+/-0,3		3+/-0,5						3+/-0,5					
Denmark	DK1	1,7+/- 0,01		2,3+/-0,02			2,9+/-0,02				2,6+/-0,02				3+/-0,03						
	DK2													3.1+/-1,8							
Estonia	EE1 urban											2.7+/-1,2			3,7+/-2,3						
	EE1 rural											3,2+/-2,3			3,7+/-3						
France	F7		1.8				2.1			2.2		2.3									
Hungary	H1											2.57		2.54							m+f
Ireland	IRL1							2,2+/-1,9													
Norway	N1,N2 (median)											2+/-1,3			2,3+/-2						
Sweden	S1												5.5					6.4			
	S2 Uppsala													5,8+/-2,3			6,5+/-2,4				
	S2 Trollhättan														5,1+/-2,1						
Finland	SF2 controls											3+/-1,8			5+/-1,9						
	SF3	2,1+/-2,1		2,4+/-1,7																	
Netherlands	NL1	2+/-1,3		2,3+/-0,8			2,9+/-1,6				3,6+/-2,1			3,9+/-1,6			4,6+/-2,3				m+f
United Kingdom	UK2											2+/-1,3									
	UK3										2,43+/-0,09										
	UK10	1,8+/-0,1	1,8+/-0,09	2+/-0,14	1,9+/-0,13																m+f
	UK11										1,74 (1,11-2,8)			2,18(1,29-3,41)							
	UK12						1,95+/-0,83														
	UK13				2,5+/-1,7		2,7+/-1,5				2,7+/-1,3				3,3+/-1,7						
Yugoslavia	Yu4								3.63												m+f
	Yu4b								4.34												m+f

female

	survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1			1.17 ± 2.13			1.36 ± 0,87		2.09 ± 3.31		1.49 ± 1.26		1.50 ± 1.59		1.39+1.99						male and female
Germany	D1			1.9			2			2.7			3.1								
	D2			2.86			3.05			3.36			3.18								
Spain	E2					1.5 -/- 0.4				4.5 -/- 1.1			3.1 +/- 1.1								
Denmark	DK1	1,8+/-0,01		1,7+/-0.03			2,4+/-0.01				2.3-/-0,01				2,7+/-0,02						
	DK2													2.3+/-1,2							
Estonia	EE1 urban											3+/-2,6			3,5+/-1,2						
	EE1 rural											3,2+/-3			2,6+/-2						
Hungary	H1											2.22		2.29							
Ireland	IRL1							1.6-/-1.1													
Norway	N1,N2 (median)											1.7			1,5+/-1,5						
Sweden	S1												3.6					3.3			
	S2 Uppsala													4,4+/-1,4			4+/-1,8				
	S2 Trollhättan														4,6+/-2,2						
Finland	SF2 controls											2,5+/-1,1			3,9+/-1,4						
	SF3	2,1+/-2,1		2,4+/-1,7																	
France	F7		1.8				2.1			2.2		2.3									m+f
Netherlands	NL1	2,2+/-2		2,2+/-1,1			2,9+/-1,3				3.1+/-1,3			3,4+/-1,5			3,2+/-1,9				m+f
United Kingdom	UK2											1,8+/-0,9									
	UK3										2,38+/-0,09										
	UK10	1,6+/-0,1	1,8+/-0,09	2+/-0,14	1,91+/-0,13																
	UK11										1,67 (0,99-2,32)			1,66 (0,96-2,73)							m+f
	UK12						5,9+/-2,8														
	UK13			2,2+/-1,3			2,3+/-1,4				2,3+/-1,3				2,2+/-1,3						
Yugoslavia	Yu4								3.63												m+f
	Yu45								4.34												m+f

Name of Expert: Piotr Socha
SURVEY vit E/PUFA (mg/g)

alpha-tocopherol

	survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	male and female	
male	A1			0.78			0.77		0.70		0.69		0.71		0.62							
	BG1	1.11		1.27			1.52				1.87				2.03							
	CZ2		0.37					0.22														m+f (<10y)
	D1			0.86			0.85			0.53			0.82									m+f
	D2			1.02			1.01			0.97			0.91									
	DK1	0.59		0.70			0.64				0.60				0.61							
	DK2													0.58								
	F9		0.39			0.59			0.66			0.66										
	GR4										0.80											m+f
	H1											0.43		0.45								
	PL11															0.76						
	S1													0.70			0.69					
	NL2			0.75							0.73			0.77			0.75					
	UK12	0.70	0.75	0.75																		
	UK14						0.55															m+f
	UK17			0.77			0.73				0.68				0.66							
	Yu7a							1.12														m+f
	Yu7b							1.13														m+f
female	survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	male and female	
	A1			0.85			0.78		0.69		0.71		0.74		0.69							
	BG1										1.65				1.54							
	D1			0.88			0.87			0.84			0.83									
	D2			1.01			0.96			0.94			0.92									
	DK1	0.73		0.68			0.65				0.63											
	DK2													0.60								
	H1											0.41		0.40								
	NL2	0.84		0.80			0.78				0.78			0.75			0.75					
	UK14						0.57															
	UK17			0.73			0.74				0.69				0.73							

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2

Dietary Intake Survey Template - Nutrient by Nutrient

[ ]

