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NUTRITION AND LIFESTYLE IN THE BALTIC REPUBLICS

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HEALTHIER LIVING

By the year 2015, people across society should have adopted healthier patterns of living

(Adopted by the WHO Regional Committee for Europe at its forty-eighth session, Copenhagen, September 1998)

ABSTRACT

The aim of the Baltic Nutrition and Health Surveys was to provide detailed information on the food consumption patterns and health behaviours of the population of the Baltic States. During the summer of 1997, cross-sectional surveys were conducted among representative national samples of adults in each country. Interviews with participants included a 24-hour recall of dietary intake, a standardized questionnaire. The surveys showed important variations in dietary patterns and lifestyle behaviours among the Baltic countries, and have highlighted areas where further development and implementation of national nutrition policies and health promotion campaigns are most required. Information from the surveys could also be used as baseline data against which future dietary consumption patterns would be compared.

Keywords

NUTRITION
DIET SURVEYS
HEALTH BEHAVIOR
LIFE STYLE
COMPARATIVE STUDY
GUIDELINES
BALTIC STATES

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NUTRITION AND LIFESTYLE IN THE BALTIC REPUBLICS

SUMMARY REPORT

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SUMMARY

Objective: The aim of the Baltic Nutrition and Health Surveys was to provide detailed information on the food consumption patterns and health behaviours of the population of the Baltic States.

Methods: During the summer of 1997, cross-sectional surveys were conducted among representative national samples of adults in each country (Estonia: n=2108; Latvia: n=2308; Lithuania: n=2153. Interviews with participants included a 24-hour recall of dietary intake, a standardised questionnaire (covering demographic characteristics, eating habits and health behaviours), and height and weight measurements.

Results: Differences in dietary patterns were observed among countries. Complete dependence on home grown foods was twice as high in Lithuania (29%) as in Latvia (14%) or Estonia (13%). While three out of four Lithuanians consumed vegetables daily, this was the case in only 48% of the Estonians and 60% of the Latvians. One in eight Latvians reported adding salt at the table almost always before eating compared with approximately one in fifteen Estonians or Lithuanians. Fat intake was high in all three countries, but Lithuanian respondents had a higher mean intake of fat (44% of energy) than Latvians (42%) or Estonians (36%), and they were more likely to use animal fat and lard for cooking (29% vs 8% of Estonians and 9% of Latvians). The median intake of vegetables and fruits was higher in Estonia than in Latvia and Lithuania but it was less than 300g/day in each country. Overall, 13% of the respondents were obese and almost half (48%) were overweight. Between-country differences in the prevalence of obesity were particularly large in women: 18% of Lithuanian and 17% of Latvian women were obese compared with only 6% of Estonian women. Obesity increased markedly with age and more than three out of 10 Lithuanian and Latvian women age 50 years and over were obese, compared with 15% of Estonian women. Estonian men and women were generally more likely than other respondents to be physically active during their leisure time. Lithuanian men were the least likely to be physically active during their leisure time (64% were involved in sedentary activities only) but they were the most likely to have a very high physical activity at work (17%). Women from Estonia were twice as likely as other women to smoke regularly. The proportion of heavy alcohol drinkers was higher in Estonia than in Latvia or Lithuania in men of all age groups (overall 9% vs 3%).

Conclusions: The surveys showed important variations in dietary patterns and lifestyle behaviours among the Baltic countries, and have highlighted areas where further development and implementation of national nutrition policies and health promotion campaigns are most required. Further analysis of the surveys is required to investigate determinants of a healthy lifestyle. Information from the surveys could also be used as baseline data against which future dietary consumption patterns would be compared.

1. INTRODUCTION

In several countries of the former Soviet Union, including the Baltic countries, the process of transition towards market economy has been accompanied by a severe worsening of the health of the population.[1] Between 1990 and 1994, life expectancy decreased and total mortality rates increased dramatically (Figures 1 and 2). Although these trends have recovered considerably since 1994, wide gaps in life expectancy and mortality rates still exist between the Baltic States and other European countries. In addition, the health situation in the Baltic States is complicated by the fact that these countries have some features of both industrialised and developing countries: high rates of chronic diseases such as cardiovascular diseases and cancer, as well as relatively high rates of infectious diseases, including food borne diseases and infant mortality.[1,2,3]

The wide gap in life expectancy observed between Western European countries and countries of Central and Eastern Europe (CCEE) and Newly Independent States (NIS) is mainly due to differences in premature mortality from cardiovascular diseases. In Western countries, improvements in dietary patterns through the implementation of dietary guidelines and food policies designed to improve health have contributed greatly to the reduction in cardiovascular mortality during the last twenty years.[4,5,6] However, the dietary habits of the populations of some CCEE and NIS countries remain less favourable than those found in Western countries.[7,8] Diet tends to be relatively rich in saturated fat and poor in vegetables, fruits and antioxidants, and there is an acknowledged need for the implementation of food and nutrition plans.[9,10,11,12,13]

Information on food availability and dietary patterns in populations are essential for the formulation, implementation and monitoring of effective policies and programmes designed to ensure sufficient food supply at the national and household levels, as well as to improve overall nutritional wellbeing and reduce mortality. Such information is unfortunately limited in the Baltic countries. There is consequently a need for comprehensive surveys of food consumption and regular monitoring of dietary habits and nutritional status in these countries.

In 1996, WHO facilitated the Baltic Project, funded by the Luxembourg Government, to support each country to carry out their first surveys of national food intake, nutritional status and knowledge of healthy lifestyle, using a common methodology. The main objective of the surveys was to provide national representative information on several aspects of food patterns and lifestyle behaviours, including:

- food security;
- mean energy, nutrient and food intakes;
- dietary patterns (e.g., frequency of vegetable consumption, use of salt, use of dietary supplements, type of fat used for cooking, etc);
- knowledge and beliefs related to food intake;
- height, weight and prevalence of obesity;
- physical activity level;
- prevalence of smoking;
- pattern of alcohol consumption.

It is expected that the results of the Baltic Nutrition and Health Surveys will be used to formulate national food and nutrition policies and develop targeted public health promotion campaigns. Survey data information will also be used as baseline information against which future dietary consumption patterns will be compared.

Figure 1. Life expectancy at birth, in years.

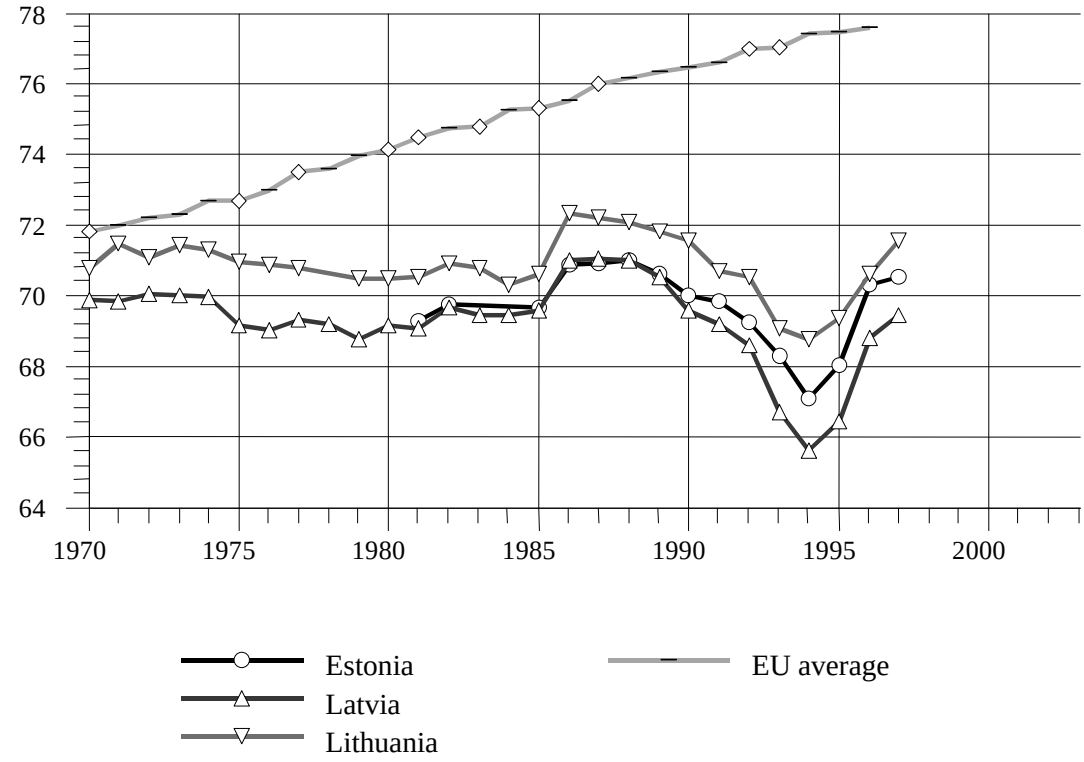
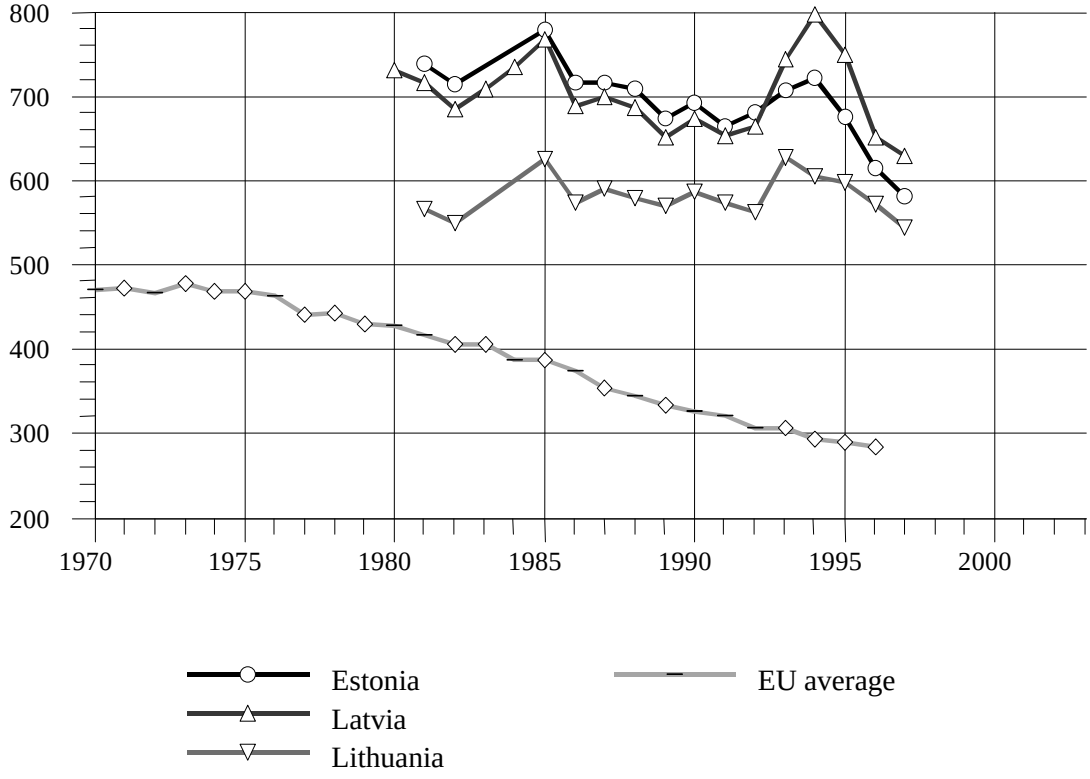


Figure 2. Age-standardised mortality rate (per 100000) from diseases of the circulatory system.



2. METHODS

2.1 Study population

The surveys were conducted in each country during the summer of 1997. Each survey sought to include representative samples of the national population aged between 19 and 64 years (20-65 in Lithuania). In each country, the sampling frames were the National Population Registers. All interviews were conducted in the individuals' own homes in the national language or in Russian.

In Estonia, a simple random sample of 3000 persons, stratified by age, was drawn from the register. Interviewers did not return to a house if there was no reply. Substitution was allowed if the response rate in the county in question was less than 60%; substitutes were selected on the basis of place of residence (usually neighbours, especially in the countryside). Overall, less than 5% of individuals, in seven counties, were substituted. The response rate was 67.3%. Pregnant or lactating women were excluded from the sample in Estonia. Interviews were conducted by public health specialists, nutritionists, and individuals with previous interviewing experience. Each interviewer attended a one-day initial training session.

In Latvia, two-stage sampling was used to draw a sample of 3000 persons from the National Population Register. The first stage selected a sample for each of the 26 regions of Latvia according to population size. In the second stage, random samples within strata were selected. The exception was for the city of Riga, where there appeared to be problems with the population register data, with a disproportionate number of people registered in with ages between 60 and 65. Consequently, in Riga, the second stage sample was also stratified by age group. Substitution was not permitted and interviewers would return to an address up to five times. The response rate was 77.7%. Interviewers were recruited from the regional environmental health centres. Each interviewer received one day of training.

In Lithuania, a sample of 3,000 names was drawn at random from those individuals listed on the National Population Register who were living at addresses in Lithuania and who were aged between 20 and 65. There was no substitution. In most cases the interviewers returned to an address on multiple occasions if they were unable to find the subject. The response rate was 72.7%. Interviewers were mainly assistants working in hygiene stations, who underwent an initial one-day training session.

2.2 Data collection

The interviews included three parts: a 24-hour recall of dietary intake, the administration of a standardised questionnaire, and the measurement of height and weight.

The 24-hour recall was used to define and quantify food intake during the previous 24 hours (starting exactly 24 hours before the time at which the interview started). Common sets of household measures and photographs and/or drawings of commonly used foods were showed to the participants to help them estimate food portion sizes. Probing questions about snacks, drinks, type of milk, fat and other foods were used to elicit more information. In Estonia, dietary information were converted into daily nutrient intakes using the Finnish Micro-Nutrica Nutritional Analysis program adapted to include Estonian foods (Estonian Version 2, 1997, Food Processing Institute, Tallinn Technical University). This program includes over 1150 food items and dishes and 66 nutrients. In Latvia and Lithuania, the Russian Institute of Nutrition Food Composition Table (based on 1984 Skurihin Tables) was used to convert foods into nutrients.

The interviewer administered questionnaire was developed and agreed by all countries. It was translated by professional translators from English into Estonian, Latvian, Lithuanian, and Russian. Each country used the same Russian version of the questionnaire. The questionnaire covered demographic and socio-economic characteristics, health behaviours, and dietary beliefs. The respondents were also asked about their height without shoes and their weight without clothes or shoes. Nationality was classified as that of the native population, Russian, or "other" --which essentially equated to Ukrainian or Belarussian, or, in Lithuania, to Polish. The income variable related to average income per family member per month. In each country, it was divided into four categories, with the lowest category considered to be living in severe poverty. In Estonia, the cut-point used for this lowest category was equivalent to the "minimum basket for the living" in 1997 (<US$75 per person per month). In Latvia and Lithuania, as salaries are lower than in Estonia, a cut-off point of <US$50 per person per month was selected.

Measurements of height and weight were performed by the interviewers according to standardised procedures, with respondents without shoes in light clothing. Body mass index (BMI) was calculated as the weight in kilograms divided by the height in metres squared. Standard definitions of relative body weight status were used (underweight - BMI < 18.5 kg/m^2; normal - BMI 18.5-24.9; overweight - BMI 25-29.9; obese BMI ≥ 30).[14] The ratio of energy intake to estimated basal metabolic rate was calculated to assess potential underreporting of energy intake. Estimates of basal metabolic rate were calculates from published equations using information on age and measured body weight.[15]

2.3 Statistical analyses

Data were analysed using the statistical package STATA version 6.0 (College Station, Texas). In this report, all individuals with missing information on age were excluded from the analyses (n=7 in Latvia and n=11 in Lithuania), as were pregnant and lactating women respondents in Latvia and Lithuania (n=17 and n=18 respectively) in order to parallel the sampling selection of the Estonian survey. In Lithuania, three respondents were over 65 years of age but were kept in the analyses.

Variables with a skewed distribution were transformed using log normal or square-root transformations before the analyses; transformed values were returned to their original units in the tables of results. Between-country differences in dietary intakes and health behaviours were assessed using analyses of variance (with Bonferroni multiple comparison tests), Krusdal-Wallis one-way analysis of variance by ranks (for variables that could not be normalised using standard transformations, that is, intakes of alcohol and foods by food groups), and chi-square tests. As sex and age are strong determinants of dietary intake, the results were presented separately for men and women, and they were stratified by age. Because of the large number of statistical tests performed, significance was taken as $p<0.01$.

3. RESULTS

3.1 General characteristics of the sample

After excluding individuals who did not report their age as well as women who were pregnant or lactating at the time of the survey (total of 23 persons in Latvia and 29 persons in Lithuania), the samples included 2018 respondents in Estonia, 2308 in Latvia, and 2153 in Lithuania. The proportions of men and women in the final samples were similar to those found

in the general adult population of each country, based on Statistical Yearbook data (Table 1). However, in Estonia, respondents tended to be slightly younger than the general adult population; in Latvia and Lithuania they were slightly older. The distribution of the study groups by area of residence and nationality compared favourably with those of the general population.

Table 1. Demographic characteristics of the participants in the surveys and of the general populations of Estonia, Latvia and Lithuania.

Characteristic	Estonia		Latvia		Lithuania	
	Survey	General population[a]	Survey	General population[b]	Survey	General population[c]
Age group	*19-65 yrs*	*19-64 yrs*	*19-65 yrs*	*19-64 yrs*	*19-65 yrs*[d]	*19-65 yrs*
Sex (%)						
Men	46.7	48.0	46.4	47.8	45.8	48.1
Women	53.3	52.0	53.6	52.2	54.2	51.9
Age (%)						
19-34 years	42.4	37.1	29.4	36.7	32.9	39.4
35-49 years	34.5	35.2	33.3	34.4	35.9	34.1
50-65 years	23.1	27.7	37.3	28.9	31.2	26.4
Age group	*19-65 yrs*	*All ages*	*19-65 yrs*	*All ages*	*19-65 yrs*[d]	*All ages*
Area of residence (%)						
Urban	66.1	[e]	66.6	68.9	66.8	70.9
Rural	33.9	[e]	33.4	31.1	33.2	29.1
Nationality (%)						
Estonian/Latvian/Lithuanian	69.6	65.2	54.8	55.3	84.7	81.6
Other	30.4	34.8	45.3	44.7	15.3	18.4

[a] Estonian population in 1997 (Statistical Yearbook of Estonia, Statistical Office of Estonia, 1998).

[b] Latvian population in 1997 (Statistical Yearbook of Latvia, Statistical Office of Latvia, 1998).

[c] For age, sex and area of residence: Lithuanian population at the beginning of 1998; for nationality: Lithuanian population at the beginning of 1997 (Department of Statistics, Government of the Republic of Lithuania, 1997, 1998).

[d] Includes 3 individuals over 65 years of age.

[e] The method used to classify cities and towns as rural or urban is different from the method used in the surveys.

Table 2 gives the characteristics of each study groups by gender. In each country, there was a higher proportion of female than male respondents (55% in Estonia and 54% in Latvia and Lithuania). Significant between-country differences were observed among countries for the distribution by age, nationality, education level, number of persons in the household, work activity, and income (all $p<0.001$).

Overall, respondents from Estonia were younger (mean age=39 years) and those from Latvia were older (mean=44 years) than respondents from Lithuania (mean=42). The sample from Lithuania was the most homogeneous in terms of nationality with 85% of the respondents being of Lithuanian nationality, 8% of Russian nationality and 7% of other nationalities. In

Table 2. General characteristics of the respondents by country and sex.

Characteristic	Men			Women		
	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania
Age (%)[a]						
19-34 yrs	44.0	31.5	35.5	41.1	27.6	30.8
35-49 yrs	35.5	34.9	36.6	33.7	32.0	35.3
50+ yrs	20.5	33.6	28.0	25.2	40.4	34.0
Mean age (SD[b])	38 (12)	43 (13)	41 (13)	39 (13)	44 (13)	43 (13)
Base	*902*	*1070*	*987*	*1116*	*1238*	*1166*
Nationality (%)[a]						
Estonian/Latvian/Lithuanian	71.6	55.6	83.1	68.0	54.0	86.1
Russian	22.5	33.6	9.3	25.2	35.8	7.7
Other	5.9	10.8	7.6	6.8	10.2	6.3
Base	*902*	*1070*	*987*	*1116*	*1237*	*1161*
Area of residence (%)						
Urban	60.8	65.9	65.8	70.4	67.2	67.7
Rural	39.3	34.1	34.3	29.6	32.8	32.3
Base	*902*	*1070*	*987*	*1116*	*1238*	*1166*
Number of persons in household (%)[a]						
1	23.4	10.7	6.8	19.4	11.0	11.1
2	23.5	23.3	22.1	24.5	28.5	24.5
3	25.6	30.3	28.2	25.5	27.9	25.5
4	19.7	24.4	28.4	20.1	21.7	25.3
5+	7.8	11.3	14.4	10.5	11.0	13.6
Base	*902*	*1062*	*981*	*1116*	*1233*	*1160*
Education level (%)[a]						
Primary	15.1	21.0	22.4	10.7	18.0	18.6
Secondary	47.7	31.3	26.2	44.4	33.3	24.9
Secondary special or university	37.3	47.7	51.4	45.0	48.7	56.6
Base	*902*	*1047*	*982*	*1116*	*1211*	*1159*
Work activity (%)[a]						
Working	71.5	61.7	64.7	59.5	48.7	53.2
Unemployed	14.1	19.6	23.8	8.6	14.3	12.5
Pensioner/disabled	7.4	12.5	9.6	14.9	26.0	19.1
Housewife	1.0	3.3	0.4	8.5	8.3	13.4
Student	6.0	3.0	1.4	8.5	2.8	1.9
Base	*902*	*1069*	*987*	*1116*	*1237*	*1164*
Income (%)[a]						
Level 1-Low	24.7	40.3	32.5	30.9	36.4	33.7
Level 2	33.5	27.0	30.2	40.4	30.7	35.5
Level 3	28.2	11.0	19.5	22.7	11.9	17.3
Level 4-High	13.6	21.7	17.7	6.0	21.0	13.5
Total	*902*	*911*	*1813*	*1116*	*1118*	*2234*

[a] Significant variations ($p<0.001$) among countries in men and in women, using chi-square tests.

[b] SD=standard deviation

comparison, almost one in four respondents from Estonia and one in three respondents from Latvia were of Russian nationality. No significant between-country difference was observed for the area of residence; almost two-thirds of the respondents lived in urban areas. Less than one in ten persons lived on their own in Lithuania, compared with one in five in Estonia. Between 8% (Estonia) and 14% (Lithuania) of the respondents lived in large households (including 5 or more individuals).

The proportion of respondents who went only to primary school was slightly higher in Latvia (19%) and Lithuania (20%) than in Estonia (13%). However, the proportion of respondents with more than secondary education was lowest in Estonia (42%) and highest in Lithuania (54%). The majority of the respondents were currently employed (between 55% and 65% among countries). The overall country-specific unemployment rate varied between 11% (Estonia) and 18% (Lithuania), but reached 24% in Lithuanian men. Pensioners and disabled people accounted for 12% (Estonia) to 20% (Latvia) of the study samples. One-third of the respondents was considered to be living in severe poverty (lowest income group), with variations from 28% in Estonia up to 38% in Lithuania.

3.2 Dietary habits and beliefs

3.2.1 Reasons for choosing foods

In all three countries, cost was the most commonly reported reason for choosing foods (Table 3). However, the proportion of respondents selecting foods based on their cost was considerably higher in Lithuania (67%) and Latvia (60%) than in Estonia (41%). In contrast, Estonians were more likely than Latvians and Lithuanians to choose foods because of their taste (28% vs 19% and 16% respectively) or because of family preferences (19% vs 14% and 6%). The prevention of diseases and the need to follow a special diet were less frequently reported as the main reason for choosing foods. Older respondents were generally more likely than younger respondents to report choosing foods because of their cost, to prevent diseases, or because of a special diet, and they were less likely to choose foods according to taste. Taste was more frequently reported by men than by women as the main reason to choose foods, while the reverse was true for the prevention of diseases and for special diets. In Estonia and Latvia, women were also more likely than men to select cost as their main reason for choosing foods.

3.2.2 Dependence on home grown or raised foods

The level of dependence on home grown or raised foods varied greatly among countries (Table 4). In Estonia, more than half the respondents did not depend at all on home grown foods compared with 29% of Latvians and 38% of Lithuanians. In comparison, more than twice as many Lithuanians (29%) as Estonians (13%) and Latvians (14%) reported depending entirely on home grown or raised foods. In each country, at least about a third of the respondents –up to almost half the Latvians respondents-- depended partially or entirely on home grown foods (47% in Latvia, 42% in Lithuania and 32% in Estonia). No marked differences were observed between men and women. Variations by age were found, particularly in Estonia where partial/entire dependence increased with age and where the proportion of respondents who did not (at all) depend on home grown foods decreased considerably with age. Older Latvian men and women and Lithuanian women were also more likely than their younger counterparts to depend at least partially on home grown foods.

Table 3. Main reason for choosing foods by country.

	Estonia						Latvia						Lithuania						p-value[a]
	n	Prevent diseases/ improve health %	Need for special diet %	Cost %	Taste %	Family preference %	*n*	Prevent diseases/ improve health %	Need for special diet %	Cost %	Taste %	Family preference %	*n*	Prevent diseases/ improve health %	Need for special diet %	Cost %	Taste %	Family preference %	
All men	*902*	6.7	1.2	39.3	33.9	19.0	*1060*	3.8	1.2	55.0	24.7	15.3	*982*	5.1	1.6	67.1	19.5	6.7	<0.001
18-34 yrs	*397*	5.8	0.8	26.2	46.1	21.2	*335*	2.7	0.9	42.4	35.5	18.5	*348*	4.9	0.6	64.4	21.6	8.6	<0.001
35-49 yrs	*320*	5.3	0.9	48.4	25.6	19.7	*369*	3.8	1.1	55.0	23.3	16.8	*360*	3.9	1.1	67.8	20.0	7.2	<0.001
50+ yrs	*185*	10.8	2.7	51.4	22.2	13.0	*356*	4.8	1.7	66.9	16.0	10.7	*274*	6.9	3.7	69.7	16.1	3.7	<0.001
All women	*1116*	10.4	4.5	42.0	23.8	19.4	*1235*	4.1	2.2	65.0	15.0	13.7	*1162*	10.8	3.0	66.8	13.3	6.0	<0.001
18-34 yrs	*459*	8.3	3.9	30.3	35.5	22.0	*342*	3.5	1.2	56.4	21.9	17.0	*358*	8.1	2.0	65.6	17.0	7.3	<0.001
35-49 yrs	*376*	9.6	4.3	45.2	17.0	23.9	*394*	3.1	2.3	62.7	14.7	17.3	*411*	10.2	2.7	67.9	13.1	6.1	<0.001
50+ yrs	*281*	15.0	5.7	56.9	13.5	8.9	*499*	5.4	2.8	72.8	10.4	8.6	*393*	14.0	4.3	66.7	10.2	4.8	<0.001

[a] P-value for variations among countries in the reasons for choosing foods, using chi-square tests.

Table 4. Level of dependence on home grown or raised foods by country, sex and age group.

Group	Estonia					Latvia					Lithuania					p-value[a]
	n	Not at all %	A little %	Partially %	Entirely %	*n*	Not at all %	A little %	Partially %	Entirely %	*n*	Not at all %	A little %	Partially %	Entirely %	
All men	*902*	51.7	16.2	19.0	13.2	*1069*	29.0	23.5	33.2	14.3	*985*	36.9	19.9	15.3	27.9	<0.001
18-34 yrs	*397*	55.7	14.6	18.1	11.6	*337*	34.1	22.3	30.3	13.4	*349*	33.0	22.6	17.5	26.9	<0.001
35-49 yrs	*320*	50.9	17.5	16.9	14.7	*372*	29.0	25.3	31.7	14.0	*361*	37.1	19.9	15.2	27.7	<0.001
50+ yrs	*185*	44.3	17.3	24.3	14.1	*360*	24.2	22.8	37.5	15.6	*275*	41.5	16.4	12.7	29.5	<0.001
All women	*1116*	54.8	12.8	19.7	12.6	*1234*	28.9	24.5	32.2	14.4	*1166*	39.1	19.0	11.7	30.2	<0.001
18-34 yrs	*459*	60.1	13.1	17.9	8.9	*342*	29.2	24.9	31.3	14.6	*359*	35.7	23.1	13.9	27.3	<0.001
35-49 yrs	*376*	52.1	12.0	23.4	12.5	*395*	31.7	23.0	32.4	12.9	*411*	42.6	19.5	12.2	25.8	<0.001
50+ yrs	*281*	49.8	13.5	17.8	18.9	*497*	26.6	25.4	32.6	15.5	*396*	38.6	14.9	9.1	37.4	<0.001

[a] P-value for variations among countries in the level of dependence on home grown or raised foods, using chi-square tests.

Results for the reported use of home grown vegetables paralleled the findings described above (Table 5). Respondents from Estonia less frequently use home grown vegetables than other respondents: more than 40% never used them compared with only 27% of Latvians and 17% of Lithuanians. The proportion of respondents who always used home grown vegetables was particularly high in Lithuania: two-thirds of the respondents from this country always used such vegetables compared with 53% of the Latvians but only 29% of the Estonians. In Estonian men and women, in Latvian men and in Lithuanian women, complete use of home grown vegetables increased with age; in Latvian women and Lithuanian men, few differences were observed among age groups.

3.2.3 Consumption of vegetables or roots (excluding potatoes)

Tables 6 to 8 indicate that there were large differences among countries in the weekly consumption of vegetables and roots (excluding potatoes). While 78% of the Lithuanian respondents consumed vegetables daily (six to seven days per week), this was the case in only 60% of the Latvian and 48% of the Estonian respondents (Table 6). In each country, women were more likely than men to consume vegetables daily. Overall, less than 0.2% of the Lithuanians reported eating neither fresh nor cooked vegetables; this was the case in 1% of the Latvians and 3% of the Estonians.

Raw and fresh vegetables were consumed 6-7 days per week by 70% of the Lithuanian participants (Table 7). The corresponding figures for Latvia and Estonia were 43% and 34%. In each country, daily consumption of raw or fresh vegetables was lower in men and in respondents age 50 years and over than in women and younger respondents respectively. Five percent of women and eight percent of men from Estonia said they never eat raw of fresh vegetables, compared with only 0.3% of Lithuanian men and women.

In each country, boiled and stewed vegetables were consumed less frequently than raw vegetables, possibly because the surveys took place during the summer (Table 8). Approximately 10% of Latvians and Lithuanians and a quarter of Estonians reported never consuming cooked vegetables. The majority of the respondents (41%) consumed them one to two days per week and about 16% consumed them daily (14% in Estonia, 19% in Latvia, 16% in Lithuania). As was the case for raw vegetables, women were more likely then men to consume them every day.

3.2.4 Snacking and regular eating times

As shown in Table 9, the proportion of respondents who reported eating at regular hours was considerably higher in Latvia (51%) than in Estonia (27%) and Lithuania (23%). The proportion increased with age in men from each country and in women from Estonia and Lithuania. In Latvian women, however, this proportion was slightly higher in the 35-49 years age group. In each country, women more likely ate at regular times than men.

The proportion of respondents who often or always ate between meals was 15% in Latvia, 19% in Estonia and 20% in Lithuania (Table 10). This proportion decreased with age, except in Lithuanian women; in these women, frequent snacking was highest in older women.

Table 5. Use of home grown vegetables by country, sex and age group.

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	No	Some-times	Always	*n*	No	Some-times	Always	*n*	No	Some-times	Always	
		%	%	%		%	%	%		%	%	%	
All men	*902*	43.0	28.5	28.5	*1060*	27.7	20.2	52.1	*987*	15.4	16.7	67.9	<0.001
18-34 yrs	*397*	45.1	29.5	25.4	*335*	32.2	20.0	47.8	*350*	15.4	18.6	66.0	<0.001
35-49 yrs	*320*	44.4	26.6	29.1	*371*	27.2	21.8	50.9	*361*	12.7	17.7	69.5	<0.001
50+ yrs	*185*	36.2	29.7	34.1	*354*	24.0	18.6	57.3	*276*	18.8	13.0	68.1	<0.001
All women	*1116*	41.1	29.0	29.8	*1228*	27.1	19.4	53.5	*1164*	18.0	16.6	65.5	<0.001
18-34 yrs	*459*	42.1	32.9	25.1	*342*	29.2	16.7	54.1	*359*	16.4	20.3	63.2	<0.001
35-49 yrs	*376*	40.4	27.7	31.9	*390*	29.0	18.7	52.3	*409*	20.5	15.4	64.1	<0.001
50+ yrs	*281*	40.6	24.6	34.9	*496*	24.2	21.8	54.0	*396*	16.7	14.4	68.9	<0.001

[a] P-value for variations among countries in the use of home grown vegetables, using chi-square tests.

Table 6. Weekly consumption of raw, fresh, boiled or stewed vegetables by country, sex and age group.

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Never	<6 days	6-7 days	*n*	Never	<6 days	6-7 days	*n*	Never	<6 days	6-7 days	
All men	*902*	4.2	54.2	41.6	*1060*	0.9	41.9	57.2	*981*	0.1	25.1	74.8	<0.001
18-34 yrs	*397*	5.0	55.4	39.6	*334*	0.9	40.1	59.0	*348*	0.3	25.6	74.1	<0.001
35-49 yrs	*320*	2.8	55.0	42.2	*369*	0.3	40.4	59.4	*360*	0.0	20.3	79.7	<0.001
50+ yrs	*185*	4.9	50.3	44.9	*357*	1.7	45.1	53.2	*273*	0.0	30.8	69.2	<0.001
All women	*1116*	2.8	43.8	53.4	*1233*	1.5	35.9	62.5	*1161*	0.2	19.6	80.2	<0.001
18-34 yrs	*459*	3.3	43.1	53.6	*342*	0.6	29.5	69.9	*358*	0.0	18.2	81.8	<0.001
35-49 yrs	*376*	2.4	45.0	52.7	*394*	1.5	35.3	63.2	*410*	0.5	18.3	81.2	<0.001
50+ yrs	*281*	2.5	43.4	54.1	*497*	2.2	40.9	56.9	*393*	0.0	22.4	77.6	<0.001

[a] P-value for variations among countries in the frequency of eating between main meals, using chi-square tests.

Table 7. Weekly consumption of raw and fresh vegetables by country, sex and age group.

Group	Estonia					Latvia					Lithuania					p-value[a]
	n	Never	1-2 days	3-5 days	6-7 days	*n*	Never	1-2 days	3-5 days	6-7 days	*n*	Never	1-2 days	3-5 days	6-7 days	
All men	*902*	8.2	25.4	36.4	30.0	*1066*	2.1	25.2	31.7	41.0	*984*	0.3	7.9	25.7	66.1	<0.001
18-34 yrs	*397*	8.6	22.7	38.0	30.7	*336*	1.2	20.2	33.9	44.6	*350*	0.3	5.7	28.3	65.7	<0.001
35-49 yrs	*320*	6.9	26.6	37.2	29.4	*372*	0.8	25.5	31.7	41.9	*359*	0.0	6.7	22.0	71.3	<0.001
50+ yrs	*185*	9.7	29.2	31.4	29.7	*358*	4.2	29.6	29.6	36.6	*275*	0.7	12.4	27.3	59.6	<0.001
All women	*1116*	5.2	22.1	35.0	37.6	*1236*	2.9	20.1	33.1	43.9	*1163*	0.3	6.7	19.1	74.0	<0.001
18-34 yrs	*459*	5.0	21.4	36.4	37.3	*341*	0.9	14.1	33.7	51.3	*358*	0.0	5.0	18.4	76.5	<0.001
35-49 yrs	*376*	5.1	17.0	37.8	40.2	*396*	2.8	16.9	32.8	47.5	*411*	0.5	6.1	18.5	74.9	<0.001
50+ yrs	*281*	5.7	30.3	29.2	34.9	*499*	4.4	26.7	32.9	36.1	*394*	0.3	8.9	20.3	70.6	<0.001

[a] P-value for variations among countries in the weekly consumption of raw and fresh vegetables, using chi-square tests.

Table 8. Weekly consumption of boiled or stewed vegetables, by country, sex and age group.

	Estonia					Latvia					Lithuania					p-value[a]
	n	Never	1-2 days	3-5 days	6-7 days	*n*	Never	1-2 days	3-5 days	6-7 days	*n*	Never	1-2 days	3-5 days	6-7 days	
All men	*902*	33.6	33.5	20.5	12.4	*1061*	10.5	40.2	31.6	17.8	*973*	8.9	48.3	26.9	15.8	<0.001
18-34 yrs	*397*	39.0	32.8	15.9	12.3	*335*	12.8	43.3	26.0	17.9	*345*	10.4	46.1	30.4	13.0	<0.001
35-49 yrs	*320*	28.4	35.6	22.2	13.8	*369*	7.1	41.2	31.4	20.3	*358*	6.7	49.2	25.4	18.7	<0.001
50+ yrs	*185*	30.8	31.4	27.6	10.3	*357*	11.8	36.1	37.0	15.1	*270*	10.0	50.0	24.4	15.6	<0.001
All women	*1116*	20.4	39.2	25.9	14.5	*1232*	8.2	39.8	32.7	19.3	*1149*	11.4	44.6	27.1	17.0	<0.001
18-34 yrs	*459*	23.1	37.5	27.7	11.8	*342*	6.4	41.8	32.2	19.6	*356*	9.6	46.1	26.7	17.7	<0.001
35-49 yrs	*376*	18.9	43.4	21.5	16.2	*394*	9.4	40.6	30.0	20.1	*407*	13.0	44.2	25.3	17.4	0.002
50+ yrs	*281*	18.2	36.3	28.8	16.7	*496*	8.5	37.7	35.3	18.6	*386*	11.4	43.5	29.3	15.8	0.001

[a] P-value for variations among countries in the weekly consumption of boiled or stewed vegetables, using chi-square tests.

Table 9. Proportion of respondents who have regular eating times by country, sex, and age group.

Group	Estonia		Latvia		Lithuania		p-value
	n	%	*n*	%	*n*	%	
All men	*902*	22.1	*1054*	47.3	*985*	20.9	<0.001
18-34 yrs	*397*	18.4	*332*	39.8	*348*	16.4	<0.001
35-49 yrs	*320*	22.2	*365*	44.4	*361*	20.5	<0.001
50+ yrs	*185*	29.7	*357*	57.4	*276*	27.2	<0.001
All women	*1116*	30.3	*1228*	54.6	*1166*	25.4	<0.001
18-34 yrs	*459*	26.1	*339*	52.8	*359*	25.9	<0.001
35-49 yrs	*376*	33.2	*390*	56.2	*411*	23.8	<0.001
50+ yrs	*281*	33.1	*499*	54.5	*396*	26.5	<0.001

[a] P-value for variations among countries in the proportion of respondents who have regular eating times, using chi-square tests.

Table 10. Frequency of eating between the main meals (snacking) by country, sex and age group.

Group	Estonia					Latvia					Lithuania					p-value[a]
	n	Never	Some-times	Often	Always	*n*	Never	Some-times	Often	Always	*n*	Never	Some-times	Often	Always	
		%	%	%	%		%	%	%	%		%	%	%	%	
All men	*902*	9.7	70.3	15.3	4.8	*1030*	17.0	65.7	14.7	2.6	*977*	12.2	70.7	14.2	2.9	<0.001
18-34 yrs	*397*	6.3	67.3	19.9	6.6	*327*	9.8	64.5	22.3	3.4	*349*	10.0	71.4	15.2	3.4	0.02
35-49 yrs	*320*	14.1	69.4	13.8	2.8	*365*	18.1	66.6	13.7	1.6	*356*	12.4	69.1	15.7	2.8	0.38
50+ yrs	*185*	9.2	78.4	8.1	4.3	*338*	22.8	66.0	8.3	3.0	*272*	14.7	72.1	11.0	2.2	0.003
All women	*1116*	10.6	71.5	14.2	3.8	*1213*	15.8	71.2	10.5	2.5	*1157*	9.5	67.7	18.2	4.6	<0.001
18-34 yrs	*459*	8.1	69.5	18.3	4.1	*339*	11.8	71.7	14.8	1.8	*354*	8.2	69.8	16.7	5.4	0.08
35-49 yrs	*376*	8.5	76.1	10.1	5.3	*386*	14.3	71.8	10.1	3.9	*409*	8.8	69.7	17.4	4.2	0.002
50+ yrs	*281*	17.4	68.7	12.8	1.1	*488*	19.9	70.5	7.8	1.8	*394*	11.4	63.7	20.6	4.3	<0.001

[a] P-value for variations among countries in the frequency of eating between main meals, using chi-square tests.

3.2.5 Type of fat used in cooking

In all three countries, oil was the type of fat most commonly used for cooking (Table 11). However, it was more frequently used in Latvia (78%) and Estonia (73%), than in Lithuania (57%). Oil was more often mentioned by women than by men in each country. Lithuanians were more than three times as likely as respondents from other counties to use lard for cooking (Lithuania: 29%, Estonia: 8%, Latvia: 9%). Higher proportions of Estonians than Latvians and Lithuanians reported cooking with butter and margarine. In each country, men more frequently reported using animal fats (butter or lard) for cooking than women (26% vs 18%). In general, the use of oil decreased with age and that of lard increased with age except in Latvian women; in these women, the use of oil increased with age and few differences were observed for the use of lard.