Name of Expert: Piotr Socha

Nutrient: tocopherol equivalents (mg) *alpha-tocopherol +alpha-tocopherol equivalents

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+		
Austria	A1				8,81± 3,1		9,6 ± 5,8		9,2± 4,9		10,31 ±6,04		12,26 ± 7,62			9,85±5,8						
Bulgaria	BG +	8,9+/-7,3			12,4+/ 6,99			18+/-9,3				20,2+/-8,7				22,9+/-11,1					TE	m+f (<19y)
Czech Republic	CZ1 -							6,5					7,2									m+f
	CZ2 +			3,3						4,1												
Germany	D1				9,3			9,6			11		12,8								TE	
	D2				9,6			11,6			12,7		13,7									
	D3-4-5	3, 3			4,8			6,9			7		8			9,6						
Greece	GR2*											12										
	GR3*												11,1+/-2,3									
Denmark	DK1	5,3+/-0,02			6,3+/-0,02			7,7+/-0,02				8,4+/-0,02				9,1+/-0,08					mean+/-sem	
	DK2															5,8+/-4						
France	F1-4			4,1				6,27(3,72-9,31)				6,75(4,52-9,64)				7,89(4,47-10,2)					(5-95 percentile)	
	F7*			4,66			5,56			8,14			8,42									m+f
	F8,9*		3,3		4		4,6		9,4													
Hungary	H1											14,8		15,1								
Ireland	IRL1								4,3+/-2,1				5,1+/-2			5,8+/-2,5						
Poland	PL7 Glagow																29,2+/-15,3 TE					
	PL7 Lubin																35,5+/-28,8 TE					
	PL12															15,8++/-9,11						
Sweden	S1													7,1+/-3,5			8,3+/-5,5					
	S2 Uppsala														7,3+/-2,4							
	S2 Trollhättan														7,4+/-3,6							
Finland	SF2 controls											9,2+/-4,7										
Netherlands	NL1	7,6+/-3,9			9,1+/-3,5			11,2+/-5,4				12,4+/-6,2			15,4+/-7,1			16,4+/-8,4				
United Kingdom	UK2											4,8+/-1,4										
	UK10+	3,9+/-0,08	4,5+/-0,05	5,1+/-0,15	4,6+/-0,13																	m+f
	UK11											4,9(3,8-6,5)			5,9 (4,5-7,7)							
	UK12						5,9+/-2,6															
	UK13+				7,2+/-5,1			8,3+/-3,3				9,1+/-3,3				10,3+/-4,1						
Yugoslavia	Yu4-								19,87 TE													m+f Tocopherole
	Yu4b+								28,05 TE													m+f Tocopherole

female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+		
Austria	A1				8,65 ± 3,9		10,11 ± 5,5		9,23 ± 4,98		9,39 ± 5,5		10 ± 5,73			8,9±5,77						
Bulgaria	BG+	5,9+/-7,3			12,4+/-6,99			18+/-9,3				19,1+/-12,3				17,5+/-9,4					Vitamin E	m+f
Czech Republic	CZ1 +							6,9					7,2									m+f
	CZ2+			3,3						4,1												
Germany	D1				8,4 TE			9,6 TE			10,9 TE		10,3 TE									
	D2				8,9			10,4			11,5		12,3									
	D3-4-5	3, 2			4,5			6,3			5,8		6,8			7,5						
Greece	GR2											11,1+/-2,3										
Denmark	DK1	5,1+/-0,02			5,1+/-0,01			7,1+/-0,02				6,9+/-0,02									mean+/-sem	
	DK2															6,8+/-2,4						
France	F1-4			4,1				5,7(3,51-9,63)				5,68(3,55-8,97)				5,62(3,36-11,29)					(5-95 percentile)	
Hungary	H1											13,3		13,01								
Ireland	IRL1								3,5+/-1,6				4,4+/-1,0			4,4+/-1,0						
Poland	PL6 Glagow																10,2+/-10,5					
	PL6Lubin																21,2+/-25,6					
	PL12															10,4+/-8,51 TE						
Sweden	S2 Upsalla														6,5+/-2,1							
	S2 Trollhättan														5,5+/-1,6							
Finland	SF2 controls											7,8+/-2,5										
Netherlands	NL1	5,6+/-3,5			8,4+/-3,3			10,4+/-4,6				11,7+/-4,7			12,1+/-5,6			11,6+/-5,4				
United Kingdom	UK2											4,8+/-1,1										
	UK11											4,9 (3,7-6,5)			5,5 (4,2-7,2)							
	UK12						5,9+/-2,9															
	UK13+				6,5+/-2,8			7,8+/-3				8,2+/-3,1				8,6+/-7,2						
Yugoslavia	Yu4								19,87 TE													m+f Tocopherole
	Yu4b								28,05 TE													m+f Tocopherole

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: Piotr Socha
SURVEY Vitamin K (µg)

	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	comment
male Yugoslavia	Yu4								38.98											m+f
	Yu4b								37.45											m+f
female Yugoslavia																				
	Yu4								38.99											m+f
	Yu4b								37.45											m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: K Hulshof
NUTRIENT: Calcium (mg)