3.2.6 Type of water used for drinking

The majority of the participants in the surveys reported usually drinking tap or well water (68% of Estonians, 50% of Latvians, 61% of Lithuanians) (Table 12). Bottled water was used by 10% of the respondents from Estonia, compared to only 3% of respondents from Latvia or Lithuania. In each country, the use of filtered and bottled water decreased with age in both men and women. Men were slightly more likely to drink bottled water than women. The consumption of boiled water was particularly high in Latvia (40%) compared with Estonia (13%) or Lithuania (27%), and it increased with age except in Latvian men.

3.2.7 Salt consumption

The use of salt at the table (if the food is not salty enough or almost always before tasting the foods) was particularly high in Latvia compared with the other countries (Table 13). Overall, 78% of men used it at least occasionally in Latvia compared with 57% in Estonia and 63% in Lithuania. The corresponding figures for women were consistently lower: 59%, 48% and 44% respectively. Overall, one in nine men and one in sixteen women almost always used salt at the table before tasting the foods. Respondents age 50 years and over were more likely to abstain from using salt at the table than younger respondents, except in Latvia where men 18-34 years were the least likely to use salt at the table compared with other men.

In Estonia, 19% of the respondents reported using salt that contains additives (Table 14). This was the case in only 5% of Latvians and Lithuanians. The types of salt with additives most commonly used were iodized salt and Pansalt (low sodium content) in Estonia, and iodized salt in Latvia and Lithuania (Table 15).

3.2.8 Consumption of vitamin and mineral supplements

The percentages of respondents who took vitamin and mineral supplements at least occasionally were 39% in Estonia, 48% in Latvia and 43% in Lithuania (Table 16). In each country, women more frequently reported taking supplements compared with men. One in five women was consuming supplements at least one month per year, compared with one in eight men. Approximately 5% of women and 3% of men took supplements daily. In women, the use of supplements decreased with age. In men, variations by age group differed among countries.

Table 11. Type of fat used for cooking by country, sex and age group.

Group	Estonia					Latvia					Lithuania					p-value[a]
	n	Butter	Marga-rine	Veget. oil	Animal fat/lard	*n*	Butter	Marga-rine	Veget. oil	Animal fat/lard	*n*	Butter	Marga-rine	Veget. oil	Animal fat/lard	
All men	*902*	9.3	12.3	68.6	9.8	*1060*	5.9	9.8	72.9	11.4	*987*	6.2	8.1	50.8	35.0	<0.001
18-34 yrs	*397*	8.6	10.3	76.1	5.0	*334*	6.6	9.9	74.6	9.0	*350*	7.4	7.7	53.7	31.1	<0.001
35-49 yrs	*320*	11.9	13.1	62.8	12.2	*369*	8.7	9.5	72.9	8.9	*361*	5.5	6.9	52.9	34.6	<0.001
50+ yrs	*185*	6.5	15.1	62.7	15.7	*357*	2.2	10.1	71.4	16.3	*276*	5.4	10.1	44.2	40.2	<0.001
All women	*1116*	5.6	12.4	75.7	6.4	*1232*	4.0	7.0	81.9	7.1	*1165*	5.5	7.3	63.1	24.1	<0.001
18-34 yrs	*459*	6.1	13.3	77.1	3.5	*341*	7.6	5.9	79.8	6.7	*358*	5.6	5.9	67.0	21.5	<0.001
35-49 yrs	*376*	4.8	12.2	75.5	7.5	*393*	3.6	7.6	81.2	7.6	*411*	4.9	7.3	64.0	23.8	<0.001
50+ yrs	*281*	5.7	11.0	73.7	9.6	*498*	1.8	7.2	83.9	7.0	*396*	6.1	8.6	58.6	26.8	<0.001

[a] P-value for variations among countries in the type of fat used for cooking, using chi-square tests.

Table 12. Type of water usually used for drinking by country, sex and age group.

Group	Estonia						Latvia						Lithuania						p-value[a]
	n	Tap water %	Well water %	Boiled %	Filte-red %	Bottled %	*n*	Tap water %	Well water %	Boiled %	Filte-red %	Bottled %	*n*	Tap water %	Well water %	Boiled %	Filte-red %	Bottled %	
All men	*902*	53.8	16.9	11.4	6.1	11.9	*1067*	32.1	23.7	35.9	5.4	2.9	*986*	42.9	25.5	20.1	8.4	3.1	<0.001
18-34 yrs	*397*	52.9	14.4	10.1	7.3	15.4	*337*	35.3	18.1	34.1	8.6	3.9	*349*	43.3	23.5	18.3	10.9	4.0	<0.001
35-49 yrs	*320*	55.3	16.6	11.3	5.3	11.6	*371*	32.1	21.3	38.0	5.4	3.2	*361*	44.9	23.0	19.4	9.7	3.1	<0.001
50+ yrs	*185*	53.0	22.7	14.6	4.9	4.9	*359*	29.0	31.5	35.4	2.5	1.7	*276*	39.9	31.2	23.2	3.6	2.2	<0.001
All women	*1116*	49.6	15.8	14.1	11.3	9.2	*1236*	26.8	18.6	47.2	4.9	2.6	*1166*	35.9	19.1	32.8	9.8	2.4	<0.001
18-34 yrs	*459*	47.1	13.1	11.3	14.2	14.4	*341*	25.5	18.2	41.9	8.5	5.9	*359*	35.1	16.4	29.8	14.8	3.9	<0.001
35-49 yrs	*376*	48.7	17.6	13.8	13.3	6.7	*396*	29.0	15.4	47.7	5.6	2.3	*411*	39.9	12.7	33.8	11.0	2.7	<0.001
50+ yrs	*281*	55.2	17.8	18.9	3.9	4.3	*499*	25.9	21.4	50.3	1.8	0.6	*396*	32.6	28.3	34.3	4.0	0.8	<0.001

[a] P-value for variations among countries in the type of water usually used for drinking, using chi-square tests.

Table 13. Proportion of respondents adding salt at the table by country, sex and age group.

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Never %	If food is not salty enough %	Almost always before tasting %	*n*	Never %	If food is not salty enough %	Almost always before tasting %	*n*	Never %	If food is not salty enough %	Almost always before tasting %	
All men	*902*	42.9	46.9	10.2	*1062*	22.4	64.1	13.5	*986*	37.0	52.8	10.1	<0.001
18-34 yrs	*397*	41.3	48.9	9.8	*336*	24.4	62.8	12.8	*350*	35.7	56.0	8.3	<0.001
35-49 yrs	*320*	40.9	46.9	12.2	*369*	20.9	63.4	15.7	*360*	34.7	52.8	12.5	<0.001
50+ yrs	*185*	49.7	42.7	7.6	*357*	22.1	66.1	11.8	*276*	41.7	48.9	9.4	<0.001
All women	*1116*	51.9	44.9	3.2	*1232*	40.8	47.6	11.6	*1165*	56.0	39.6	4.5	<0.001
18-34 yrs	*459*	45.5	51.0	3.5	*339*	40.1	53.4	6.5	*359*	52.7	43.2	4.2	0.007
35-49 yrs	*376*	53.5	43.9	2.7	*396*	40.7	48.0	11.4	*410*	54.4	40.7	4.9	<0.001
50+ yrs	*281*	60.1	36.3	3.6	*497*	41.5	43.3	15.3	*396*	60.6	35.1	4.3	<0.001

[a] P-value for variations among countries in the salt consumption at the table, using chi-square tests.

Table 14. Use of salt with additives by country.

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Yes %	No %	DK %	*n*	Yes %	No %	DK %	*n*	Yes %	No %	DK %	
All men	*902*	18.9	62.6	18.5	*1064*	4.2	84.0	11.8	*984*	3.2	86.0	10.9	<0.001
18-34 yrs	*397*	17.4	62.5	20.2	*336*	3.9	81.9	14.3	*349*	3.4	84.2	12.3	<0.001
35-49 yrs	*320*	18.4	64.1	17.5	*369*	5.2	83.2	11.7	*359*	3.9	85.0	11.1	<0.001
50+ yrs	*185*	22.7	60.5	16.8	*359*	3.6	86.9	9.5	*276*	1.8	89.5	8.7	<0.001
All women	*1116*	19.9	64.3	15.8	*1232*	6.1	86.0	7.9	*1164*	5.8	88.1	6.0	<0.001
18-34 yrs	*459*	17.9	61.7	20.5	*340*	6.8	85.6	7.7	*359*	6.7	88.3	5.0	<0.001
35-49 yrs	*376*	19.2	69.2	11.7	*395*	7.3	85.1	7.6	*410*	6.6	87.8	5.6	<0.001
50+ yrs	*281*	24.2	62.3	13.5	*497*	4.6	87.1	8.3	*395*	4.3	88.4	7.3	<0.001

[a] P-value for variations among countries in the use of salt with additives, using chi-square tests.

Table 15. Type of salt with additives used by country, sex and age group.

Group	Estonia					Latvia					Lithuania					p-value[a]
	n	Pansalt	Iodized	With K, Mg	Vegetta	*n*	Pansalt	Iodized	With K, Mg	Vegetta	*n*	Pansalt	Iodized	With K, Mg	Vegetta	
		%	%	%	%		%	%	%	%		%	%	%	%	
All men	*136*	41.9	47.1	11.0	0.0	*25*	0.0	76.0	24.0	0.0	*37*	8.1	86.5	5.4	0.0	<0.001
18-34 yrs	*53*	47.2	45.3	7.6	0.0	*10*	0.0	90.0	10.0	0.0	*11*	0.0	81.8	18.2	0.0	0.004
35-49 yrs	*49*	28.6	53.1	18.4	0.0	*10*	0.0	70.0	30.0	0.0	*18*	0.0	100.0	0.0	0.0	0.002
50+ yrs	*34*	52.9	41.2	5.9	0.0	*5*	0.0	60.0	40.0	0.0	*8*	37.5	62.5	0.0	0.0	0.003
All women	*179*	39.1	49.7	11.2	0.0	*58*	3.5	67.2	25.9	3.5	*70*	1.4	82.9	14.3	1.4	<0.001
18-34 yrs	*69*	32.3	58.5	9.2	0.0	*18*	11.1	55.6	33.3	0.0	*24*	0.0	72.0	24.0	4.0	0.003
35-49 yrs	*67*	41.3	41.3	17.5	0.0	*22*	0.0	62.5	29.2	8.3	*29*	0.0	92.6	7.4	0.0	<0.001
50+ yrs	*51*	45.1	49.0	5.9	0.0	*16*	0.0	87.5	12.5	0.0	*18*	5.6	83.3	11.1	0.0	0.001

[a] P-value for variations among countries in the reasons for choosing foods, using chi-square tests.

Table 16. Frequency of consumption of vitamin/mineral supplements by country, sex and age group.

Group	Estonia						Latvia						Lithuania						p-value[a]
	n	Don't use	Occa-sionally	1-2 mths/yr	3-4 mths/yr	Daily	*n*	Don't use	Occa-sionally	1-2 mths/yr	3-4 mths/yr	Daily	*n*	Don't use	Occa-sionally	1-2 mths/yr	3-4 mths/yr	Daily	
All men	*902*	67.4	20.8	6.1	2.6	3.1	*1068*	61.1	26.4	4.6	4.6	3.3	*976*	69.5	20.4	4.6	2.8	2.8	0.001
18-34 yrs	*397*	66.8	23.4	5.0	2.0	2.8	*337*	52.5	34.7	3.9	5.0	3.9	*347*	66.0	21.9	6.1	2.6	3.5	<0.001
35-49 yrs	*320*	69.7	18.1	6.9	2.5	2.8	*372*	61.3	25.0	5.1	5.7	3.0	*355*	71.6	20.0	3.7	2.8	2.0	0.03
50+ yrs	*185*	64.9	20.0	7.0	3.8	4.3	*359*	69.1	20.1	4.7	3.1	3.1	*274*	71.2	19.0	4.0	2.9	2.9	0.87
All women	*1116*	55.4	22.5	11.6	6.5	4.1	*1235*	44.9	35.1	7.5	7.5	5.1	*1157*	47.3	31.6	9.3	6.3	5.6	<0.001
18-34 yrs	*459*	46.8	29.6	10.0	7.8	5.7	*342*	35.7	40.1	7.6	11.1	5.6	*357*	42.0	34.7	11.5	5.9	5.9	0.008
35-49 yrs	*376*	57.2	20.2	13.0	6.4	3.2	*395*	40.8	36.7	9.6	8.6	4.3	*408*	48.0	29.7	8.6	7.1	6.6	<0.001
50+ yrs	*281*	66.9	13.9	12.1	4.3	2.9	*498*	54.4	30.3	5.8	4.0	5.4	*392*	51.3	30.6	7.9	5.9	4.3	<0.001

[a] P-value for variations among countries in the frequency of consumption of vitamin/mineral supplements, using chi-square tests.

3.2.9 Dietary beliefs

Dietary beliefs are described in Tables 17-21. More than half the respondents from Lithuania (52%) were aware that all types of fat do not give the same risk of various coronary diseases (Table 17). The corresponding figures for Estonia and Latvia were 43% and 29% respectively. In each country, women and younger respondents were more likely to know about the importance of considering the types of dietary fats. Knowledge about the possible harmful effects of dietary salt on health was slightly higher in Estonia (73%) than in Lithuania (71%) or Latvia (66%) (Table 18). Women were more likely to have answered correctly than men in each country, as were younger women compared with women age 50 years and over. In men, the knowledge of the effects of salt decreased with age in Lithuania, but in Estonia and Latvia it was highest in middle aged men.

Meat was not considered to be an essential component in an everyday healthy diet by 52% of Lithuanians, 47% of Estonians, and 42% of Latvians (Table 19). Women were more likely than men to believe that meat does not need to be consumed daily. Variations by age were observed but they differed by country and sex. The majority of the respondents (66% of the Estonians, 60% of the Lithuanians, and 46% of the Latvians) said that alcohol has a high energy content (Table 20). In Estonia and Lithuania, women were more likely than men to say that alcohol was high in calories, while the reverse trend was observed (but only slightly) in Latvia.

In Estonia, other dietary beliefs were investigated (Table 21). Overall, 57% of the respondents either believed that bread and potatoes are fattening or did not know the correct answer. About 29% thought that bread and potatoes are a good source of protein. Finally, 35% of the respondents did not think that potatoes are a good source of vitamin C, but 30% did not know if they are or not. The majority of the respondents (63%) said that they did not know whether tea could cause iron deficiency; 18% of the men and 14% of the women said that it does not.

3.3 Mean energy, nutrient and food intakes

Mean energy, nutrient and food intakes are showed in Tables 22-25. Overall, mean energy intake was lowest in Estonia, intermediate in Latvia, and highest in Lithuania, in both men and women (Table 22). In men and women from Estonia and Latvia, and in Lithuanian men, energy intake decreased with age. In Lithuanian women, it did not tend to vary by age. The median ratios of energy intake to estimated basal metabolic rate in men were 1.16, 1.32, and 1.36 in Estonia, Latvia and Lithuania, respectively. The corresponding figures for women were 1.09, 1.16, and 1.29.

Between-country differences in crude carbohydrate, protein and fat intakes generally followed the pattern observed for energy intake, with Estonia reporting the lowest intakes. The distribution of crude alcohol intake during the day before the interview tended to vary among countries, but the median intake was zero in each country. The mean proportion of energy from fat was high in men and women from all three countries, but it was particularly high in Lithuania (44%) and Latvia (42%) compared with Estonia (36%). In contrast, percent energy from carbohydrate, protein and alcohol was generally higher in Estonia than in the other countries. Mean protein intake by kilogram of body weight (around 1 g/kg and lowest 0.8 g/kg) tended to decrease with age, and it was higher in men than in women. It was lower in Estonian than in Latvian and Lithuanian men; in women, the intake was slightly higher in Lithuania than in the other two countries.

Table 17. Dietary belief by country: "All fats give the same risk of various coronary disease".

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	
All men	*902*	39.7	36.8	23.5	*1058*	27.4	36.5	36.1	*986*	45.3	19.3	35.4	<0.001
18-34 yrs	*397*	44.6	33.8	21.7	*335*	27.8	32.8	39.4	*349*	47.3	17.8	35.0	<0.001
35-49 yrs	*320*	42.5	35.3	22.2	*367*	26.4	40.3	33.2	*361*	46.0	21.1	33.0	<0.001
50+ yrs	*185*	24.3	46.0	29.7	*356*	28.1	36.0	36.0	*276*	42.0	18.8	39.1	<0.001
All women	*1116*	46.5	35.6	17.9	*1218*	30.8	43.5	25.7	*1162*	58.1	20.7	21.2	<0.001
18-34 yrs	*459*	52.9	30.5	16.6	*339*	36.6	36.3	27.1	*359*	62.4	18.9	18.7	<0.001
35-49 yrs	*376*	46.8	40.7	12.5	*387*	32.0	44.2	23.8	*407*	59.5	22.6	17.9	<0.001
50+ yrs	*281*	35.6	37.0	27.4	*492*	25.8	48.0	26.2	*396*	52.8	20.5	26.8	<0.001

[a] P-value for variations answers to this assertion, using chi-square tests.

Table 18. Dietary belief by country: "More dietary salt in the diet is of no consequence for your health".

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	
All men	*902*	68.0	20.3	11.8	*1058*	62.2	20.9	16.9	*986*	66.9	16.5	16.5	0.001
18-34 yrs	*397*	65.2	21.7	13.1	*335*	59.7	23.0	17.3	*349*	71.1	13.8	15.2	0.006
35-49 yrs	*320*	72.2	18.1	9.7	*367*	66.2	19.1	14.7	*361*	65.4	17.7	16.9	0.09
50+ yrs	*185*	66.5	21.1	12.4	*356*	60.4	20.8	18.8	*276*	63.8	18.5	17.8	0.36
All women	*1116*	76.3	15.1	8.5	*1219*	69.2	21.2	9.6	*1161*	73.6	17.5	8.9	0.002
18-34 yrs	*459*	77.6	15.0	7.4	*339*	73.8	20.1	6.2	*358*	76.5	17.6	5.9	0.39
35-49 yrs	*376*	77.9	15.2	6.9	*387*	73.6	18.4	8.0	*407*	73.5	18.2	8.4	0.62
50+ yrs	*281*	72.2	15.3	12.5	*493*	62.7	24.1	13.2	*396*	71.2	16.7	12.1	0.01

[a] P-value for variations answers to this assertion, using chi-square tests.

Table 19. Dietary belief by country: "Meat is an essential component in everyday healthy diet".

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	
All men	*902*	42.1	49.0	8.9	*1058*	33.0	51.0	16.0	*986*	44.5	43.3	12.2	<0.001
18-34 yrs	*397*	37.5	51.9	10.6	*335*	35.2	47.2	17.6	*349*	49.3	38.7	12.0	<0.001
35-49 yrs	*320*	47.5	45.3	7.2	*367*	32.4	54.5	13.1	*361*	40.7	47.9	11.4	0.001
50+ yrs	*185*	42.7	49.2	8.1	*356*	31.5	51.1	17.4	*276*	43.5	43.1	13.4	0.002
All women	*1116*	50.6	39.3	10.1	*1219*	50.1	36.3	13.5	*1162*	58.8	30.5	10.8	<0.001
18-34 yrs	*459*	46.2	42.3	11.6	*339*	52.8	31.0	16.2	*359*	61.6	27.0	11.4	<0.001
35-49 yrs	*376*	52.4	39.9	7.7	*387*	56.1	34.4	9.6	*407*	59.7	31.7	8.6	0.17
50+ yrs	*281*	55.5	33.5	11.0	*493*	43.6	41.6	14.8	*396*	55.3	32.3	12.4	0.003

[a] P-value for variations answers to this assertion, using chi-square tests.

Table 20. Dietary belief by country: "Alcohol has a high calorie content".

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	*n*	Wrong %	Right %	DK %	
All men	*902*	22.4	63.5	14.1	*1058*	18.4	47.7	33.8	*986*	10.3	55.9	33.8	<0.001
18-34 yrs	*397*	19.7	62.2	18.1	*335*	17.0	50.5	32.5	*349*	9.7	55.6	34.7	<0.001
35-49 yrs	*320*	27.5	62.8	9.7	*367*	19.6	49.1	31.3	*361*	8.9	61.5	29.6	<0.001
50+ yrs	*185*	19.5	67.6	13.0	*356*	18.5	43.8	37.6	*276*	13.0	48.9	38.0	<0.001
All women	*1116*	14.3	67.3	18.5	*1219*	17.2	45.3	37.5	*1161*	8.6	62.8	28.6	<0.001
18-34 yrs	*459*	14.6	68.4	17.0	*339*	14.8	54.0	31.3	*359*	9.2	70.2	20.6	<0.001
35-49 yrs	*376*	16.0	70.7	13.3	*387*	18.9	49.6	31.5	*406*	9.9	66.3	23.9	<0.001
50+ yrs	*281*	11.4	60.9	27.8	*493*	17.7	35.9	46.5	*396*	6.8	52.5	40.7	<0.001

[a] P-value for variations answers to this assertion, using chi-square tests.