Male / Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				780 +/- 258		760 +/- 347		734 +/- 341		820 +/- 420		647 +/- 473			754 +/- 439					
Belgium	B2								848+/- 439												
	B4														805 +/-351						
Bulgaria	BG1	555 +/- 306			533 +/- 252			617 +/- 301				582 +/- 315				578 +/- 307					2-10years data applicable to male and female
Czech Republic	CZ1						726						640								
	CZ2			617						665											data applicable to male and female
Denmark	DK1	996 +/- 3			899 +/- 2				1093 +/- 3			1061 +/- 4				1121 +/- 6					mean +/- se
	DK2																1098 +/-529				
Estonia	EE1											648+/-303			592+/-391						urban
	ES1											618+/-359			656+/-352						rural
Finland	SF2										1060+/-380										Control group
	SF3	827 +/- 273			973 +/- 323																data applicable to male and female
France	F1-4		~ 1200				~ 1150				~ 1100				~ 1100						
	F7			790			656			833			835								data applicable to male and female
Germany	D1				599			610			645		769			756					
	D2				647			783			717		733			670					
Greece	GR1	782 +/- 301		754 +/- 306		819 +/- 329		822 +/- 334		651 +/- 395		745 +/- 321									
	GR2									795 +/- 360				771 +/- 390							
	GR4											1099 +/- 612									
Hungary	H											596		667							
Italy	IT3						772+/-357														males + females
	IT5		539+/-216			692+/-234				760+/-213											males + females
Ireland	IRL1								1039 +/- 489				952 +/- 369			950 +/- 432			927 +/- 432		18-25 yrs
Netherlands	NL1	790 +/- 251			858 +/- 225			901 +/- 298			912 +/- 330			934 +/- 335			908 +/- 412				
	NL2						988+/-451														
	NL3							867+/-451													
Norway	N1												1075								median
	N2												1207								median
	N3																				
Poland	PL4																1000 +/- 400				16-29 years
	PL4									564+/-272											urban
	PL6									511+/-257											rural
	PL8												558+/-347								1990
	PL9												651+/-11085								1991
	PL13													586+/-154							
Portugal	P1										577				553						
Russia	Rus	547+/-50	479+/-36	573+/-40	545+/-50	555+/-38	523+/-55	450+/-30	451+/-38	452+/-34	490+/-35	537+/-44	567+/-40	587+/-37	566+/-39	720+/-56	647+/-64	597+/-46	641+/-53	669+/-62	mean +/- se
Spain	E1	1029 +/- 248			1121 +/- 262		1200 +/- 273														males and females
	E2					850 +/- 116					686 +/- 69			653 +/- 121							
	E3			804+/-34		542+/-44		782+/-56		818+/-58				738+/-46							
Sweden	S1													1061+/-308			966+/-365				
	S2														1045						Uppsala + Trollhatan 17-19 y
Switzerland	CH1												619+/-387			832+/-474			779+/-420		
United Kingdom	UK2											767+/-191									
	UK3										763 +/- 16										mean +/- se
	UK8											830			790						median
	UK9															753					smokers+non smokers
	UK10	503+/-11.4	635+/-10.5	665+/-13.6																	2-3 years data appl males and females mean +/- se
	UK13				657 +/- 220			656 +/- 194				541 +/- 236				653 +/- 236					
Yugoslavia	YU4a								875												males and females
	YU4b								1210												males and females

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: K. Hulshof
NUTRIENT: Magnesium (mg)

Male / Females	Survey	2 / 2	3 / 3	4 / 4	5 / 5	6 / 6	7 / 7	8 / 8	9 / 9	10 / 10	11 / 11	12 / 12	13 / 13	14 / 14	15 / 15	16 / 16	17 / 17	18 / 18	19 / 19	19+ / 19+	
Austria	A 1			226 +/- 69			255 +/- 77		253 +/- 80		271 +/- 92		279 +/- 105		271 +/- 112						
Belgium	B4												214 +/- 66								
Bulgaria	BG1	123 +/- 55		159 +/- 9			225 +/- 8				255 +/- 105				273 +/- 198						2-10years data applicable to male
Finland	SF3	198 +/- 49		237 +/- 51																	data applicable to male and femal
Hungary	H1											309			305						
Denmark	DK1	214 +/- 0.6		217 +/- 0.4			264 +/- 0.6				263 +/- 0.8				292 +/- 1.2						mean +/- se
	DK2														253 +/- 99						
Estonia	EE1											308 +/- 113			288+/-125						urban
	EE1											310+/-103			209+/-115						rural
Finland	RF9										268 +/- 89										Control group
France	F1-4	~225				~275				~270				~270							
	F7		202			226			2239			255									males and females
Germany	D1			226			246			264			309		324						
	D2			235			263			289			299		282						
Hungary	H1											309			305						
Netherlands	NL1	177 +/- 55		202 +/- 52			220 +/- 54			243 +/- 64			251 +/- 69			201 +/- 74					
Norway	N1																	363			median
	N2												393								median
	N3															370 +/- 130					16-29 years
Poland	P4									219+/-57											urban
	P4									209+/-54											rural
	PL7																	363 +/- 144 and 471 +/- 240			Cracow and Lublin
	PL9											146 +/- 34									
	PL13								211												
Russia	Rus1	218+/-27	196+/-17	269+/-34	312+/-62	207+/-13	331+/-25	353+/-62	255+/-27	272+/-41	337+/-56	299+/-38	259+/-21	244+/-16	305+/-34	264+/-36	333+/-39	243+/-17	358+/-61		mean +/- se
Spain	E3					254 +/- 18				297 +/- 33			329 +/- 23								
	E9			248+/-8		240+/-10		262+/-20		242+/-9		250+/-12									
Sweden	S1													239+/-57			240+/-71				
	S2														261						Uppsala - Trollhattan
United Kingdom	UK2											205 +/-44									
	UK6											250			260						median
	UK10	132+/-1.6	137+/-1.5	137 +/- 2.3																	2-3 years data app males and fen
	UK13			155 +/- 40			177 +/- 41				182 +/- 48				191 +/- 58						
Yugoslavia	YU4a								292												males and females
	YU4b								417												males and females

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: K. Hulshof
NUTRIENT: Phosphor (mg)

Male

Country	Survey	Values (in age order, up to 18+)	Remarks
Belgium	B2	1384 +/- 518	
	B4		
Hungary	H1	1472 +/- 356	
Denmark	DK1	1345 +/- 4; 1612 +/- 5; 1704 +/- 4; 1848 +/- 11	
	DK2	1117	mean +/- se
Finland	SF3	1225 +/- 319; 1688 +/- 613	
France	F1,4	~1450; ~1700; ~1750	data applicable to male and female
Germany	D1		
	D2		
Greece	GR1	1224 +/- 379; 1340 +/- 390; 1406 +/- 449; 1450 +/- 445; 1395 +/- 460	
	GR2		
	GR4		
Hungary	H1	1495 +/- 422	
Ireland	IRL1	1117	
Italy	IT5	939 +/- 205; 1060 +/- 227; 1150 +/- 209	
Netherlands	NL1	1444 +/- 553; 1552 +/- 523; 2044 +/- 715; 2105; 2105	
	NL2	1116 +/- 300; 1273 +/- 303; 1430 +/- 403; 1572 +/- 415; 1723 +/- 550	males + females
Poland	P4	1362 +/- 423	
	P5	980 +/- 235	urban
	PL7	895 +/- 255	rural
	PL7	1808 +/- 621	Glogow
	PL8	1982 +/- 738	Lubin
	PL10	933 +/- 247	
		932 +/- 335	
Russia	Rus1	691 +/- 47; 608 +/- 50; 577 +/- 64; 803 +/- 49; 887 +/- 52; 839 +/- 70; 780 +/- 38; 855 +/- 40; 944 +/- 58; 957 +/- 63; 1040 +/- 55; 1087 +/- 44; 1237 +/- 64; 1193 +/- 59; 1035 +/- 47; 1223 +/- 70; 1237 +/- 74	mean +/- se
Sweden	S1	1573 +/- 441; 1799 +/- 507	
	S2		Uppsala - Trollhattan
United Kingdom	UK2	1100 +/- 200	
	UK10	740 +/- 8.2; 767 +/- 13.4	
	UK13	819 +/- 251; 1008 +/- 243; +/- 281; 1330 +/- 345	2-3 years data appl males and female; mean +/- s mean +/- sl
Yugoslavia	YU4a		males and females
	YU4b		males and females

Females

Country	Survey	Values (in age order, up to 18+)	Remarks
Belgium	B2	1182 +/- 452	
	B4	1160 +/- 372	
Denmark	DK1	1152 +/- 3; 1425 +/- 3; 1419 +/- 4; 1492 +/- 6	
	DK2		mean +/- se
Finland	SF3	1225 +/- 319; 1432 +/- 522	
France	F2,F3,F4,F5	~1400; ~1300; ~1300	data applicable to male and female
Germany	D1		
	D2		
Greece	GR1	1151 +/- 346; 1222 +/- 375; 1241 +/- 426; 1294 +/- 427; 1276 +/- 436	
	GR4	1221 +/- 478	
Ireland	IRL1	1337 +/- 503; 1250 +/- 395; 1259 +/- 402; 1292 +/- 519	
Italy	IT5	939 +/- 206; 1050 +/- 227; 1168 +/- 209	18-25 yrs
Netherlands	NL1	1073 +/- 279; 1167 +/- 283; 1289 +/- 324; 1326 +/- 324; 1359 +/- 390	males + females
	NL3	1140 +/- 387	
Poland	P4	937 +/- 238	
	P4	872 +/- 247	
	PL8	894 +/- 215	
	PL13		
Russia	Rus1	750 +/- 69; 727 +/- 44; 797 +/- 50; 772 +/- 49; 779 +/- 73; 793 +/- 49; 797 +/- 67; 771 +/- 44; 800 +/- 47; 756 +/- 35; 847 +/- 48; 835 +/- 59; 843 +/- 39; 832 +/- 41; 875 +/- 37; 820 +/- 54; 772 +/- 67	mean +/- se
Sweden	S1	1250 +/- 326; 1175 +/- 373 +/- 379	
	S2		Uppsala - Trollhattan
United Kingdom	UK2	1000 +/- 200	
	UK10	740 +/- 9.2; 736 +/- 13.3	
	UK13	848 +/- 216; 915 +/- 199; 932 +/- 251; 959 +/- 273	2-3 years data appl males and female; mean +/- s mean +/- se
Yugoslavia	YU4a		males and females
	YU4b		males and females

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: K. Hulshof
NUTRIENT: Potassium(mg)
Male