Table 21. Other dietary beliefs in Estonia.

Group	Bread and potatoes are fattening				Bread and potatoes are a good source of protein				Potatoes are a good source of vitamin C				The consumption of tea could cause iron deficiency			
	n	Wrong	Right	Don't know	*n*	Wrong	Right	Don't know	*n*	Wrong	Right	Don't know	*n*	Wrong	Right	Don't know
		%	%	%		%	%	%		%	%	%		%	%	%
All men	*902*	45.5	31.9	22.6	*902*	35.3	29.4	35.4	*902*	35.9	30.8	33.3	*902*	18.3	16.5	65.2
18-34 yrs	*397*	43.8	32.8	23.4	*397*	35.0	30.0	35.0	*397*	35.5	29.2	35.3	*397*	18.9	14.6	66.5
35-49 yrs	*320*	47.2	30.6	22.2	*320*	37.5	25.9	36.6	*320*	39.4	30.3	30.3	*320*	17.5	19.7	62.8
50+ yrs	*185*	46.0	32.4	21.6	*185*	31.9	34.1	34.1	*185*	30.8	35.1	34.1	*185*	18.4	15.1	66.5
All women	*1116*	40.3	44.3	15.4	*1116*	40.0	28.9	31.2	*1116*	34.8	38.4	26.8	*1116*	13.5	24.9	61.6
18-34 yrs	*459*	38.6	48.2	13.3	*459*	37.3	29.4	33.3	*459*	32.5	37.7	29.9	*459*	13.7	24.4	61.9
35-49 yrs	*376*	44.2	43.4	12.5	*376*	48.1	24.5	27.4	*376*	40.7	37.5	21.8	*376*	13.6	27.7	58.8
50+ yrs	*281*	38.1	39.2	22.8	*281*	33.5	33.8	32.7	*281*	30.6	40.9	28.5	*281*	13.2	22.1	64.8

Table 22. Mean daily energy and macronutrient intakes by sex, age group and country.

Nutrient	All ages			19-34 years			35-49 years			50+ years		
	Estonia *n=900*	Latvia *n=1065*	Lithuania *n=2606*	Estonia *n=396*	Latvia *n=337*	Lithuania *n=339*	Estonia *n=319*	Latvia *n=372*	Lithuania *n=357*	Estonia *n=185*	Latvia *n=356*	Lithuania *n=266*
Men												
Crude intakes												
Energy (kcal)												
Mean (SD)	2278 (1144)	2583 (1196)	2606 (1028)	2464 (1255)	2822 (1244)	2663 (1008)	2190 (1103)	2594 (1227)	2649 (1020)	2033 (873)	2345 (1067)	2477 (1056)
Transf. Mean[a]	2139	2456[b]	2507[b]	2319	2693[b]	2572[c]	2040	2459[b]	2551[b]	1939	2238[c]	2369[b]
Carbohydrate (g)												
Mean (SD)	225 (115)	263 (125)	249 (113)	241 (128)	285 (138)	262 (118)	215 (105)	266 (132)	246 (106)	208 (97)	239 (99)	236 (113)
Transf. Mean	211	250[b]	237[b]	226	270[b]	249	201	252[b]	235[b]	197	230[c]	224
Protein (g)												
Mean (SD)	80 (44)	87 (46)	87 (40)	84 (47)	94 (48)	89 (38)	76 (42)	87 (46)	88 (41)	75 (37)	80 (43)	82 (41)
Transf. Mean	74	82[b]	82[b]	78	88[c]	85	70	82[b]	83[b]	70	75	77
Protein (g/kg)												
Mean (SD)	1.0 (0.6)	1.1 (0.6)	1.1 (0.5)	1.1 (0.6)	1.2 (0.6)	1.1 (0.5)	1.0 (0.5)	1.1 (0.6)	1.1 (0.5)	1.0 (0.5)	1.0 (0.5)	1.0 (0.5)
Transf. Mean	0.94	1.04[b]	1.04[b]	1.00	1.14[c]	1.09	0.88	1.03[c]	1.04[b]	0.91	0.96	0.97
Fat (g)												
Mean (SD)	95 (63)	127 (80)	135 (72)	106 (72)	141 (82)	136 (70)	89 (56)	126 (81)	139 (74)	82 (48)	115 (76)	129 (74)
Transf. Mean	85	116[b]	126[b,d]	96	131[b]	127[b]	78	115[b]	129[b]	75	104[b]	119[b]
Alcohol (g)												
Mean (SD)	24 (62)	5 (22)	7 (24)	23 (55)	5 (16)	5 (18)	28 (74)	6 (26)	9 (27)	19 (51)	5 (22)	6 (25)
Median	0	0[f]	0[f]	0	0[f]	0[f]	0	0[f]	0	0	0	0
Intakes as percent of energy												
Carbohydrate												
Mean (SD)	42.7 (14.0)	42.4 (11.8)	39.4 (12.3)[b,e]	41.8 (13.1)	41.3 (11.2)	40.2 (12.1)	43.6 (15.5)	42.6 (11.8)	38.4 (11.9)[b,e]	43.1 (13.0)	43.2 (12.4)	39.5 (12.8)[c,d]
Protein												
Mean (SD)	14.7 (4.7)	13.7 (4.2)[b]	13.5 (4.0)[b]	14.3 (4.6)	13.5 (4.1)	13.6 (3.6)	14.7 (4.8)	13.8 (4.5)	13.4 (4.0)[c]	15.4 (4.7)	13.8 (4.0)[b]	13.6 (4.4)[b]
Fat												
Mean (SD)	36.5 (12.6)	42.7 (11.7)[b]	45.4 (12.2)[b,e]	37.9 (12.2)	44.2 (11.0)[b]	44.7 (11.9)[b]	35.0 (13.2)	42.1 (12.0)[b]	45.8 (12.1)[b,e]	35.8 (12.2)	41.8 (11.9)[b]	45.5 (12.6)[b,d]
Alcohol												
Mean (SD)	6.2 (13.7)	1.2 (4.4)	1.8 (5.8)	6.0 (12.3)	1.0 (2.9)	1.4 (4.4)	6.7 (14.8)	1.5 (5.6)	2.3 (7.4)	5.7 (14.4)	1.1 (4.2)	1.4 (4.9)
Median	0	0[f]	0[f]	0	0[f]	0[f]	0	0[f]	0	0	0	0

/continued…

(continued) Table 22. Mean daily energy and macronutrient intakes by sex, age group and country.

Nutrient	All ages			19-34 years			35-49 years			50+ years		
	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania
	n=1115	*n=1235*	*n=1132*	*n=459*	*n=342*	*n=350*	*n=376*	*n=396*	*n=402*	*n=280*	*n=497*	*n=380*
Women												
Crude intakes												
Energy (kcal)												
Mean (SD)	1640 (766)	1791 (799)	1953 (832)	1760 (801)	1857 (792)	1913 (805)	1605 (765)	1835 (870)	1970 (873)	1491 (676)	1710 (738)	1973 (812)
Transf. Mean[a]	1552	1709[b]	1865[b,e]	1670	1779	1832[c]	1515	1740[b]	1873[b]	1416	1637[b]	1888[b,e]
Carbohydrate (g)												
Mean (SD)	185 (91)	195 (94)	203 (98)	197 (100)	200 (94)	195 (84)	181 (88)	194 (96)	203 (104)	170 (75)	192 (91)	209 (93)
Transf. Mean	174	185[c]	191[b]	185	190	185	171	183	190[c]	162	182[c]	199[b]
Protein (g)												
Mean (SD)	59 (29)	60 (31)	68 (34)	61 (28)	61 (32)	68 (33)	58 (30)	61 (31)	68 (36)	55 (27)	59 (30)	68 (33)
Transf. Mean	55	56	64[b,e]	58	57	64[d]	55	58	64[b]	52	55	64[b,e]
Protein (g/kg)												
Mean (SD)	0.9 (0.5)	0.9 (0.5)	1.0 (0.5)	1.0 (0.5)	1.0 (0.5)	1.1 (0.5)	0.9 (0.5)	0.9 (0.5)	1.0 (0.6)	0.8 (0.4)	0.8 (0.4)	0.9 (0.5)
Transf. Mean	0.86	0.83	0.94[c,e]	0.97	0.92	1.01	0.84	0.86	0.94	0.74	0.75	0.88[b,e]
Fat (g)												
Mean (SD)	69 (42)	84 (51)	96 (54)	75 (43)	89 (52)	95 (51)	66 (41)	89 (53)	97 (55)	61 (38)	78 (46)	95 (55)
Transf. Mean	62	78[b]	88[b,e]	69	82[b]	88[e]	59	82[e]	89[b]	55	72[b]	88[b,e]
Alcohol (g)												
Mean (SD)	4 (15)	1 (10)	2 (10)	4 (14)	2 (11)	2 (8)	5 (17)	1 (11)	2 (10)	3 (16)	1 (8)	1 (11)
Median	0	0	0	0	0	0	0	0	0	0	0	0
Intakes as percent of energy												
Carbohydrate												
Mean (SD)	47.3 (12.6)	44.6 (11.9)[b]	42.7 (12.8)[b,e]	46.4 (13.0)	44.3 (12.1)	42.1 (12.9)[b]	47.4 (12.4)	43.5 (11.7)[b]	42.3 (13.5)[b]	48.5 (12.3)	45.7 (12.0)[c]	43.8 (11.9)[b]
Protein												
Mean (SD)	15.0 (4.4)	13.7 (4.8)[b]	14.1 (4.3)[b]	14.6 (4.5)	13.3 (5.0)[b]	14.3 (4.3)	15.2 (4.5)	13.7 (4.4)[b]	14.0 (4.6)[b]	15.3 (4.3)	14.0 (4.9)[c]	13.9 (4.0)[b]
Fat												
Mean (SD)	36.3 (11.3)	41.1 (11.3)[b]	42.6 (11.6)[b,d]	37.4 (11.2)	41.8 (11.4)[b]	43.1 (11.4)[b]	35.6 (11.4)	42.2 (11.1)[b]	42.9 (11.8)[b]	35.3 (11.3)	39.8 (11.4)[b]	41.9 (11.5)[b]
Alcohol												
Mean (SD)	1.5 (5.8)	0.5 (3.1)	0.6 (3.7)	1.6 (5.6)	0.6 (2.6)	0.5 (2.5)	1.8 (6.2)	0.5 (3.7)	0.8 (4.8)	1.0 (5.6)	0.4 (2.9)	0.5 (3.4)
Median	0	0	0	0	0	0	0	0	0	0	0	0

[a] Transf. Mean=the variable was transformed using a square root transformation before the analyses to improve normality. The transformed values were returned to their original units.
[b] Different ($p<0.001$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.
[c] Different ($p<0.01$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.
[d] Different ($p<0.01$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.
[e] Different ($p<0.001$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.
[f] Difference in the distribution of intakes ($p<0.001$) compared with Estonia, using Krusdal-Wallis analysis of variance.

Table 23. Mean daily intakes of vitamins (excluding supplements) by sex, age group and country.

Nutrient	All ages			19-34 years			35-49 years			50+ years		
	Estonia *n=900*	Latvia *n=1065*	Lithuania *n=2606*	Estonia *n=396*	Latvia *n=337*	Lithuania *n=339*	Estonia *n=319*	Latvia *n=372*	Lithuania *n=357*	Estonia *n=185*	Latvia *n=356*	Lithuania *n=266*
Men												
Crude intakes (units)												
Vitamin C (mg)												
Mean (SD)	82 (96)	64 (63)	128 (108)	85 (105)	69 (54)	132 (117)	84 (93)	62 (68)	130 (102)	69 (81)	61 (65)	122 (102)
Transf. Mean[a]	62	52[b]	110[b,c]	66	59	113[b,c]	63	50	112[b,c]	53	49	104[b,c]
Thiamin (mg)												
Mean (SD)	1.4 (1.0)	1.6 (1.0)	1.6 (0.9)	1.5 (1.2)	1.7 (1.0)	1.6 (0.9)	1.3 (0.8)	1.6 (1.0)	1.7 (1.0)	1.2 (0.9)	1.5 (1.0)	1.5 (0.9)
Transf. Mean	1.2	1.5[b]	1.5[b]	1.4	1.6[d]	1.5	1.1	1.4[b]	1.6[b]	1.1	1.4[b]	1.4[b]
Riboflavin (mg)												
Mean (SD)	1.4 (1.1)	1.7 (1.1)	1.7 (1.0)	1.5 (1.1)	1.8 (1.3)	1.8 (1.1)	1.4 (1.2)	1.6 (0.9)	1.7 (1.0)	1.4 (1.0)	1.6 (0.9)	1.6 (0.9)
Transf. Mean	1.2	1.5[b]	1.6[b]	1.3	1.7[b]	1.7[b]	1.2	1.5[b]	1.6[b]	1.2	1.5[b]	1.5[b]
Niacin (mg NE)												
Mean (SD)	32 (18)	17 (11)	23 (22)	35 (19)	19 (13)	23 (20)	30 (17)	17 (10)	24 (22)	29 (16)	15 (9)	21 (24)
Geometric mean	27	15[b]	17[b,c]	30	16[b]	18[b]	24	15[b]	17[b,d]	25	13[b]	15[b]
Retinol (µg RE)												
Mean (SD)	1882 (5986)	986 (2025)	933 (1382)	1780 (4879)	1290 (3222)	972 (1573)	1973 (7080)	831 (732)	955 (1298)	1947 (6107)	860 (1334)	856 (1225)
Geometric mean	742	666	662	844	775	649[b]	638	617	686	730	626	646
Intakes (units) per 10 MJ												
Vitamin C (mg)												
Mean (SD)	91 (108)	64 (59)	128 (154)	88 (98)	64 (51)	126 (122)	99 (122)	62 (61)	129 (162)	86 (102)	67 (64)	130 (177)
Transf. Mean[a]	46	41	90[b,c]	48	44	90[b,c]	47	37	91[b,c]	42	42	89[b,c]
Thiamin (mg)												
Mean (SD)	1.4 (0.8)	1.5 (0.5)	1.5 (0.6)	1.5 (0.9)	1.5 (0.5)	1.5 (0.6)	1.4 (0.6)	1.5 (0.5)	1.5 (0.6)	1.4 (0.6)	1.5 (0.5)	1.5 (0.6)
Transf. Mean	1.3	1.4[d]	1.4	1.4	1.4	1.4	1.3	1.4	1.4[d]	1.3	1.4	1.4
Riboflavin (mg)												
Mean (SD)	1.5 (1.1)	1.6 (0.9)	1.6 (0.7)	1.5 (0.9)	1.6 (0.8)	1.6 (0.8)	1.5 (1.2)	1.6 (1.1)	1.6 (0.7)	1.6 (1.4)	1.7 (0.8)	1.6 (0.7)
Transf. Mean	1.3	1.5[b]	1.5[b]	1.3	1.5[d]	1.5[b]	1.2	1.4[b]	1.5[b]	1.3	1.6[d]	1.5[d]
Niacin (mg NE)												
Mean (SD)	34 (12)	16 (8)	21 (17)	34 (11)	16 (8)	21 (17)	34 (13)	16 (7)	22 (18)	35 (12.8)	16 (8)	20 (17)
Geometric mean	32	15[b]	17[b,c]	33	15[b]	17[b,e]	31	15[b]	17[b]	32	15[b]	15[b]
Retinol (µg RE)												
Mean (SD)	2136 (7862)	946 (1618)	882 (1096)	1719 (3806)	1116 (2264)	891 (1285)	2418 (8986)	819 (879)	892 (1093)	2543 (11431)	918 (1462)	859 (800)
Geometric mean	887	683[b]	657[b]	929	721[b]	625[b]	805	634	670	947	701[b]	682[b]

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(continued) Table 23. Mean daily intakes of vitamin and minerals (excluding supplements) by sex, age group and country.

Nutrient	All ages			19-34 years			35-49 years			50+ years		
	Estonia *n=1115*	Latvia *n=1235*	Lithuania *n=1132*	Estonia *n=459*	Latvia *n=342*	Lithuania *n=350*	Estonia *n=376*	Latvia *n=396*	Lithuania *n=402*	Estonia *n=280*	Latvia *n=497*	Lithuania *n=380*
Women												
Crude intakes (units)												
Vitamin C (mg)												
Mean (SD)	82 (81)	70 (65)	121 (112)	89 (76)	77 (69)	121 (112)	86 (91)	70 (63)	129 (126)	65 (74)	65 (63)	112 (95)
Transf. Mean[a]	65	57[d]	101[b,c]	73	64	101[b,c]	67	58	107[b,c]	52	53	95[b,c]
Thiamin (mg)												
Mean (SD)	1.0 (0.6)	1.0 (0.6)	1.1 (0.7)	1.1 (0.7)	1.1 (0.7)	1.1 (0.6)	1.0 (0.6)	1.0 (0.6)	1.1 (0.8)	0.8 (0.5)	1.0 (0.6)	1.2 (0.7)
Transf. Mean	0.9	0.9	1.0[c,d]	1.0	1.0	1.0	0.9	0.9	1.0	0.8	0.9[b]	1.1[b,c]
Riboflavin (mg)												
Mean (SD)	1.1 (0.7)	1.3 (0.9)	1.4 (0.8)	1.2 (0.7)	1.3 (0.9)	1.3 (0.7)	1.1 (0.7)	1.3 (0.7)	1.3 (0.8)	1.0 (0.7)	1.3 (0.9)	1.5 (0.8)
Transf. Mean	1.0	1.2[b]	1.3[b,c]	1.1	1.2	1.2[d]	1.0	1.2[b]	1.3[b]	0.9	1.2[b]	1.4[b,c]
Niacin (mg NE)												
Mean (SD)	23 (12)	12 (8)	24 (25)	25 (12)	13 (9)	26 (26)	23 (11)	12 (7)	25 (26)	21 (11)	11 (8)	20 (22)
Geometric mean	21	10[b]	15[b,c]	22	11[b]	16[b,c]	21	10[b]	16[b,c]	19	9[b]	13[b,c]
Retinol (µg RE)												
Mean (SD)	1404 (4068)	814 (1612)	795 (1159)	1473 (3787)	860 (2265)	758 (853)	1498 (4467)	770 (792)	724 (763)	1163 (3956)	817 (1561)	902 (1645)
Geometric mean	643	579	552[b]	706	581	549[d]	642	578	528	554	577	583
Intakes (units) per 10 MJ												
Vitamin C (mg)												
Mean (SD)	130 (145)	102 (104)	165 (187)	132 (126)	109 (111)	171 (205)	138 (159)	99 (94)	175 (197)	115 (152)	100 (106)	149 (156)
Transf. Mean[a]	76	64[d]	111[b,c]	83	68	141[b,c]	76	64	117[b,c]	66	61	102[b,c]
Thiamin (mg)												
Mean (SD)	1.4 (0.6)	1.4 (0.5)	1.4 (0.5)	1.5 (0.7)	1.4 (0.5)	1.4 (0.5)	1.5 (0.7)	1.4 (0.5)	1.4 (0.5)	1.3 (0.6)	1.4 (0.4)	1.4 (0.5)
Transf. Mean	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.3[d]	1.3	1.3	1.3	1.3
Riboflavin (mg)												
Mean (SD)	1.7 (0.9)	1.7 (0.8)	1.8 (0.8)	1.6 (0.8)	1.7 (0.7)	1.7 (0.8)	1.6 (0.9)	1.7 (0.8)	1.7 (0.7)	1.7 (1.0)	1.8 (0.9)	1.9 (0.9)
Transf. Mean	1.5	1.6[b]	1.6[b]	1.5	1.6	1.6	1.5	1.6[d]	1.6	1.5	1.7[d]	1.7[b]
Niacin (mg NE)												
Mean (SD)	36 (12)	16 (8)	28 (26)	35 (12)	16 (8)	31 (28)	36 (12)	16 (8)	30 (28)	35 (11)	15 (8)	24 (23)
Geometric mean	34	14[b]	20[b,c]	34	15[b]	22[b,c]	35	15[b]	21[b,c]	33	14[b]	17[b,c]
Retinol (µg RE)												
Mean (SD)	2148 (5866)	1116 (1385)	1052 (1611)	2224 (5935)	1092 (1605)	1108 (1707)	2230 (6132)	1080 (1175)	908 (782)	1915 (5248)	1161 (1378)	1151 (2094)
Geometric mean	1038	848[b]	744[b,e]	1045	812[d]	749[b]	1066	841[d]	712[b,c]	990	881	775[b]

[a] Transf. Mean=The variable was transformed using a square root or log normal transformation before the analyses to improve normality. The values were returned to their original units.
[b] Different ($p<0.001$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.
[c] Different ($p<0.001$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.
[d] Different ($p<0.01$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.
[e] Different ($p<0.01$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.

Table 24. Mean daily intakes of minerals (excluding supplements) by sex, age group and country.

Nutrient	All ages			19-34 years			35-49 years			50+ years		
	Estonia *n=900*	Latvia *n=1065*	Lithuania *n=2606*	Estonia *n=396*	Latvia *n=337*	Lithuania *n=339*	Estonia *n=319*	Latvia *n=372*	Lithuania *n=357*	Estonia *n=185*	Latvia *n=356*	Lithuania *n=266*
Men												
Crude intakes (units)												
Iron (mg)												
Mean (SD)	15 (10)	19 (10)	23 (13)	16 (9)	20 (10)	23 (13)	15 (10)	19 (10)	24 (14)	15 (10)	17 (9)	22 (14)
Transf. Mean	14	17	21[b,c]	14	19[b]	21[b,e]	14	18[b]	22[b,c]	14	16	21[b,c]
Calcium (mg)												
Mean (SD)	716 (544)	855 (547)	858 (468)	760 (584)	951 (659)	882 (516)	658 (512)	832 (531)	853 (456)	723 (498)	787 (421)	835 (418)
Transf. Mean	625	783[b]	801[b,c]	668	863[b]	818[b]	567	757[b]	796[b]	637	736	786[b]
Phosphorus (mg)												
Mean (SD)	1485 (754)	1485 (687)	1502 (610)	1565 (834)	1587 (744)	1525 (610)	1420 (698)	1483 (700)	1520 (601)	1425 (646)	1389 (601)	1449 (620)
Transf. Mean	1393	1410	1442	1469	1507	1466	1327	1403	1460	1349	1329	1387
Potassium (mg)												
Mean (SD)	3760 (1818)	4246 (2187)	4905 (2698)	4009 (1918)	4471 (2262)	4912 (2483)	3602 (1845)	4281 (2289)	5090 (2816)	3500 (1458)	3995 (1976)	4649 (2787)
Transf. Mean	3535	3977[b]	4567[b,c]	3784	4199	4599[b]	3352	3985[b]	4735[b,c]	3333	3764	4307[b,e]
Magnesium (mg)												
Mean (SD)	347 (179)	383 (197)	441 (263)	369 (203)	415 (227)	442 (240)	333 (162)	383 (189)	459 (269)	325 (144)	353 (168)	414 (282)
Transf. Mean	327	363[b]	410[b,c]	347	392[d]	414[b]	313	364[b]	427[b,c]	309	337	383[b,e]
Intakes (units) per 10 MJ												
Iron (mg)												
Mean (SD)	17 (9)	18 (7)	21 (10)	16 (6.1)	17 (5)	21 (10)	18 (11)	18 (8)	22 (10)	18 (9)	18 (7)	22 (10)
Transf. Mean	15	17[b]	20[b,c]	15	17[b]	19[b,c]	16	17	20[b,c]	16	17	20[b,c]
Calcium (mg)												
Mean (SD)	784 (498)	838 (449)	822 (398)	769 (464)	841 (468)	815 (408)	765 (554)	805 (426)	799 (374)	849 (466)	869 (452)	861 (413)
Transf. Mean	711	784[b]	780[d]	702	784	771	684	753	760	781	818	819
Phosphorus (mg)												
Mean (SD)	1643 (509)	1429 (414)	1418 (370)	1577 (436)	1384 (394)	1403 (369)	1677 (587)	1417 (407)	1406 (344)	1727 (493)	1486 (434)	1454 (403)
Transf. Mean	1603	1400[b]	1395[b]	1546	1356[b]	1379[b]	1626	1388[b]	1385[b]	1687	1455[b]	1427[b]
Potassium (mg)												
Mean (SD)	4298 (2021)	4120 (1716)	4631 (2066)	4190 (1611)	3914 (1428)	4548 (2057)	4406 (2659)	4116 (1687)	4699 (2053)	4344 (1452)	4318 (1961)	4645 (2098)
Transf. Mean	4127	3956	4413[c,d]	4048	3786	4328[c]	4173	3947	4486[c]	4219	4130	4425
Magnesium (mg)												
Mean (SD)	394 (162)	370 (130)	414 (194)	378 (124)	361 (142)	407 (189)	412 (213)	371 (123)	423 (200)	398 (123)	377 (124)	411 (192)
Transf. Mean	364	353	379[c]	357	345	372	366	354	388	377	359	378

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(continued) Table 24. Mean daily intakes of minerals (excluding supplements) by sex, age group and country.

Nutrient	All ages			19-34 years			35-49 years			50+ years		
	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania
	n=1115	*n=1235*	*n=1132*	*n=459*	*n=342*	*n=350*	*n=376*	*n=396*	*n=402*	*n=280*	*n=497*	*n=380*
Women												
Crude intakes (units)												
Iron (mg)												
Mean (SD)	12 (7)	13 (7)	20 (12)	12 (7)	13 (7)	20 (12)	12 (7)	13 (7)	21 (13)	11 (7)	13 (8)	20 (12)
Transf. Mean	11	12[b]	18[b,c]	11	13	18[b,c]	11	12[d]	19[b,c]	10	12[b]	18[b,c]
Calcium (mg)												
Mean (SD)	589 (362)	742 (456)	782 (420)	614 (376)	715 (379)	739 (398)	571 (354)	775 (525)	766 (433)	574 (349)	734 (445)	837 (421)
Transf. Mean	533	680[b]	728[b]	557	665[b]	691[b]	515	701[b]	709[b]	518	673[b]	784[b,c]
Phosphorus (mg)												
Mean (SD)	1096 (485)	1081 (493)	1192 (528)	1123 (488)	1061 (457)	1155 (493)	1090 (491)	1096 (531)	1183 (461)	1059 (468)	1083 (487)	1236 (523)
Transf. Mean	1042	1027	1134[b,c]	1069	1013	1104	1035	1035	1116	1008	1030	1181[b,c]
Potassium (mg)												
Mean (SD)	3050 (1320)	3075 (1596)	4454 (2713)	3141 (1301)	3165 (1529)	4539 (2776)	3121 (1447)	3085 (1700)	4647 (2845)	2806 (1135)	3006 (1554)	4172 (2486)
Transf. Mean	2912	2879	4069[b,c]	3006	2981	4158[b,c]	2969	2875	4227[b,c]	2687	2814	3825[b,c]
Magnesium (mg)												
Mean (SD)	261 (109)	285 (143)	427 (305)	266 (109)	291 (126)	450 (331)	265 (112)	286 (133)	438 (305)	248 (103)	280 (161)	395 (275)
Transf. Mean	250	271[d]	384[b,c]	255	278	403[b,c]	254	272	392[b,c]	237	265	357[b,c]
Intakes (units) per 10 MJ												
Iron (mg)												
Mean (SD)	18 (8)	18 (8)	25 (14)	17 (9)	18 (7)	26 (13)	18 (7.9)	18 (9)	26 (14)	18 (8)	19 (8)	24 (14)
Transf. Mean	16	17	22[b,c]	16	17	23[b,c]	17	17	23[b,c]	17	17	22[b,c]
Calcium (mg)												
Mean (SD)	907 (524)	1033 (535)	1001 (467)	885 (507)	982 (513)	962 (409)	896 (513)	1041 (537)	982 (532)	956 (561)	1062 (546)	1056 (439)
Transf. Mean	839	970[b]	953[b]	818	920[d]	920[d]	829	977[b]	927	886	999[d]	1012[d]
Phosphorus (mg)												
Mean (SD)	1672 (456)	1492 (446)	1500 (404)	1590 (429)	1414 (429)	1482 (371)	1701 (456)	1472 (418)	1477 (449)	1767 (476)	1561 (468)	1540 (381)
Transf. Mean	1642	1460[b]	1473[b]	1561	1382[b]	1459[d]	1673	1444[b]	1444[b]	1737	1527[b]	1517[b]
Potassium (mg)												
Mean (SD)	4850 (1967)	4260 (1690)	5579 (2699)	4663 (1957)	4226 (1569)	5798 (2786)	5050 (1935)	4197 (1747)	5760 (2739)	4889 (2004)	4334 (1724)	5187 (2533)
Transf. Mean	4687	4098[b]	5272[b]	4499	4070[d]	5484[b,c]	4893	4034[b]	5447[c,d]	4727	4169[b]	4901[c]
Magnesium (mg)												
Mean (SD)	413 (155)	399 (154)	532 (316)	390 (149)	392 (126)	573 (359)	431 (164)	396 (149)	541 (314)	428 (148)	406 (175)	484 (267)
Transf. Mean	391	379	464[b,c]	369	373	494[b,c]	408	375	470[b,c]	405	386	431[c]

[a] Transf. Mean=The variable was transformed using a square root transformation before the analyses to improve normality. The transformed values were returned to their original units.

[b] Different ($p<0.001$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.

[c] Different ($p<0.001$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.

[d] Different ($p<0.01$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.

[e] Different ($p<0.01$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.

Table 25. Mean and median daily intakes (grams) of foods by sex, age group and country.

	All ages			19-34 years			35-49 years			50+ years		
	Estonia *n=900*	Latvia *n=1065*	Lithuania *n=962*	Estonia *n=396*	Latvia *n=337*	Lithuania *n=339*	Estonia *n=319*	Latvia *n=372*	Lithuania *n=357*	Estonia *n=185*	Latvia *n=356*	Lithuania *n=266*
Men												
Vegetables												
Mean (SD)	220 (195)	201 (235)	211 (211)	225 (207)	227 (263)	210 (199)	218 (186)	199 (224)	220 (230)	213 (182)	179 (214)	199 (198)
Median	187	120[a]	170[b]	185	150	180	187	120[c]	170	198	100[c]	162
Potatoes												
Mean (SD)	231 (201)	275 (281)	292 (309)	261 (214)	271 (280)	301 (333)	211 (198)	289 (291)	309 (309)	203 (169)	263 (270)	259 (274)
Median	202	225	225	240	225	225	200	225[a]	250[a]	200	225	200
Fruits												
Mean (SD)	135 (255)	67 (196)	139 (301)	151 (291)	87 (222)	118 (254)	145 (242)	56 (183)	142 (310)	87 (176)	58 (182)	160 (340)
Median	0	0[c]	0[c,d]	5	0[c]	0[c]	0	0[c]	0[a,d]	0	0[c]	0[d]
Vegetables and fruits (excluding potatoes)												
Mean (SD)	355 (331)	268 (330)	349 (370)	376 (360)	315 (373)	328 (327)	362 (330)	255 (312)	362 (395)	299 (255)	237 (301)	359 (388)
Median	277	200[c]	241[d]	298	225[c]	247	272	168[c]	220[d]	250	128[c]	270[d]
Cereals												
Mean (SD)	218 (175)	215 (183)	181 (162)	218 (190)	218 (187)	181 (159)	216 (160)	223 (194)	180 (149)	223 (169)	202 (166)	183 (183)
Median	177	161	148[c,d]	172	166[c]	150	180	161	150[b,c]	176	157[c]	146
Milk & milk products												
Mean (SD)	328 (383)	296 (369)	325 (353)	331 (389)	312 (436)	336 (390)	304 (385)	262 (344)	301 (337)	360 (365)	317 (321)	345 (324)
Median	233	200	237	244	200	230	200	135	200	264	250	268
Meat & meat products												
Mean (SD)	198 (172)	187 (200)	199 (178)	223 (184)	226 (211)	215 (187)	188 (168)	183 (196)	194 (171)	163 (140)	155 (187)	183 (176)
Median	166	140[a]	170[b]	188	195	180	150	140	175	150	100	150
Fish												
Mean (SD)	24 (72)	33 (126)	21 (59)	21 (65)	33 (144)	22 (65)	21 (61)	35 (132)	19 (52)	37 (96)	32 (97)	21 (62)
Median	0	0	0	0	0	0	0	0	0	0	0	0
Fats & oils												
Mean (SD)	39 (41)	20 (38)	40 (55)	44 (49)	20 (31)	36 (55)	35 (35)	22 (45	42 (55)	33 (31)	20 (36)	41 (55)
Median	29	10[c]	20[c,d]	30	10[c]	17[c,d]	28	10[c]	20[d]	28	10[c]	20[d]

/continued…

(continued) Table 25. Mean and median daily intakes (grams) of foods by sex, age group and country.

	All ages			19-34 years			35-49 years			50+ years		
	Estonia *n=1115*	Latvia *n=1235*	Lithuania *n=1132*	Estonia *n=459*	Latvia *n=342*	Lithuania *n=350*	Estonia *n=376*	Latvia *n=396*	Lithuania *n=402*	Estonia *n=280*	Latvia *n=496*	Lithuania *n=380*
Women												
Vegetables												
Mean (SD)	192 (166)	168 (176)	168 (180)	193 (171)	171 (172)	186 (195)	191 (151)	178 (174)	166 (169)	192 (178)	159 (179)	154 (176)
Median	160	102[c]	120[a]	154	118	140	159	120	121[c]	163	100[c]	100[c]
Potatoes												
Mean (SD)	177 (165)	172 (218)	191 (236)	172 (156)	164 (187)	183 (234)	191 (185)	173 (224)	197 (249)	165 (148)	177 (233)	193 (223)
Median	150	125[c]	150[c]	150	150	135	159	150[a]	150	150	80	150
Fruits												
Mean (SD)	168 (168)	96 (201)	199 (318)	211 (270)	118 (222)	192 (305)	172 (253)	106 (202)	222 (359)	94 (155)	74 (182)	182 (280)
Median	50	0[c]	35[d]	147	0[c]	60[a,d]	37	0[c]	38[d]	12	0[c]	0[d]
Vegetables and fruits (excluding potatoes)												
Mean (SD)	360 (308)	265 (282)	367 (372)	404 (326)	289 (289)	377 (373)	363 (318)	284 (285)	388 (402)	286 (242)	233 (271)	336 (335)
Median	295	200[c]	280[d]	350	200[c]	294[d]	277	200[c]	276[d]	243	150[c]	260[d]
Cereals												
Mean (SD)	160 (160)	148 (150)	115 (117)	162 (132)	128 (119)	102 (108)	158 (120)	148 (149)	110 (116)	157 (107)	161 (168)	134 (124)
Median	127	99[c]	86[c,d]	127	94[c]	77[b,c]	121	94[c]	80[b,c]	135	102	100[c]
Milk & milk products												
Mean (SD)	296 (296)	276 (311)	310 (306)	301 (269)	252 (259)	256 (265)	284 (258)	278 (352)	274 (286)	306 (263)	291 (307)	397 (340)
Median	250	200[c]	230[b]	250	193[a]	200[a]	243	200	200	250	215	333[a,d]
Meat & meat products												
Mean (SD)	123 (123)	94 (127)	117 (125)	134 (119)	112 (140)	122 (124)	126 (115)	103 (124)	117 (132)	102 (98)	74 (118)	112 (120)
Median	100	50[c]	100[a,d]	104	69[c]	100	100	70[c]	91	81	0[c]	80[d]
Fish												
Mean (SD)	22 (22)	21 (68)	16 (50)	21 (55)	28 (87)	16 (47)	19 (66)	17 (55)	18 (54)	30 (74)	21 (63)	14 (50)
Median	0	0	0	0	0	0	0	0	0	0	0	0
Fats & oils												
Mean (SD)	27 (26)	14 (21)	22 (34)	30 (27)	13 (21)	19 (31)	26 (24)	14 (22)	22 (31)	26 (26)	15 (22)	24 (39)
Median	20	10[c]	10[c,d]	23	10[c]	10[c]	19	10[c]	10[c,d]	20	10[c]	10[c]

[a] Difference in the distribution of intakes ($p<0.01$) compared with Estonia, using Krusdal-Wallis analysis of variance.

[b] Difference in the distribution of intakes ($p<0.01$) compared with Latvia, using Krudal-Wallis analysis of variance.

[c] Difference in the distribution of intakes ($p<0.001$) compared with Estonia, using Krusdal-Wallis analysis of variance.

[d] Difference in the distribution of intakes ($p<0.001$) compared with Latvia, using Krudal-Wallis analysis of variance.

Crude micronutrient intakes were generally higher among Lithuanians, possibly because of their higher total energy intakes (Tables 23-24). However, crude niacin intakes were higher among Estonians than among other respondents, and no difference in crude phosphorus intakes were observed in men. When micronutrient intakes were expressed as units (mg, mg NE, or μg RE) per 10MJ, the pattern of findings changed slightly for some nutrients. The results indicated that vitamin C intake was higher in Lithuania than in the other countries and that riboflavin intake was higher in Latvia and Lithuania than in Estonia. As for niacin intake, it remained highest in Estonia and lowest in Latvia, while retinol intake was significantly higher in Estonia than in the other countries. The highest mean iron, potassium and magnesium intakes were observed in Lithuania. Mean calcium intake was highest in Latvia and lowest in Estonia, but phosphorus intake was highest in Estonia.

The mean intakes of foods from different food groups (in grams per day) are described in Table 25, and the distributions of vegetable, fruit and potato intakes by country and sex are shown in Figures 3-20. In men, differences in the distribution of intakes among countries were observed for the intakes of vegetables (excluding potatoes), fruits, cereals, meat and meat products, and fats and oils. In Estonia, 92% of the respondents had consumed vegetables (excluding potatoes) the day before their interview, compared with 75% of the Latvians and 79% of the Lithuanians; median vegetable intakes were very low in each country. Latvian men tended to have lower intakes of vegetables (Figures 3-5), fruits (Figures 9-11), meat and meat products, and fats and oils than their Estonian and Lithuanian counterparts, while the intake of cereals was lower among Lithuanian than Estonian or Latvian male respondents. Fruit intake was particularly low in men, with median intakes equal to zero in all countries. No difference in the distribution of potato intakes was observed in men (Figures 15-17); the median intake was around 200-225 g/day. In women, we found that Latvian respondents were consuming lower quantities of fruits (Figures 12-14) and milk and milk products than Estonian and Lithuanian women. Intakes of cereals, meat and meat products, and fats and oils were highest in Estonia, intermediate in Lithuania and lowest in Latvia. Estonian women had higher intakes of vegetables than Latvian and Lithuanian women (Figures 6-8), but median intakes were extremely low in each country. The median potato intake of women was around 125-150 g/day, with Latvian women consuming less potatoes than the other respondents (Figures 18-20).

3.4 BMI and relative body weight status

The mean BMIs and distribution of respondents by body weight status are shown in Table 26. In each country, the mean BMI and the prevalence of obesity increased with age. The increase in the prevalence of obesity was particularly striking in women: in Estonia, the prevalence was 11 times higher in women age 50 years and over than in women less than 35, in Latvia it was 6 times higher, and in Lithuania it was 5 times higher. In men, the prevalence of obesity increased with age by more than 50% in Estonia, it tripled in Latvia and doubled in Lithuania.

Among men, mean BMI was slightly higher in Lithuania than in Estonia although the difference was only significant when all age groups were combined. Among women, there was rather more diversity. In all age groups, mean BMI was significantly higher in Latvia and in Lithuania than in Estonia. While there were relatively small differences in the distribution of BMI values in men (Figure 21), the distribution of the whole population was shifted to the right in women from Latvia compared with women from Estonia, and it was shifted slightly further to the right in women from Lithuania (Figure 22).

Figure 3. Mean daily intake of vegetables (excluding potatoes; g/day) in Estonian men.

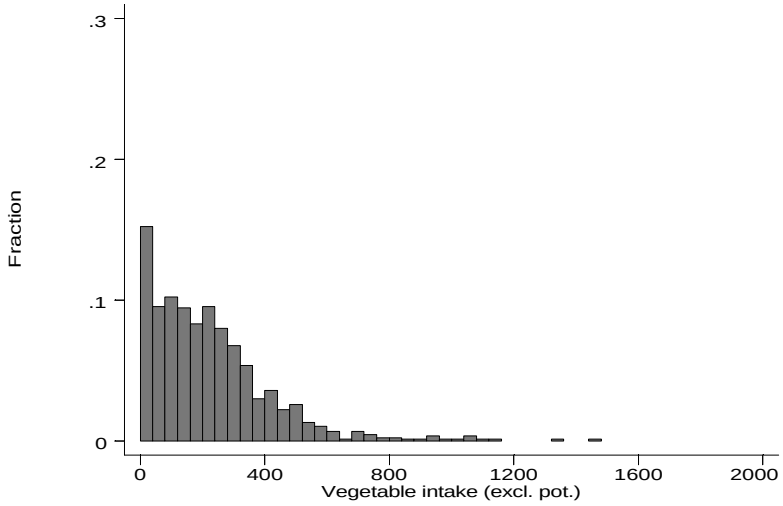

Figure 4. Mean daily intake of vegetables (excluding potatoes; g/day) in Latvian men.