Survey males		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				2026 +/- 508		2251 +/- 682		2302 +/- 832		2449 +/- 836		2733 +/- 1023			2751 +/- 1126					
Belgium	B2								2972 +/- 1053												
	B4																				
Denmark	DK1	2200 +/- 10			2400 +/- 20			2800 +/- 10							3473 +/- 784						
	DK2												3300 +/- 10			3500 +/- 20					
Finland	SF5	2358 +/- 656			2737 +/- 639											3600 +/- 1100					mean +/- se
Germany	D1				2200			2300			2500		3000			3200					data applicable to male and femal
	D2				2300			2510			2930		3150			3250					
Greece	GR2											2748									
Hungary	H1											2418		2598							
Italy	IT2	1557+/-386					2047+/-586			2155+/-409											
Netherlands	NL1	2200 +/- 510			2372 +/- 621			2610 +/- 787			3112 +/- 820			3456 +/- 1009			3623 +/- 1241				males + females
	NL3							2776+/-929													
Poland	P4									2700+/-716											urban
	P4									2519+/-853											rural
Russia	RUS1																				
Sweden	S1	2029+/-118	1834+/-155	2143+/-187	2300+/-172	2290+/-121	2272+/-151	2303+/-140	2217+/-136	2402+/-136	2432+/-120	2745+/-137	2946+/-192	3110+/-157	3339+/-193	3929+/-211	2849+/-159	3137+/-15	3168+/-164		mean +/- se
United Kingdom	UK10	1476+/-17.7	1513+/-17.9	1573+/-25.6										3909+/-878			3673+/-967				2-3 years data appl mean +/- s
	UK12																				mean +/- se
Yugoslavia	YU4a				1944 +/- 503			2136 +/- 465				2392 +/- 608				2803 +/- 820					males and females
	YU4b								3158 4358												males and females

Females

potassium females		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	
Austria	A1				1928 +/- 595		2239 +/- 740		2224 +/- 786		2404 +/- 849		2405 +/- 991			2225 +/- 926					
Belgium	B4														2716 +/- 754						
Denmark	DK1	2100 +/- 10			2100 +/- 10			2600 +/- 10				2700 +/- 10				3900 +/- 10					
	DK2																				
Finland	SF3	2398 +/- 606			2737 +/- 630											2800 +/- 1000					mean +/- se
Germany	D1				1900			2100			2100		2600			2700					data applicable to male and femal
	D2				2120			2500			2690		2730			2540					
Hungary	H1											2334		2289							
Netherlands	NL1	2031 +/- 606			2331 +/- 593			2559 +/- 611			2823 +/- 724			2876 +/- 774		2975 +/- 868					
	NL3							2462+/-765													
Poland	P2									2038+/-740											urban
	P4									2403+/-747											rural
Russia	RUS1																				
Sweden	S1	1988+/-157	2016+/-146	2151+/-114	2175+/-210	2150+/-135	2036+/-173	2114+/-135	2331+/-168	2186+/-136	2248+/-129	2195+/-109	2541+/-153	2321+/-110	2210+/-110	2587+/-158	2565+/-129	2417+/-154	2294+/-198		mean +/- se
United Kingdom	UK10	1475+/-17.7	1513+/-17.9	1501+/-25.3										2537+/-622			2485+/-764				2-3 years data appl for mean +/- se
	UK13																				
Yugoslavia	YU4a				1774 +/- 459			2019 +/- 420				2100 +/- 350				2162 +/- 593					males and females
	YU4b								3158 4338												males and females

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2

Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: K. Hulshof

NUTRIENT: Sodium (mg)

	Survey	Values	
Male			
Denmark	DK2		15+
France	F9	4400 +/- 1600	
Germany	D1		m+f
	D2	3200	
Greece	GR5		
Italy	IT4	2436 +/- 931	
Poland	P6	3174+/-8053200 +/-10582783+/-697	m+f
	P4	1950+/-579	
		1931+/-745	
Russia	Rus1	1815+/-156 2470+/-417 2600+/-213 2583+/-219 2673+/-151 2679+/-168 2558+/-134253+/-11138157+/-188 3401+/-189 3820+/-227 4044+/-1604689+/-2234667+/-246 4095+/-148 4754+/-929 4887+/-437	mean +/- se
Sweden	S1	3005+/-842 3499+/-910	
	S2		Uppsala + Trollhatan
United Kingdom	UK10	1528+/-18.71573+/-26.6	2-3 years data and males and females
	UK13	2069+/-536 2402 +/- 592 2683 +/- 727 3265 +/- 896	mean +/- se
Female			
Denmark	DK2	3100 +/- 1000	19-
Germany	D1		
	D2		
France	F9		
Greece	GR5	1685 +/- 714 1796 +/- 847	m+f
Poland	P6	2538+/-749	
	P4	2403+/-747	
Russia	Rus1	1815+/-156 2470+/-417 2600+/-417 2583+/-219 2673+/-151 2879+/-168 2558+/-134 2832+/-136 3157+/-188 3401+/-189 3820+/-227 4044+/-160 4689+/-223 4667+/-246 4095+/-148 4687+/-437 4887+/-437	mean +/-sem
Sweden	S1	2226+/-538 2246+/-651	
	S2		Uppsala + Trollhatan
United Kingdom	UK10	1528+/-18.71632+/-31.8	3.5-4.5 y; mean +/- se
	UK13	1857 +/- 454 2155 +/- 496 2272 +/- 606 281 +/- 632	
United Kingdom	UK10	365+/-19.41528+/-18.71632+/-31.8	
	UK13	1857 +/- 454 2155 +/- 496 2272 +/- 606 2281 +/- 632	3.5-4.5 y; mean +/- se

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: K. Hulshof
NUTRIENT: chloride (mg)

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+			
Germany	D2																						
United Kingdom	UK10	669+/-27.5	2291+/-27.7	2462+/-42.8	3149			3806			4410		4950		5440								
	UK13				3105 +/- 799			3894 +/- 687			4030 +/- 1071				4938 +/- 1372						males and fem, mean	mean +/- s	
Female		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+			
Germany	D2																						
United Kingdom	UK10	669+/-27.5	2291+/-27.7	2436+/-47	2770			3473			3720		4130		3850								
	UK13				2765 +/- 677			3222 +/- 727				3403 +/- 885				3465 +/- 940					3.5-4.5 y; mean +/- se		

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: K. Hulshof
NUTRIENT: Fluoride (µg)

Male	Survey males	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+
Finland	SF3	255 +/- 62		313 +/- 72																
Germany	D1			434			434			505			599		642					

Female		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+
Finland	SF3	255 +/- 62		313 +/- 72																
Germany	D1			369			395			437			513		548					

m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: I. Elmadfa
NUTRIENT: Iron (mg)
Male

	Survey	2	3	4	6	5	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				8,5±1,38			10.4 ± 1,7			11.52 ±2,23		14,4 ± 2,94			15,36 ± 2,4			13.6 ± 8		mean±se
Belgium	B2								10,4±2,7												mean±se
	B4														13,4±2,9						mean±se
Czech Republic	CZ2							8.9						16,4							mean/m+f
Denmark	DK2																12±3,8				mean±se
Estonia	FE1											21±9,9			21±10,4						urban mean±se
	EE1											15±4,5			15,5±4.6						rural mean±se
Finland	SF1		13±4			13±6			15±6						21±9			22±8			mean±se
	SF2diabetics													20±5							mean±se
	SF2control													17±5							mean±se
	SF4diabetics											14±5									mean±se
	SF4control											16±4									mean±se
France	F2,F3,F4,F5			7.8				11				12.5				14.4					mean±se
	F6			6.6			10.6			11.5			12.6								mean/m+f
	F10,F11	6.5		7.3		8	8.7														mean±se
Germany	D1				10			10.2			11.3		13.7			14					mean±se
	D2				10			11.6			13.4		14.9			15.5					mean±se
Greece	GR1	7,7±4,7		9,6±4,7		9,6±3,9		10,2±4,6		11±5,1			11,9±6,1								mean±se
	GR4											15									mean
	GR5									11,2±5,5					13,8±6,4						mean±se
Ireland	IRL1								12,9±4,6					14,7±4,7			19,3±7,9		15,4±4,9		mean±se
Netherlands	NL1	6,1±1,7			7±2			8,4±2,2				9,9±2,9			10,8±2,9			11,5±4			mean±se
	NL2							10,1±3,9													mean±se
	NL3							8,4±2,7													mean±se
Norway	N2																	16			median
Poland	PL4urban									74,5±21,4 % 7,5±2,1											%RDA
	PL4rural									74±24,3/7,4±2,4											%RDA
	PL9												14±3								mean±se
Russia	Rus2	9,8±0,8	8,6±0,71	12,4±1,2	13,2±1	12,6±1	14,9±1,4	14±1,6	13,4±1	14,6±0,6	14,1±0,8	15,7±1,1	16,8±1	17,1±0,8	18,9±1,4	19,4±1,1	16,1±0,5	17,8±0,8	16,3±1,1		mean±se
Spain	E5	9,3±2,3			10,6±2,5		11,8±3,5														mean±se
	E6					7,6±0,9					11,3±1,1			16,5±1,7							mean±se
Sweden	S1													17,4±4,4				20,8±6,3			mean±se
	S3 Uppsala														19,1±5,5						mean±se
	S3Trollhättan														19,6±4,9						mean±se
	S4														19,7						median
Switzerland	CH1												16±4,7				13,4±6,5			12,8±4,6	mean±se
United Kingdom	UK1							9,1±0,4			11,2±0,5										mean±se
	UK2											10±2									mean±se
	UK5										11,7±0,24										mean±se
	UK11non smoker																15,2±0,2				mean±se
	UK11occ smoker																14,0±0,2				mean±se
	UK11reg smoker																13,8±0,3				mean±se
	UK13	5±0,1	5,4±0,09	5,9±0,12																	mean±se 1,5-4,5y m+f
	UK12						10±4,3														mean±se
	UK12				8,3±2,6			9,6±2,7				10,8±3,2					12,6±4,1				mean±se
Yugoslavia	YU4a								14.87												mean/m+f
	YU4b								20.41												mean/m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: I. Elmadfa
NUTRIENT: zinc (mg)