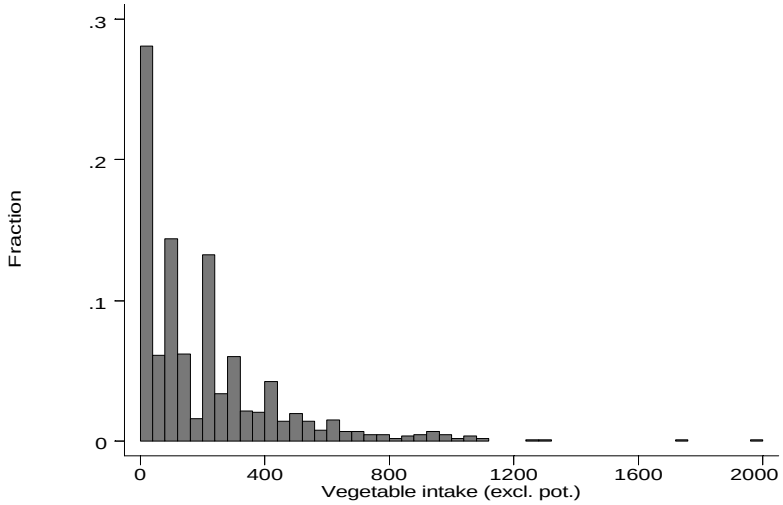

Figure 5. Mean daily intake of vegetables (excluding potatoes; g/day) in Lithuanian men.

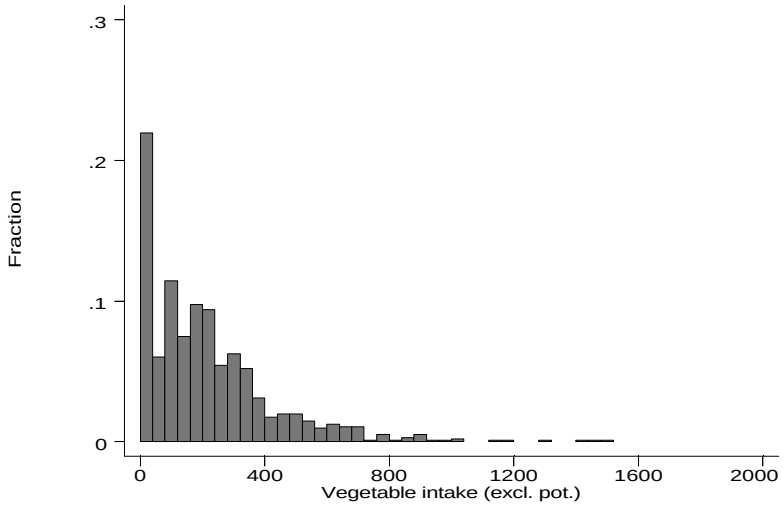

Figure 6. Mean daily intake of vegetables (excluding potatoes; g/day) in Estonian women.

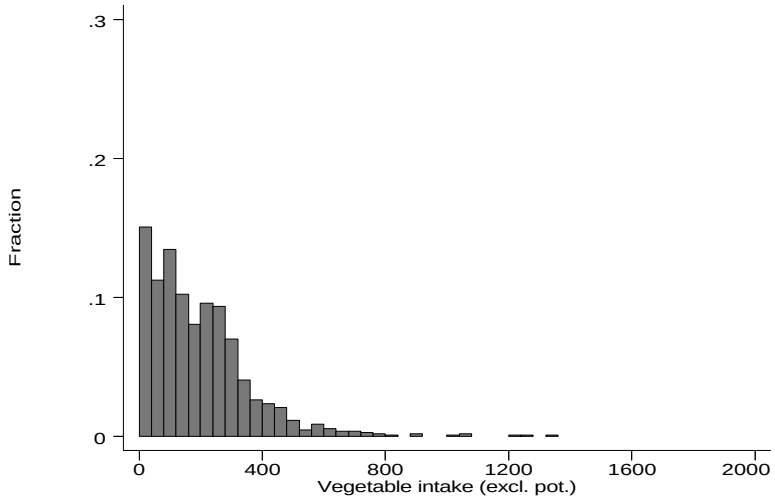

Figure 7. Mean daily intake of vegetables (excluding potatoes; g/day) in Latvian women.

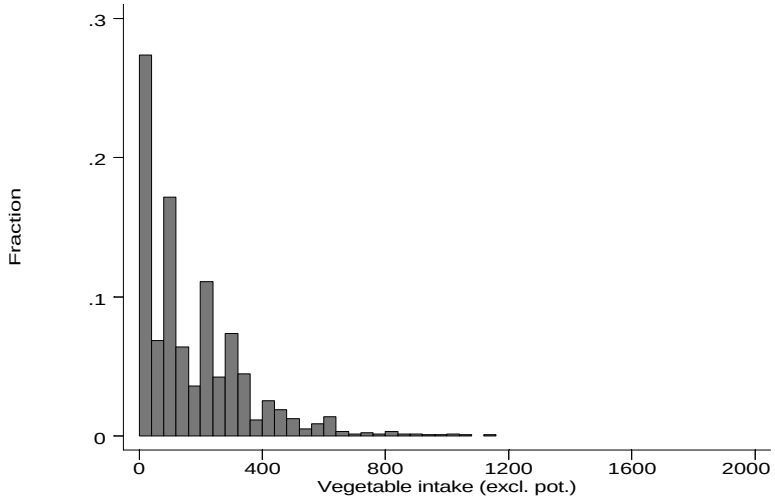

Figure 8. Mean daily intake of vegetables (excluding potatoes; g/day) in Lithuanian women.

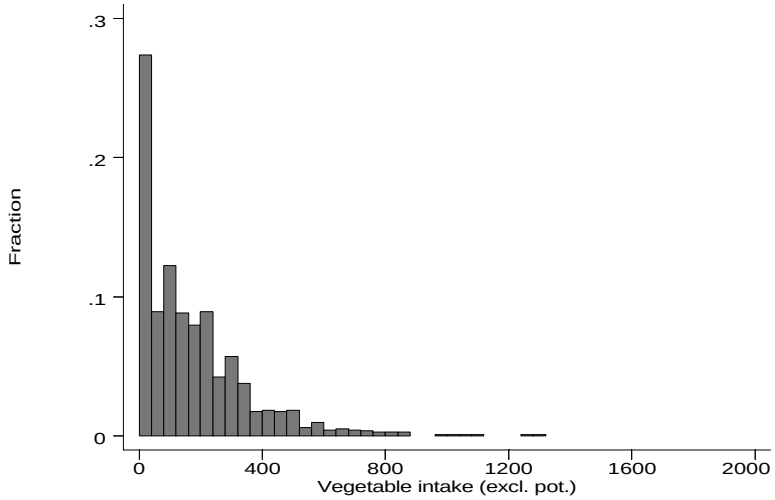

Figure 9. Mean daily intake of fruits (g/day) in Estonian men.

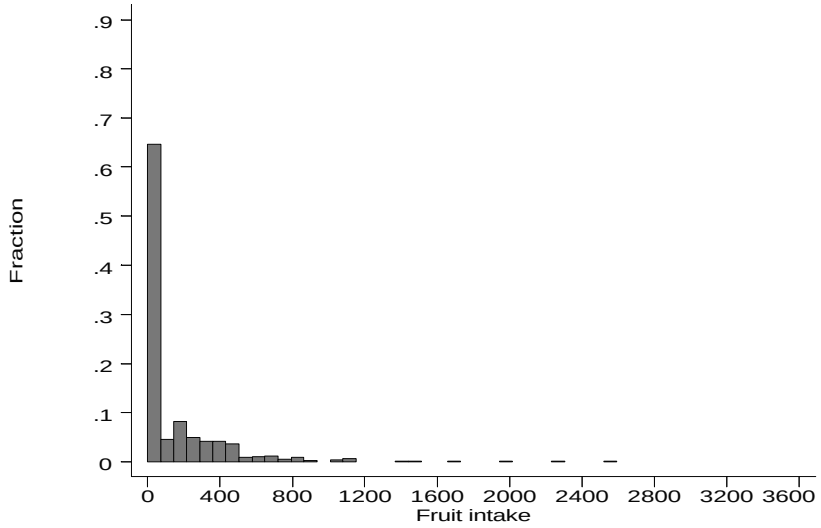

Figure 10. Mean daily intake of fruits (g/day) in Latvian men.

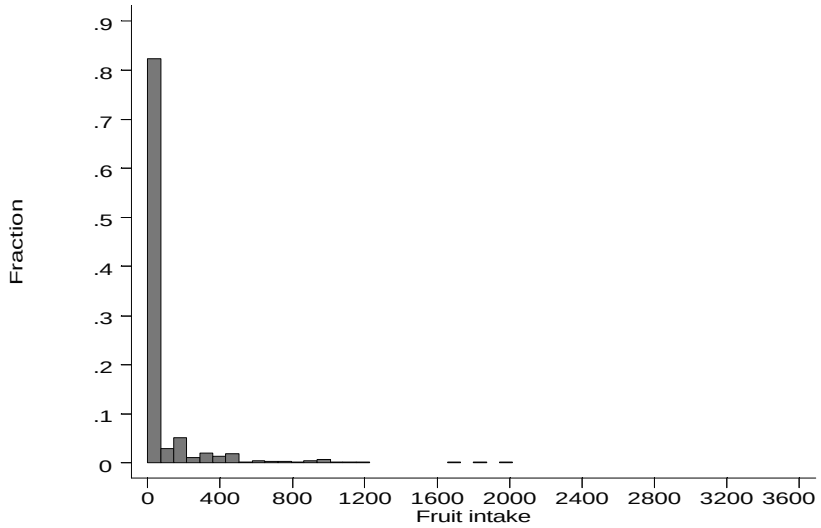

Figure 11. Mean daily intake of fruits (g/day) in Lithuanian men.

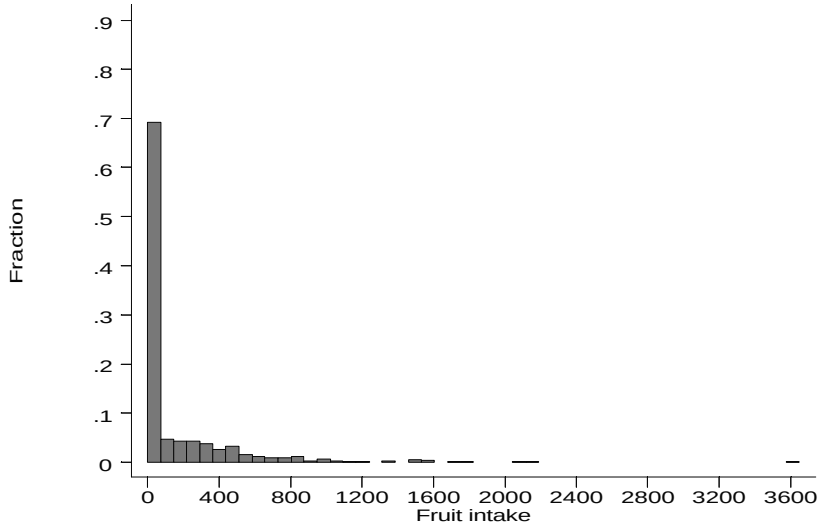

Figure 12. Mean daily intake of fruits (g/day) in Estonian women.

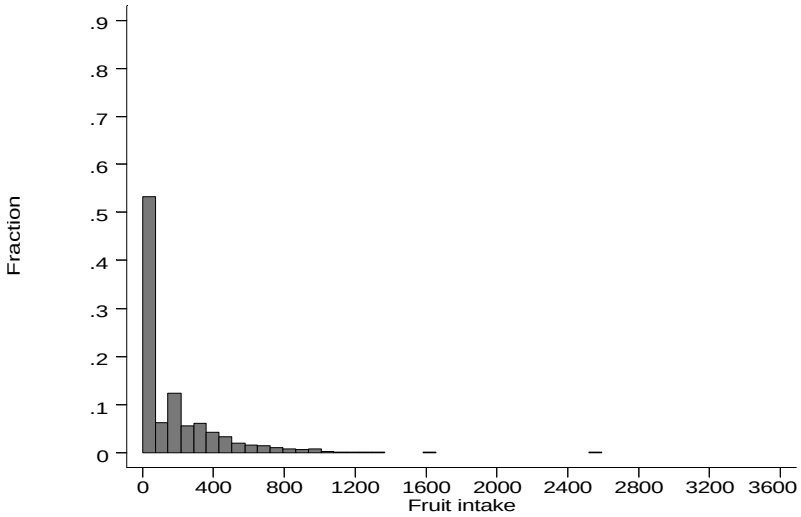

Figure 13. Mean daily intake of fruits (g/day) in Latvian women.

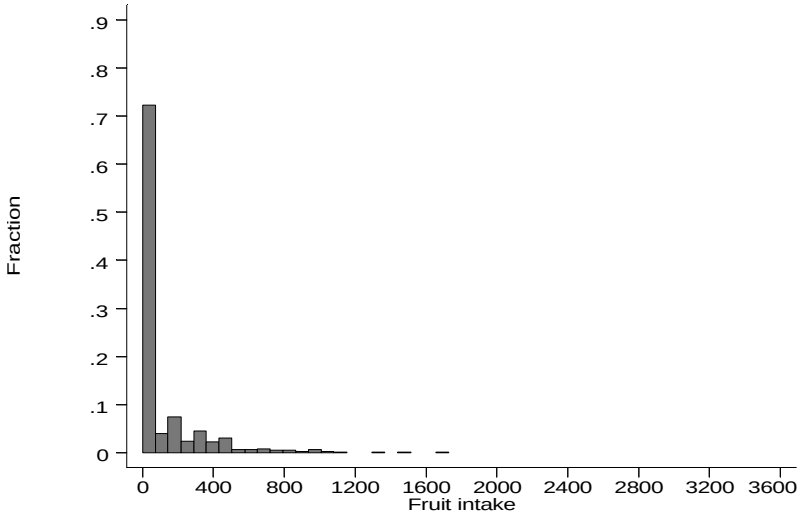

Figure 14. Mean daily intake of fruits (g/day) in Lithuanian women.

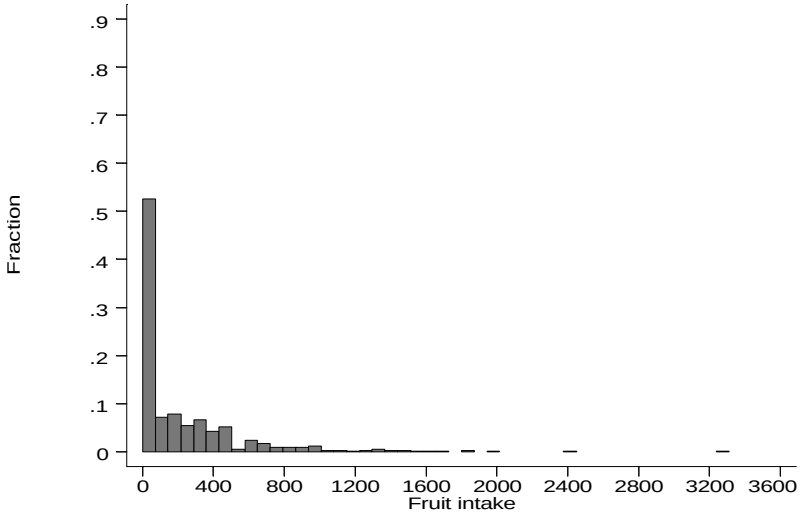

Table 26. Mean BMI and relative body weight status by country, sex and age group.

Group	Estonia							Latvia							Lithuania							p-value[b]
	n	BMI		Under-weight	Normal weight	Over-weight	Obese	*n*	BMI		Under-weight	Normal weight	Over-weight	Obese	*n*	BMI		Under-weight	Normal weight	Over-weight	Obese	
		Mean (SD)	Geom. mean[a]	%	%	%	%		Mean (SD)	Geom. mean	%	%	%	%		Mean (SD)	Geom. mean	%	%	%	%	
Men																						
All	*525*	25.1 (3.7)	24.8	1.3	56.8	32.0	9.9	*1062*	25.5(3.7)	25.2	0.9	48.7	41.0	9.5	*966*	25.8 (3.8)	25.6[c]	0.4	46.3	41.9	11.4	0.001
19-34 yrs	*258*	24.5 (3.8)	24.2	1.9	62.8	27.1	8.1	*335*	24.2 (3.0)	24.0	0.6	65.7	30.2	3.6	*345*	24.8 (3.3)	24.6	0.6	59.4	33.9	6.1	0.06
35-49 yrs	*174*	25.5 (3.5)	25.3	1.2	52.9	35.1	10.9	*368*	25.8 (3.7)	25.6	0.5	44.8	44.3	10.3	*352*	26.1 (3.8)	25.8	0.3	41.8	45.5	12.5	0.19
50+ yrs	*93*	25.9 (3.5)	25.6	0.0	47.3	39.8	12.9	*359*	26.4 (4.0)	26.1	1.4	36.8	47.6	14.2	*269*	26.8 (4.1)	26.5	0.4	35.3	47.6	16.7	0.27
Women																						
All	*629*	23.3 (4.1)	23.0	7.3	62.8	23.9	6.0	*1230*	25.8 (4.9)	25.3[c]	2.7	46.9	33.0	17.4	*1130*	25.9 (5.4)	25.4[c]	3.7	45.3	32.7	18.3	<0.001
19-34 yrs	*305*	21.5 (2.9)	21.3	12.8	75.7	10.2	1.3	*338*	22.7 (4.0)	22.4[c]	6.8	75.7	13.0	4.4	*348*	23.2 (4.6)	22.9[c]	8.1	67.0	18.7	6.3	<0.001
35-49 yrs	*196*	24.2 (4.2)	23.8	3.6	59.2	30.1	7.1	*394*	25.3 (4.2)	25.0[c]	1.5	52.0	34.3	12.2	*403*	25.7 (4.6)	25.3[c]	3.5	44.9	36.2	15.4	0.007
50+ yrs	*128*	26.3 (4.0)	26.1	0.0	37.5	46.9	15.6	*498*	28.2 (4.8)	27.9[c]	0.8	23.9	45.6	30.3	*379*	28.7 (5.6)	28.2[c]	0.0	25.9	41.7	32.5	0.001

[a] Geometric mean.

[b] P-value for variations in body weight status distribution among countries, using chi-square tests.

[c] Significantly different ($p<0.005$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.

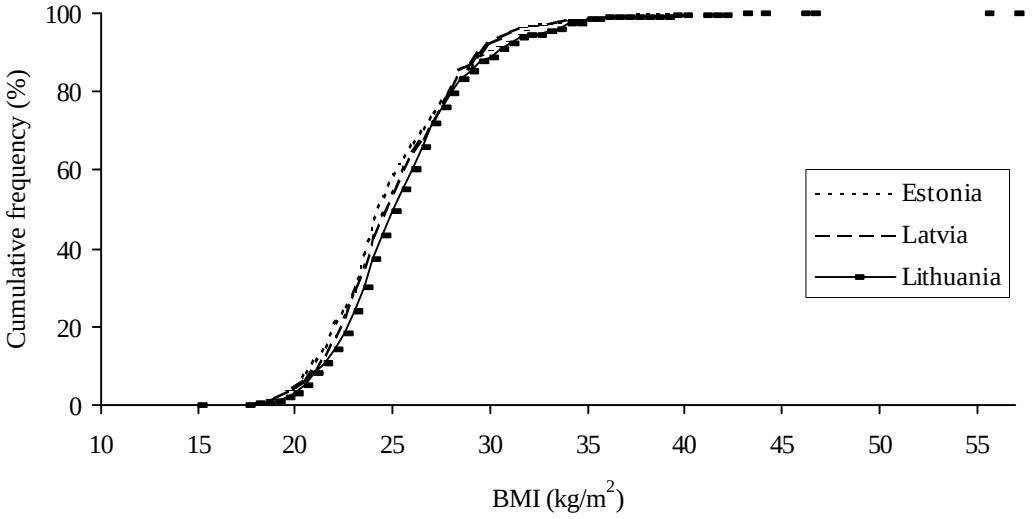

Figure 21. Age-standardised cumulative frequency distribution of body mass index (BMI) by country in men.

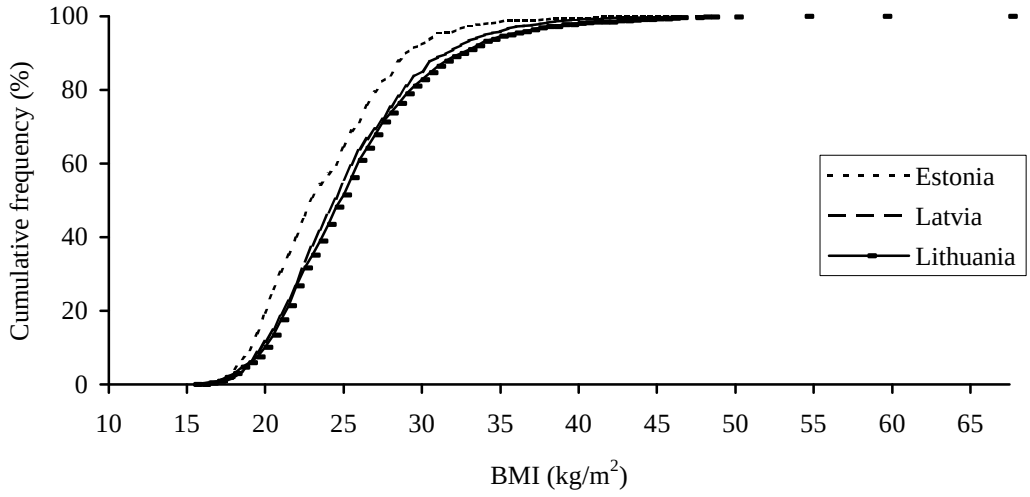

Figure 22. Age-standardised cumulative frequency distribution of body mass index (BMI) by country in women.

When the combined prevalence of overweight and obesity (BMI ≥ 25 kg/m^2) was examined, over 40% of men from Estonia and more than half the male respondents from Latvia and Lithuania had an excess weight. This was the case in 30% of women from Estonia, in 50% of those from Latvia and in 60% of those from Lithuania. Excess weight was particularly prevalent in women age 50 years and over in Latvia and Lithuania, three quarters of them being overweight or obese. There were rather more obese men among the over 50s in Lithuania than in the other countries. The proportion of women who were obese in Latvia and Lithuania was almost three times that in Estonia. The difference was especially marked in women aged under 35, with over four times as many women in Lithuania being obese compared with those in Estonia.

We compared BMI calculated from measured height and weight with BMI estimated from self-reported height and weight (Tables 27-28). On average, Latvian men and women were slightly more likely to underreport their BMI (by 0.6 kg/m^2) compared with their Estonian and Lithuanian counterparts (by 0.2 kg/m^2). The joint classification of relative body weight status based on reported and measured BMI showed that all respondents were within one BMI category.

Table 27. Mean difference between reported and measured BMI (kg/m^2) by country, sex sex and age group.

Group	Estonia		Latvia		Lithuania	
	n	Mean (SD)	*n*	Mean (SD)	*n*	Mean (SD)
Men						
All	*525*	-0.2 (0.9)	*444*	-0.5 (1.3)[a]	*928*	-0.1 (1.1)[b]
19-34 yrs	*258*	-0.2 (0.9)	*142*	-0.5 (1.3)[a]	*331*	-0.1 (1.0)[b]
35-49 yrs	*174*	-0.2 (0.9)	*136*	-0.4 (1.2)	*341*	-0.1 (1.1)[b]
50+ yrs	*93*	-0.3 (1.2)	*166*	-0.4 (1.2)	*256*	-0.2 (1.4)
Women						
All	*628*	-0.2 (0.8)	*525*	-0.6 (1.9)[a]	*1094*	-0.3 (1.3)[b]
19-34 yrs	*305*	-0.1 (0.7)	*143*	-0.2 (1.3)	*344*	-0.2 (1.1)
35-49 yrs	*195*	-0.2 (0.6)	*153*	-0.5 (1.3)[a]	*394*	-0.3 (1.1)[b]
50+ yrs	*128*	-0.4 (1.2)	*229*	-1.0 (2.5)[a]	*356*	-0.5 (1.6)[b]

[a] Significantly different ($p<0.05$) from Estonia, using analyses of variance and Bonferron multiple comparison tests.

[b] Significantly different ($p<0.05$) from Latvia..

Table 28. Joint classification of relative body weight status based on reported and measured BMI, by country.

Reported BMI categories	Estonia				Latvia				Lithuania			
	Measured BMI categories				Measured BMI categories				Measured BMI categories			
	Under-weight	Normal weight	Over-weight	Obese	Under-weight	Normal weight	Over-weight	Obese	Under-weight	Normal weight	Over-weight	Obese
	%	%	%	%	%	%	%	%	%	%	%	%
Men												
Underweight	1.1	0.0	0.0	0.0	0.7	0.7	0.0	0.0	0.1	0.2	0.0	0.0
Normal weight	0.2	55.0	4.0	0.0	0.7	44.6	9.0	0.0	0.2	42.2	5.0	0.0
Overweight	0.0	1.7	27.8	1.3	0.0	1.4	33.3	3.2	0.0	3.8	36.2	2.0
Obese	0.0	0.0	0.2	8.6	0.0	0.0	0.7	5.8	0.0	0.0	0.9	9.4
Women												
Underweight	5.1	1.8	0.0	0.0	1.5	0.8	0.0	0.0	2.7	0.7	0.0	0.0
Normal weight	2.2	60.4	3.3	0.0	1.1	39.8	7.2	0.0	1.0	43.6	5.6	0.0
Overweight	0.0	0.8	20.1	1.1	0.0	2.1	26.9	5.1	0.0	1.4	26.8	2.7
Obese	0.0	0.0	0.5	4.8	0.0	0.0	1.0	14.5	0.0	0.0	0.5	15.1

3.5 Other health behaviours: physical activity level, smoking, alcohol intake

Physical activity at work and during leisure time varied considerably among countries within each population sub-group examined (Tables 29-31). Generally, Estonian men and women were more likely to be very sedentary at work and less likely to be sedentary during their leisure time than men and women from Latvia or Lithuania. Conversely, Lithuanian men and women more frequently had a high or very high physical activity at work than other respondents.

Overall, one in three Estonians had a very low physical activity level at work compared with only about one in five Latvians and Lithuanians (Table 29). In each country, women were more likely than men to have a sedentary occupation. Individuals age 50 years and over tended to be the most sedentary at work compared with younger individuals, except for Lithuanian women: in these women, sedentarity at work decreased with age. In men, the proportion of respondents reporting a high or very high physical activity at work was highest in Lithuania, followed by Latvia. In women, differences among countries were smaller.

Half the respondents reported participating only in sedentary activities such as reading and watching television during their leisure time (Table 30). Lithuanians were particularly sedentary, with 60% of the respondents from this country reporting a low physical activity level during their leisure time compared with 52% of Latvians and 43% of Estonians. In each country, men were more likely than women to be sedentary during leisure time. A slightly higher proportion of Estonians than Latvians and Lithuanians reported participating in hard training and competitive sports more than once a week. However, when the combined prevalence of participation in high and very high physical activity level was examined, the differences were more striking in women than in men: 22% of Lithuanian women reported this level of activity compared with 15% of Latvian women and 16% of Estonian women.

Table 29. Physical activity level at work[a] by country, sex, and age group.

Group	Estonia					Latvia					Lithuania					p-value[b]
	n	Low	Moderate	High	Very high	*n*	Low	Moderate	High	Very high	*n*	Low	Moderate	High	Very high	
		%	%	%	%		%	%	%	%		%	%	%	%	
All men	*902*	29.2	28.7	34.2	8.0	*1064*	16.8	36.2	35.2	11.8	*938*	17.3	33.1	32.4	17.3	<0.001
18-34 yrs	*397*	28.0	29.5	35.5	7.1	*335*	17.6	33.7	36.7	11.9	*334*	18.0	32.0	31.1	18.9	<0.001
35-49 yrs	*320*	29.4	27.5	33.8	9.4	*370*	14.3	31.6	38.7	15.4	*347*	13.8	33.1	34.9	18.2	<0.001
50+ yrs	*185*	31.4	29.2	31.9	7.6	*359*	18.7	43.2	30.1	8.1	*257*	21.0	34.2	30.7	14.0	0.001
All women	*1116*	35.8	41.8	21.0	1.5	*1236*	23.5	57.4	17.3	1.8	*1122*	25.2	50.7	22.7	1.3	<0.001
18-34 yrs	*459*	35.3	43.4	20.0	1.3	*342*	24.0	61.1	13.7	1.2	*352*	29.3	50.6	19.3	0.9	<0.001
35-49 yrs	*376*	35.6	40.7	21.8	1.9	*396*	22.2	53.5	22.0	2.3	*401*	27.2	49.1	22.4	1.3	0.002
50+ yrs	*281*	36.7	40.6	21.4	1.4	*498*	24.3	57.8	16.1	1.8	*369*	19.2	52.6	26.3	1.9	<0.001

[a] Low=Very largely sedentary work; Moderate=Sedentary or standing work; High=Work involving a lot of walking, lifting or carrying (e.g., heavy industrial work, building and construction work, work as a postmen, heavier housework); Very high= Heavy manual work (e.g., forestry work, heavy agricultural work, heavybuilding and construction work, road work).

[b] P-value for variations among countries in physical activity level distribution, using chi-square tests

Table 30. Physical activity level during leisure time by country, sex, and age group.

Group	Estonia					Latvia					Lithuania					p-value[b]
	n	Low	Moderate	High	Very high	*n*	Low	Moderate	High	Very high	*n*	Low	Moderate	High	Very high	
		%	%	%	%		%	%	%	%		%	%	%	%	
All men	*902*	45.6	33.4	16.0	5.1	*1066*	53.4	27.9	15.8	3.0	*985*	63.8	15.2	18.2	2.8	<0.001
18-34 yrs	*397*	39.6	33.8	19.1	7.6	*336*	45.5	29.2	19.1	6.3	*349*	61.9	17.2	14.3	6.6	<0.001
35-49 yrs	*320*	51.6	30.9	14.1	3.4	*371*	53.6	29.1	14.8	2.4	*360*	64.4	13.9	20.6	1.1	<0.001
50+ yrs	*185*	48.1	36.8	12.4	2.7	*359*	60.5	25.4	13.7	0.6	*276*	65.2	14.5	19.9	0.4	<0.001
All women	*1116*	41.0	44.2	12.5	2.4	*1237*	51.2	33.1	14.9	0.8	*1155*	56.7	21.8	21.2	0.3	<0.001
18-34 yrs	*459*	31.2	49.7	15.0	4.1	*342*	38.3	43.3	15.8	2.6	*358*	54.2	28.2	17.0	0.6	<0.001
35-49 yrs	*376*	43.4	42.0	12.8	1.9	*395*	46.1	34.7	19.0	0.3	*407*	55.0	21.4	23.3	0.3	<0.001
50+ yrs	*281*	53.7	38.1	7.8	0.4	*500*	64.0	25.0	11.0	0.0	*390*	60.8	16.4	22.8	0.0	<0.001

[a] Low=Reading, watching television or other sedentary activities; Moderate=Walking, bicycling or other light activities at least 4 hours a week; High=Jogging and other recreational sports or heavy gardening, at least 4 hours a week; Very high=Hard training and competitive sport more than once a week.

[b] P-value for variations among countries in physical activity level distribution, using chi-square tests

Table 31. Weekly participation in regular physical activity (such as jogging, cycling) long enough to work out a sweat.

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Never	1-2 days/wk	3+ days/wk	*n*	Never	1-2 days/wk	3+ days/wk	*n*	Never	1-2 days/wk	3+ days/wk	
		%	%	%		%	%	%		%	%	%	
All men	*902*	70.3	15.6	14.1	*1066*	80	11.3	9.0	*984*	74.9	8.5	16.6	<0.001
18-34 yrs	*397*	63.5	15.9	20.7	*337*	67	18.1	15.1	*349*	62.8	12.9	24.4	0.03
35-49 yrs	*320*	74.4	16.9	8.8	*371*	82	11.1	7.3	*360*	78.9	6.7	14.4	<0.001
50+ yrs	*185*	77.8	13.0	9.2	*358*	90	5.0	5.0	*275*	85.1	5.5	9.5	0.001
All women	*1116*	79.2	11.6	9.2	*1236*	85	7.7	7.0	*1161*	77.4	8.0	14.6	<0.001
18-34 yrs	*459*	70.2	15.0	14.8	*342*	70	18.4	11.7	*358*	67.9	14.3	17.9	0.14
35-49 yrs	*376*	81.1	12.2	6.7	*395*	88	6.1	6.3	*410*	79.0	6.1	14.9	<0.001
50+ yrs	*281*	91.5	5.0	3.6	*499*	94	1.6	4.2	*393*	84.2	4.3	6.5	<0.001

[a] P-value for variations among countries in physical activity level distribution, using chi-square tests

In comparison, the proportion of highly physically active men varied from 19 to 21%. The proportion of men who had a high or very high physical activity level tended to decrease with age in each country. In women, this proportion also decreased with age in Estonia, but, in Latvia and Lithuania, it was highest in the 35-49 years age group.

More than three out of four respondents reported that they never participate in regular physical activities such as jogging and cycling long enough to work out a sweat (Table 31). The proportion of respondents who participate in these activities at least three days a week was highest in Lithuania (16% overall), intermediate in Estonia (11%), and lowest in Latvia (8%).

The proportions of men who smoked daily were 54%, 56% and 53% respectively in Estonia, Latvia and Lithuania (Table 32). The corresponding figures for women were 24%, 11% and 8%. For both sexes, current smoking rates were lowest in individuals age 50 years and over, and highest in the age group 35 to 49 years. In men, the overall distribution by smoking status was remarkably similar among countries, although there were slightly more men in Estonia who had never smoked and slightly less who smoked occasionally than in the other two countries. In contrast, smoking rates varied considerably among women. In Estonia, daily smoking was twice as high as in Latvia and three times higher than in Lithuania. As well, Estonian women were more likely to smoke occasionally than other women. Of the respondents who were not currently smoking, 66% of men (76% in Estonia, 63% in Latvia, 59% in Lithuania) and 88% of women (86% in Estonia, 89% in Latvia, 88% in Lithuania) had never smoked.

The pattern of alcohol consumption varied by country (Table 33). The proportion of respondents consuming alcohol at least every week differed among country, with, for both sexes, the highest rates found in Estonia, followed by Lithuania, and then Latvia. For both men and women, consumption declined with age. This was especially marked among women: the proportion of those aged 50-64 years who reported drinking at least weekly was between a third and a fifth of that among those aged 19-34 years. The commonest beverage drunk (in all three countries and in both sexes) was beer, followed by spirits among men and wine among women.

Turning to the amount drunk, the mean daily consumption during the previous week, in grams per day, is shown in Table 34, as is the percentage of heavy drinkers (respondents drinking greater than 80g of alcohol per day). The mean daily consumption was lowest in Latvia and highest in Estonia. The percentage of heavy drinkers was much higher in Estonia than in the other countries, at almost one in ten men. Heavy drinking was rare among women in all countries. Considering only those who reported having drunk during the previous week, the amounts drunk, as well as the percentage who drank heavily, were very much lower among women than men in each country.

Table 32. Prevalence of smoking by country, sex and age group.

Group	Estonia				Latvia				Lithuania				p-value[a]
	n	Daily %	Occasionally %	Non smoker %	*n*	Daily %	Occasionally %	Non smoker %	*n*	Daily %	Occasionally %	Non smoker %	
All men	*902*	53.9	9.9	36.3	*1066*	55.9	12.0	32.1	*986*	53.1	12.5	34.4	0.17
18-34 yrs	*397*	53.2	11.8	35.0	*336*	56.3	17.0	26.8	*350*	56.6	14.3	29.1	0.08
35-49 yrs	*320*	61.3	9.7	29.1	*370*	65.1	8.9	26.0	*361*	59.8	13.0	27.2	0.32
50+ yrs	*185*	42.7	6.0	51.4	*360*	46.1	10.6	43.3	*275*	40.0	9.5	50.6	0.15
All women	*1116*	24.1	13.9	62.0	*1228*	10.9	9.8	79.3	*1159*	7.6	9.7	82.7	<0.001
18-34 yrs	*459*	27.0	20.3	52.7	*337*	12.2	15.1	72.7	*359*	10.6	12.3	77.2	<0.001
35-49 yrs	*376*	29.0	12.0	59.0	*396*	14.4	13.9	71.7	*407*	9.1	13.5	77.4	<0.001
50+ yrs	*281*	12.8	6.1	81.1	*495*	7.3	2.8	89.9	*393*	3.3	3.3	93.4	<0.001

[a] P-value for variations among countries in smoking status distribution, using chi-square tests.

Table 33. Usual pattern of alcohol consumption by country, sex and age group.

Group	Estonia							Latvia							Lithuania							p-value[a]
	n	Daily	2-3/wk	1/wk	2-3/mth	A few times/yr	Never	*n*	Daily	2-3/wk	1/wk	2-3/mth	A few times/yr	Never	*n*	Daily	2-3/wk	1/wk	2-3/mth	A few times/yr	Never	
		%	%	%	%	%	%		%	%	%	%	%	%		%	%	%	%	%	%	
Men																						
Beer																						
All men	*902*	12.6	21.0	15.5	18.6	11.2	21.1	*1066*	3.6	9.9	19.3	24.9	20.2	22.1	*985*	7.5	24.9	16.2	22.0	13.5	15.8	<0.001
18-34 yrs	*397*	14.6	25.4	19.1	17.1	7.8	15.9	*336*	4.5	9.8	24.4	31.3	14.9	15.2	*350*	9.4	33.4	18.6	18.9	9.4	10.3	<0.001
35-49 yrs	*320*	10.6	20.9	15.6	19.1	11.3	22.5	*372*	3.5	10.0	21.5	23.7	21.8	19.6	*359*	8.4	24.8	15.9	25.4	13.7	12.0	<0.001
50+ yrs	*185*	11.9	11.4	7.6	21.1	18.4	29.7	*358*	2.8	10.1	12.3	20.1	23.5	31.3	*276*	4.0	14.1	13.8	21.7	18.5	27.9	0.001
Wine																						
All men	*902*	0.8	3.1	5.7	16.0	43.8	30.7	*1063*	0.0	2.2	1.5	17.1	29.4	49.9	*983*	0.3	3.9	5.5	16.1	33.8	40.5	<0.001
18-34 yrs	*397*	0.5	3.5	7.1	21.9	41.6	25.4	*335*	0.0	2.4	0.9	17.9	31.3	47.5	*350*	0.3	3.4	6.9	20.6	40.0	28.9	<0.001
35-49 yrs	*320*	1.3	2.8	5.6	10.9	44.7	34.7	*371*	0.0	2.2	2.2	23.2	28.8	43.7	*359*	0.3	5.6	6.1	15.6	32.3	40.1	<0.001
50+ yrs	*185*	0.5	2.7	2.7	11.9	47.0	35.1	*357*	0.0	2.0	1.4	10.1	28.0	58.5	*274*	0.4	2.2	2.9	11.0	27.7	55.8	<0.001
Spirits																						
All men	*902*	2.8	8.2	17.4	36.4	24.0	11.3	*1066*	0.5	8.1	8.0	40.9	31.7	10.9	*987*	0.9	6.8	13.8	38.9	31.7	7.9	<0.001
18-34 yrs	*397*	2.0	5.0	20.2	36.8	22.2	13.9	*336*	0.3	8.6	5.1	44.9	28.0	13.1	*350*	0.0	5.4	15.1	42.0	31.1	6.3	<0.001
35-49 yrs	*320*	4.1	11.3	15.9	38.8	23.1	6.9	*371*	0.0	10.2	11.9	41.2	28.3	8.4	*361*	1.7	8.9	15.2	39.6	27.4	7.2	0.02
50+ yrs	*185*	2.2	9.7	14.1	31.4	29.2	13.5	*359*	1.1	5.3	6.7	36.8	38.7	11.4	*276*	1.1	5.8	10.1	34.1	38.0	10.9	0.06

/continued…

(continued) Table 33. Usual pattern of alcohol consumption by country, sex and age group.