Male

Country	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				5,9±1,2			8,14 ± 1,65			9,0 ± 2,28		10,8 ± 2,65			13,35± 4,05					mean±se
Belgium	B4														8,2 ± 2,6						mean±se
Denmark	DK2																14,3±3,6				mean±se
Estonia	EE1											12,9±3,5			15,3±4,8						urban mean±se
	EE1											11,1±3,8			12,1±4,1						rural mean±se
Finland	SF2diabetics													19±4							mean±se
	SF2control													14±4							mean±se
	SF4athlets											12±4									mean±se
	SF4control											15±3									mean±se
France	F2,F3,F4,F5			7,5				10				12				12.5					mean
Germany	D1				7.2			7.4			8.5		10.3			10.6					mean
	D2				7.4			8.9			10.2		11.6			12.4					mean
Greece	GR4											11									mean
Ireland	IRL1									10,1±3,6				11,7±3,9			15,1±4,9			14,6±5,3	mean±se
Netherlands	NL2	5,8±1,7			5,5±1,9			7,5±2				8,9±3			9,7±2,8				10,5±3,5		mean±se
Poland	PL4urban									68±19,8%											%RDA
	PL4rural									65,9±21,3%											%RDA
Spain	E5					7,0±0,9					9,9±0,9			14,4±1,6							mean±se
Sweden	S1													10,6±2,7			12,2±3,2				mean±se
	S3 Uppsala														12,5±3,2						mean±se
	S3Trollhättan														12,1±2,9						mean±se
United Kingdom	UK1							6,4±0,3			7,8±0,3										mean±se
	UK2											8,2									mean±se
	UK11non smoker																10,5±0,1				mean±se
	UK11occ smoker																10,6±0,1				mean±se
	UK11reg smoker																9,9±0,1				mean±se
	UK10	4,3±0,09	4,4±0,06	4,7±0,09																	mean±se1,5-4,5y m+f
	UK12						6,5±1,8														mean±se
	UK13				5,6±1,8			6,1±1,6				7,2±2					8,7±2,7				mean±se
Yugoslavia	YU4a									9.72											mean/m+f
	YU4b									13.06											mean/m+f

Female

Country	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A1				5,5 ± 1,1			7,37 ± 1,43			7,92 ± 1,68		8,76 ± 1,92			9,35 ± 2,28			10 ± 7		mean±se
Belgium	B4														6,3 ± 2,2						mean±se
Denmark	DK2																10,8 ± 3,5				mean±se
Estonia	EE1											12,2 ± 4,2			10 ± 4,9						urban mean±se
	EE1											10,9 ± 3,2			9,4 ± 3,9						rural mean±se
Finland	SF2diabetics													15 ± 3							mean±se
	SF2control													11 ± 3							mean±se
	SF4athlets											10 ± 2									mean±se
	SF4control											11 ± 3									mean±se
France	F2,F3,F4,F5			7				9,5				9				9					mean
Germany	D1				6.2			5.7			7,4		8,6			9.4					mean
	D2				6.7			8.5			9.2		9.7			9.3					mean
Ireland	IRL1									8,9 ± 3,5				9,7 ± 3			9,7 ± 2,9		9,1 ± 3,9		mean±se
Netherlands	NL2	5,5 ± 1,5			6,1 ± 1,7			7 ± 2				7,5 ± 2,1			6,1 ± 2,3			8,5 ± 2,6			mean±se
Poland	PL4urban									70,3±18%											%RDA
	PL4rural									66,3±10,1%											%RDA
Spain	E5					8,5 ± 0,9					9,9 ± 0,8			11 ± 0,9							mean±se
Sweden	S1													8,2 ± 2,1			8 ± 2,5				mean±se
	S3 Uppsala														9,3 ± 2,1						mean±se
	S3Trollhättan														8,4 ± 2,1						mean±se
United Kingdom	UK1							5,2 ± 0,2			7,1 ± 0,2										mean±se
	UK2											7 ± 1									mean±se
	UK11non smoker																9,1 ± 0,16				mean±se
	UK11occ smoker																8,4 ± 0,1				mean±se
	UK11reg smoker																8,3 ± 0,1				mean±se
	UK10	4,3±0,06	4,4±0,06	4,7±0,09																	mean±se1,5-4,5y m+f
	UK12						6,5±1,8														mean±se
	UK13				5,6±1,8			6,1±1,6				7,2±2					8,7±2,7				mean±se
Yugoslavia	YU4a									8.72											mean/m+f
	YU4b									13.06											mean/m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: I. Elmadfa
NUTRIENT: copper (mg)

Male

	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Finland	SF1		1,1±0,7			1,5±1			1,6±1,3						2,1±1,2			2,1±1,2			mean±se
	SF2diabetics										2,6±1,2										mean±se
	SF2control										1,9±0,8										mean±se
	SF4athletes											1,2±0,4									mean±se
	SF4control											1,6±0,6									mean±se
France	F2,F3,F4,F5	1.3																			mean±se
Germany	D1						1.7				1.9				2						mean±se
	D2			1.7			1.8			1.9			2.3		2.3						mean±se
Poland	PL4urban			1.58			1.79			2.03			2.22		2.29						%RDA
	PL4rural								59,5±23%												%RDA
United Kingdom	UK1								67,2±23,8%												mean±se
	UK13						1,7±0,2				1,3±0,1										mean±se
Yugoslavia	YU4a			0,7±0,24			0,81±0,23				0,9±0,26				1,05±0,33						mean/m+f
	YU4b								3.25												mean/m+f
									4.5												

Female

	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Finland	SF1		1,1±0,7			1,2±0,7			1,3±0,9						1,3±0,9			1,3±0,7			mean±se
	SF2diabetics										2,1±0,8										mean±se
	SF3control										1,3±0,4										mean±se
	SF4athletes											1,1±0,3									mean±se
	SF4control											1,2±0,3									mean±se
France	F2,F3,F4,F5	1.2																			mean±se
Germany	D1						1.6				1.5				1.6						mean±se
	D2			1.4			1.6			1.7			2		2						mean±se
Poland	PL4urban			1.44			1.74			1.81			1.9		1.76						%RDA
	PL4rural								58,4±24%												%RDA
United Kingdom	UK1								56,4±22.3%												mean±se
	UK13						2,4±1,1				1,3±0,1										mean±se
Yugoslavia	YU4a			0,64±0,21			0,74±0,21				0,79±0,25				0,8±0,28						mean/m+f
	YU4b								3.25												mean/m+f
									4.5												

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: I. Elmadfa
NUTRIENT: Iodine (µg)

Male

	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A 1				184,8 ± 21,6			194,6 ± 42			228,6 ± 61,2		278 ± 84			342 ± 98			217 ± 100		mean±se
	SF2diabetics												390 ± 100								mean±sd
	SF2control												470±330								mean±sd
Germany	D1				59,5			59,4			68,4		63,3			88					mean
	D2				64			74			80		90			82					mean
United Kingdom	UK11non smoker																179±4				mean±se
	UK11occ smoker																197,2±2,9				mean±se
	UK11reg smoker																204±3,6				mean±se
	UK14	123±3	117±2,3	113±3,6																	mean±se 1,5-4,5
	UK13				156±73			154±62				162±69					233±9				mean±se
Yugoslavia	YU4a								141,95												mean/m+f
	YU4b								155,80												mean/m+f

Female

	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Austria	A 1				169,2 ± 32,4			136 ± 37,8			219,6 ± 52,2		253 ± 76			255 ± 62			186 ± 110		mean±se
	SF2diabetics												330 ± 90								mean±sd
	SF2control												340± 290								mean±se
Germany	D1				51,2			54			60,9		71			75,1					mean
	D2				59			69			74		74			82					mean
United Kingdom	UK11non smoker																160,3±2,7				mean±se
	UK11occ smoker																154,9±2,2				mean±se
	UK11reg smoker																150,8±3,5				mean±se
	UK14	123±3	117±2,6	113±3,6																	mean±se 1,5-4,5
	UK13				143±66			131±52				129±65					135±71				mean±sd
Yugoslavia	YU4a								141,95												mean/m+f
	YU4b								159,88												mean/m+f

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2

Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: I. Elmadfa

NUTRIENT: chromium (µg)

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Finland	SF1		23±5			28±6			31±9						40±15			40±12			
	SF2diabetics													27±6							mean±sd
	SF2control													34±16							mean±se
Yugoslavia	YU4a									1,02 ?											mean/m-t
	YU4b									2,43 ?											mean/m-t

Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment
Finland	SF1		21±6			24±6									29±10			37±10			
	SF2diabetics													24±6							mean±sd
	SF2control													25±7							mean±se
Yugoslavia	YU4a									1,02 ?											mean/m+t
	YU4b									2,43 ?											mean/m+t

NUTRITIONAL NEEDS OF CHILDREN - EXPERT GROUP 2
Dietary Intake Survey Template - Nutrient by Nutrient

Name of Expert: I. Elmadfa
NUTRIENT: selenium (µg)

Male	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment	
Denmark	DK2																41±12				mean±se	
Estonia	EE1											67±28			72±33						urban	mean±se
	EE1											70±21			59±30						rural	mean±se
Finland	SF2diabetics													27±9							mean±se	
	SF2control													24±9							mean±se	
	SF4 athlets											75±23									mean±se	
	SF4 control											90±20									mean±se	
Netherlands	NL1	26±10			27±9			34±13				37±12			42±14			45±18			mean±se	
Sweden	S1													12,2±4 6			14,6±5,2				mean±se	
	S3 Upsa														33±10						mean±se	
	S3 Trel														30±9						mean±se	
United Kingdom	UK11non smoker																73±0,9				mean±se	
	UK11occ smoker																72±1				mean±se	
	UK11reg smoker																68,9±1 5				mean±se	
	UK12						27,3±13														mean±se	
Yugoslavia	YU4a								0.19												mean/m+f	
	YU4b								0.16												mean/m+f	

Female	Survey	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	19+	Comment	
Germany	DK2																32±11				mean±se	
Estonia	EE1											57±29			68±36						urban	mean±se
	EE1											08±24			54±29						rural	mean±se
Finland	SF4 athlets											63±16									mean±se	
	SF4 control											69±20									mean±se	
Netherlands	NL1	22±9			27±10			30±10				34±10			35±12			36±12			mean±se	
Sweden	S1													10,1±3,3			9,9±4				mean±se	
	S3 Ups														24±8						mean±se	
	S3 Trel														23±7						mean±se	
United Kingdom	UK11non smoker																57±0,7				mean±se	
	UK11occ smoker																55,2±0,7				mean±se	
	UK11reg smoker																53,7±1,1				mean±se	
	UK12						24,2±6														mean±se	
Yugoslavia	YU4a								0.19												mean/m+f	
	YU4b								0.16												mean/m+f	