Group	Estonia							Latvia							Lithuania							p-value[a]
	n	Daily	2-3/wk	1/wk	2-3/mth	A few times/yr	Never	*n*	Daily	2-3/wk	1/wk	2-3/mth	A few times/yr	Never	*n*	Daily	2-3/wk	1/wk	2-3/mth	A few times/yr	Never	
		%	%	%	%	%	%		%	%	%	%	%	%		%	%	%	%	%	%	
Women																						
Beer																						
All women	*1116*	1.5	4.9	9.2	12.6	19.5	52.2	*1237*	0.0	3.5	1.1	9.6	26.7	59.2	*1164*	0.1	3.0	5.8	13.1	25.7	52.2	<0.001
18-34 yrs	*459*	2.6	6.3	14.2	15.7	21.8	39.4	*341*	0.0	4.7	1.8	17.0	28.2	48.4	*359*	0.0	4.2	9.2	18.7	26.5	41.5	<0.001
35-49 yrs	*376*	0.8	6.1	9.6	12.8	20.0	50.8	*396*	0.0	4.3	1.3	10.9	29.6	54.0	*410*	0.2	2.7	6.1	12.2	26.3	52.4	<0.001
50+ yrs	*281*	0.7	1.1	0.7	7.5	15.3	74.7	*500*	0.0	2.0	0.4	3.6	23.4	70.6	*395*	0.0	2.3	2.5	9.1	24.3	61.8	<0.001
Wine																						
All women	*1116*	0.5	2.5	6.6	20.8	47.5	22.1	*1236*	0.2	1.2	1.4	29.4	36.9	30.9	*1163*	0.3	1.9	4.5	17.3	47.5	28.6	<0.001
18-34 yrs	*459*	0.4	3.5	9.2	23.5	50.1	13.3	*341*	0.6	2.6	3.5	37.0	37.2	19.1	*359*	0.0	3.1	7.8	25.6	47.4	16.2	<0.001
35-49 yrs	*376*	0.8	2.9	7.5	23.9	46.3	18.6	*395*	0.0	1.3	0.3	33.9	41.5	23.0	*409*	0.5	2.0	3.7	20.1	48.7	25.2	<0.001
50+ yrs	*281*	0.0	0.4	1.4	12.1	44.8	41.3	*500*	0.2	0.2	0.8	20.6	33.0	45.2	*395*	0.3	0.8	2.3	6.8	46.3	43.5	<0.001
Spirits																						
All women	*1116*	0.3	1.8	7.2	25.0	43.3	22.5	*1235*	0.3	1.1	1.1	17.7	52.2	27.5	*1163*	0.1	0.7	1.8	15.6	57.7	24.2	<0.001
18-34 yrs	*459*	0.2	2.0	8.7	29.6	38.1	21.4	*340*	0.3	2.4	1.5	24.1	52.9	18.8	*359*	0.0	0.3	1.4	21.5	58.8	18.1	<0.001
35-49 yrs	*376*	0.3	2.7	7.7	25.0	46.0	18.4	*395*	0.8	1.0	1.8	20.3	55.7	20.5	*409*	0.2	0.7	2.4	16.4	57.7	22.5	<0.001
50+ yrs	*281*	0.4	0.4	3.9	17.4	48.0	29.9	*500*	0.0	0.4	0.4	11.4	49.0	38.8	*395*	0.0	1.0	1.5	9.4	56.7	31.4	<0.001

[a] P-value for variations among countries in physical activity level distribution, using chi-square tests

Table 34. Mean daily alcohol intake (grams of alcohol) during the previous week and proportion of heavy drinkers (>80g/d) by country, sex and age group.

Group	Estonia				Latvia				Lithuania				p-value[b]
	n	Mean (SD)	Geom. mean[a]	>80g/d %	*n*	Mean (SD)	Geom. mean	>80g/d %	*n*	Mean (SD)	Geom. mean	>80g/d %	
All respondents													
All men	*902*	29 (42)	2.1	9.3	*1070*	15 (24)	0.5[c]	2.8	*987*	19 (38)	1.2[e]	2.6	<0.001
18-34 yrs	*397*	29 (43)	2.7	8.8	*337*	15 (25)	0.6[c]	3.6	*350*	20 (22)	2.4	2.6	<0.001
35-49 yrs	*320*	33 (46)	3.8	11.9	*373*	16 (23)	0.8[c]	2.7	*361*	20 (28)	1.7	3.1	<0.001
50+ yrs	*185*	19 (31)	0.5	6.0	*360*	13 (24)	0.3	2.2	*276*	17 (59)	0.3	2.2	0.03
All women	*1116*	6 (12)	0.1	0.5	*1238*	3 (7)	0.02[c]	0.2	*1166*	4 (26)	0.04[c,f]	0.3	0.24
18-34 yrs	*459*	7 (14)	0.1	0.9	*342*	4 (8)	0.1	0	*359*	4 (6)	0.1	0.0	0.05
35-49 yrs	*376*	6 (12)	0.1	0.5	*396*	4 (9)	0.0[d]	0.5	*411*	5 (43)	0.0	0.5	0.79
50+ yrs	*281*	3 (8)	0.0	0.0	*500*	2 (4)	0.0	0	*396*	3 (8)	0.0	0.2	0.14
Respondents who consumed alcohol during the previous week													
All men	*694*	37 (45)	21.1	12.1	*699*	23 (26)	14.7[c]	4.3	*719*	27 (42)	17.1[c]	3.6	<0.001
18-34 yrs	*315*	37 (46)	21.6	11.1	*225*	23 (27)	14.6[c]	5.3	*279*	25 (22)	17.1	3.2	<0.001
35-49 yrs	*263*	40 (48)	22.4	14.5	*259*	24 (24)	16.0[c]	3.9	*275*	27 (29)	17.4	4.0	<0.001
50+ yrs	*116*	31 (35)	17.4	9.5	*215*	22 (29)	13.2	3.7	*165*	29 (74)	16.4	3.6	0.04
All women	*524*	13 (15)	8.0	1.2	*433*	8 (10)	5.5[c]	0.5	*485*	9 (40)	5.7[c]	0.6	0.44
18-34 yrs	*246*	13 (16)	8.4	1.6	*159*	9 (10)	5.7[c]	0.0	*186*	7 (6)	5.5[c]	0.0	0.06
35-49 yrs	*189*	13 (14)	8.2	1.1	*159*	9 (13)	6.0[d]	1.3	*183*	12 (63)	5.6[c]	0.6	0.78
50+ yrs	*89*	10 (12)	6.3	0.0	*115*	7 (6)	4.8	0.0	*116*	9 (13)	6.1	1.7	0.17

[a] Geometric mean.

[b] P-value for variations among countries in the proportion of heavy drinkers, using chi-square tests.

[c] Different ($p<0.001$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.

[d] Different ($p<0.005$) from Estonia, using analysis of variance and Bonferonni multiple comparison tests.

[e] Different ($p<0.001$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.

[f] Different ($p<0.005$) from Latvia, using analysis of variance and Bonferonni multiple comparison tests.

4. DISCUSSION

Findings from the Baltic surveys showed important between-country variations in all aspects of the dietary patterns and lifestyle behaviours investigated. They have also highlighted areas where further research and where the development of national nutrition policies are required.

4.1 Food security

Food inequity and the lack of safe healthy foods are important contributors to mortality rates in Europe. Recently, the gap between the rich and poor has risen in several countries,[16] and food insecurity may become an important issue in some European countries due to the increasingly uncertain conditions related to the very rapid economic and social changes encountered. In particular, the transition to market economy in countries of the former Soviet Union has resulted in higher prices of goods due to a reduction in subsidies, while salaries have remained low, and while unemployment has increased as a result of industrial restructuring.

Results from the surveys showed that, among the populations of the Baltic countries, cost was the most important consideration when choosing foods. This was particularly the case in Lithuania (67%) and Latvia (60%) where unemployment and poverty were highly prevalent. In Lithuania, almost one in four male participants was unemployed at the time of the survey and one in three respondents was considered to live in severe poverty. In Latvia, one in six respondents was unemployed and 38% lived in severe poverty. In comparison, only 41% of Estonians reported selecting their foods mainly because of their cost; in that country, 11% of the respondents were unemployed and 28% reported living in severe poverty. Unfortunately, a limited budget often means that healthier, safer foods cannot be afforded. In Lithuania, it was reported that recent increases in food prices have caused poorer people to consume cheaper, less nutrient dense foods which are more likely to be contaminated, thus less healthy and safe.[10]

The level of dependence on home grown or raised foods, and the use of home grown vegetables in the Baltic States, paralleled the findings described above. Estonians were the least likely to depend on home grown foods and to use home grown vegetables, while Lithuanians were the most likely to depend entirely on these foods and to always use home grown vegetables. In each country, however, at least about a third of the respondents –up to almost half the Latvians respondents- depended partially or entirely on home grown foods. Fortunately, these foods permit an increased access to healthy foods in a large proportion of the populations studied (e.g., Lithuanians were the most likely to consume vegetables regularly), and it has been reported that one of the reasons why families living in countries undergoing economic transition are not suffering from protein-energy malnutrition is because many produce their own foods.[17] The issue of food security in the Baltic States will need to be considered more closely within population sub-groups as access to safe healthy foods may help reduce considerably diet-related morbidity and premature mortality from non-communicable diseases in these countries. It has also been suggested that dietary guidelines and concerns about national food security should be included in the new Common Agriculture Policy (CAP).[10,18] As the Baltic countries are lining up to join the European Union, the CAP will have a dramatic impact on their food production policies.

4.2 Dietary intake and habits

Measurements of dietary intake based on a single 24-hour recall may provide reasonable estimates of mean intakes for a group or population sub-group.[19] However, the standard deviations obtained

with this technique are greatly overestimated because of normal day-to-day variation in dietary intakes. Thus, estimating the proportions of individuals with an intake above or below a certain cut-off could be misleading and has not been done in this report.

It is increasingly recognised that dietary intakes tend to be generally underreported.[20,21] In Western countries, the average daily energy requirements of sedentary adults is approximately 1.55 times the basal metabolic rate; thus, ratios of energy intake to basal metabolic rate less than 1.55 would indicate potentially inaccurate (under) estimates of habitual food intakes. The average energy intakes of the participants in the Baltic surveys were generally lower than expected, particularly in women. In addition, the median ratio of energy intake to basal metabolic rate suggests potential underreporting in some population sub-groups, particularly among Estonian respondents. This could explain why Estonians have lower mean crude intakes of nutrients than respondents from Latvia and Lithuania (except for alcohol and niacin intakes). This also suggests that caution is warranted when comparing crude intakes among countries in this report and that comparisons of nutrient intakes expressed in units per 10MJ may be more appropriate.

WHO recommends an intake of more than 400 grams of vegetables (in addition to potatoes) and fruits per day. These foods prevent micro-nutrient deficiency and contribute to the prevention of non-communicable diseases.[22] Results from the questionnaire data and from the 24-hour recall suggest that the WHO recommendation is not generally met by the adult populations of the Baltic countries. Overall, only 78% of the Lithuanians, 60% of the Latvians and 48% of the Estonians reported consuming vegetables (raw or cooked) daily (six to seven days per week, excluding potatoes). In addition, despite the fact that the surveys were conducted during the summer, a period during which vegetables and fruits should be more easily accessible to the population, the results of the 24-hour recall indicate that the median intake of vegetables and fruits of the participants was considerably below the recommendation, particularly in Latvia where the median intake was only 200 grams on the day before the interview. Reasons for the extremely low intakes of vegetables and fruits in the Baltic countries should be explored further if effective promotion campaigns to increase mean consumption are to be developed. In addition, easy access to vegetables and fruits should be promoted and increased.

In addition to vegetable and fruit intake, the consumption of potatoes needs to be examined carefully. Indeed, potatoes have an important role in a healthy diet, as they are a good source of complex carbohydrate, dietary fibre, and vitamin C[23,24]. However, data from the Food and Agriculture Organization food balance sheet statistics[25] indicate that potato availability over the thirty year period from the sixties up until the beginning of the nineties was reduced by approximately 25%, to an average of around 200 grams per day in Europe. This trend should ideally be reversed in countries of the European Union, in which availability is relatively very low. Countries such as the Baltic States (which have generally higher levels of intake) should also be encouraged to increase their current levels of intake; but from a policy perspective, it may be easier to encourage the populations of these countries to maintain their current levels of intake rather than to change them once they have already decreased. Thus, means of maintaining potato, and if possible increasing, potato consumption in the Baltic countries should be developed.

In each country, the mean fat intake (as a proportion of dietary energy) of men and women was clearly above current international recommendations (15-30% of dietary energy[22]), particularly in Latvia and Lithuania. This is worrying as a high fat intake has been associated with some of the

major health problems found in the Baltic countries, including cardiovascular disease and cancer,[26,27] and as some studies have indicated that individuals with a high fat intake were less likely to meet other dietary guidelines than were individuals with a lower fat intake:[28] they tended to have higher intakes of cholesterol, saturated fat, sodium, protein, and energy, as well as lower intakes of vitamin C, carbohydrate, carotene, folate, and dietary fibre - nutrients considered necessary to maintain good health and prevent illnesses. We also observed in this study that the knowledge that different types of dietary fat do not give the same risk of various coronary diseases was generally low among the participants. In Latvia, less than a third of the respondents answered this question correctly, compared with 53% of the Lithuanians. This last observation is surprising considering the fact that Lithuanians were at least three times as likely as other participants to use lard for cooking (29% vs 9%), and 23% less likely to use oil for cooking (58% vs 75%).

Contrary to fat intake, carbohydrate consumption tended to be considerably lower than what is recommended by WHO (55-75% of dietary energy[22]). This might have important health effects as a high carbohydrate intake, particularly one made of complex carbohydrates, has been advocated for the prevention of various diseases. One way of increasing the consumption of complex carbohydrates would be by promoting potato intake (as discussed above). However, future information campaigns will have to address the apparent lack of knowledge of the population. For example, in Estonia, 57% of the population either believed that potatoes and bread are fattening or did not know if they are or not, and only 35% knew that potatoes are a good source of vitamin C.

As regards mean protein intake (15% to 17% of dietary energy or 1.0 g/kg body weight), it appears to be generally sufficient -if not high in some cases- in the Baltic countries. The high protein intakes in some individuals could be linked with current beliefs observed within the population of the Baltic countries. Indeed, less than half the respondents to the surveys, and particularly men, knew that meat is not an essential component in an everyday healthy diet. This general lack of knowledge could thus lead to an over-consumption of meat which could in turn lead to high intakes of saturated fats.

Thus, information on the macronutrient intake of the survey participants suggest that there is a pressing need, in the Baltic States, for a shift among the different sources of energy intake, particularly from fat to carbohydrates. Replacing high-fat energy dense foods by foods rich in complex-carbohydrates and dietary fibres (such as fruits and vegetables) may confer simultaneously to the populations a reduced risk and increased protection against non-communicable diseases, and help them attain energy balance. These issues will need to be tackled through comprehensive food and nutrition policies and health promotion campaigns.

Overall, the mean crude dietary intakes of vitamin C, thiamin and calcium of the participants surveyed met WHO or European guidelines.[22,30]. However, as the information is based on only one 24-hour recall, it is not possible to estimate the proportion of respondents who would not meet the recommendations or who might be at an increased risk of insufficient intakes. As some participants may have been underreporting their usual intake and as 43% of the respondents reported taking dietary supplements at least occasionally, it is possible that mean *total* intakes of vitamins and minerals –from diet and supplements- are higher. Further information on individual usual nutrient intakes and biochemical measurements would be required to estimate the prevalence of micronutrient deficiencies in the Baltic countries.

The belief that dietary salt may have harmful effects on health was better than the answer for the types of fat, with more than two-thirds of the respondents answering this question correctly. The proportion of respondents who knew about the possible effects of salt was slightly lower among Latvians than among other respondents, a finding that agrees with the higher use of salt at the table in that country. As for the type of salt used by the participants in the surveys, it usually did not contain additives: only 5% of Latvians and Lithuanians and 19% of Estonians used salt with additives. When salt with additives was used, iodised salt was used in less than 50% of the time in Estonia, 70% of the time in Latvia and 84% in Lithuania. Iodine deficiency remains one of the main nutritional deficiencies in Europe. As the World Health Organization recommends that salt intake be limited to 6 g/day in view of its link with hypertension and cardiovascular diseases[22], universal iodisation should be promoted in the Baltic states to ensure that all salt used by food manufacturers (especially for the preparation of bread), the mass catering sector and households is iodised. In addition, the iodisation of all animal fodder would ensure that iodine enters the human food chain via milk, milk products, and meat, while having the benefit of limiting the amount of salt consumed by the population. This approach would reduce current concerns regarding the quality of household and retail iodised salt, and would ensure that all the population have adequate iodine intakes, particularly lactating women and breastfed infants. For example, in the United Kingdom and the Nordic countries, it has been reported that around 45-70% of the iodine intake in humans originates from milk and milk products[31,32].

4.3 BMI and health behaviours

The results of the surveys provide for the first time evidence about the distribution of measured body weight in national samples in the Baltic countries. The proportion of obese women in Lithuania was lower than in the earlier MONICA sample.[33] This could conceivably be due to differences in sampling and it cannot be assumed that the difference is due to a real change. The prevalences for men in the two studies were broadly comparable. The Baltic surveys demonstrated a general shift to the right in the distribution of BMI in women from Latvia and Lithuania, compared with women from Estonia, and corresponding with higher rates of obesity in these countries. In contrast, the rates of obesity in Estonia, at least among young women, compared favourably with those in countries such as Sweden[34] and the Netherlands,[35] although even here there are no grounds for complacency. The steady increase with age in mean BMI and in the prevalence of obesity in all three countries suggests that the underlying effects of weight gain with age could accentuate the risks of cardiovascular diseases in the Baltic countries. It also suggests that obesity prevention in young adults should be a primary goal in health promotion strategies in order to prevent weight gain with ageing. Finally, our results suggest that if other surveys use reported and not measured weight and height, than the estimates of the real prevalence of obesity in the population may be underestimated (in this study they would have been underestimated by approximately 15-20% on average).

Physical inactivity is a major risk factor for several health problems including coronary heart disease, hypertension, and obesity.[36,37,38] The health benefits of vigorous exercise are well established. However, more recent studies have indicated that regular light-to-moderate intensity activity also confer benefits to the heart, and recent guidelines suggest that all individuals should try to accumulate every day at least 30 minutes of moderate intensity activity such as brisk walking, cycling, dancing and swimming.[39,40] In the Baltic countries, it seems that this goal is not met as physical inactivity during leisure time was highly common. It was also more frequently found than two other risk factors for coronary heart diseases, that is, smoking and obesity. Although the method used to quantify physical activity level in the

surveys was limited, it is likely that the populations surveyed were not highly physically active during their leisure time. More research on the social and psychological factors that influence the adoption and maintenance of a more active lifestyle needs to be conducted. Both attitudinal and structural barriers to physical activity will have to be addressed by future strategies developed to increase physical activity level in each Baltic State.

Smoking rates among men were relatively homogeneous, while there was much more diversity among women. This could be interpreted as showing higher rates of smoking in those who have been most exposed to West influences. Each country has introduced legislation to reduce smoking.[41,42] In Latvia, an Act on *The production,distribution and sale, and advertising of tobacco products, and the control of smoking* was enacted in December 1996. In Lithuania, a tobacco control Act was also adopted in 1996. In Estonia, an act was with parliament in July 1998. The implementation of effective and comprehensive anti-smoking policies is urgently needed. The surveys have indicated the scale of the problem but they are, in themselves, insufficient. Detailed qualitative research is now needed to understand why different groups smoke and which messages would be most effective in persuading them to stop or, preferably, in preventing the onset of smoking.

The results of the Baltic surveys confirm the importance of alcohol as a public health issue in this region, with almost one in ten Estonian men drinking at a level that equates to 80g per day, which is associated with a greatly increased risk of many of the manifestations of physical harm due to drinking.[43] This was very much higher than in the other two countries, although even there the rates among younger men were approximately one in 30. However, the absence of data on pattern of drinking in the surveys means that this study may under-estimate the harmful effects of alcohol intake. On the basis of data from a comparable but more detailed survey from Russia, there may be many more people who, while recording only moderate weekly consumption, may be drinking huge quantities during a single episode.[44] Evidence of the adverse health effects of high levels of alcohol consumption in the three Baltic Republics has been apparent for some time. These surveys now provide some information that will help create integrated, intersectoral policies to tackle them, although clearly much more detailed research is needed to understand the reasons why people drink heavily and the context in which they do so.

4.4 Strength and limitations of the surveys

The Baltic Nutrition and Health Surveys have the advantage of being based on samples of the general population of Estonia, Latvia and Lithuania, and their overall response rates were high. Their generalisability is thus an important strength. In addition, the interviews were made in the natural settings of the population, which is an additional advantage, and the response rate for each individual question in the surveys was high.

Information on dietary intake were collected using a 24-hour recall. This technique is flexible and it facilitates the inclusion of all types of foods and recipes. It is appropriate to estimate the mean intake of groups of individuals but not an individual's usual intake. Data collection with this technique is relatively fast and inexpensive but data entry is not. The validity of the method may be affected by the memory, co-operation, and communication ability of the subjects, as well as by the skills of the interviewer.[45] To help increase the accuracy of the data, 24-hour food recalls were administered only by trained interviewers and common sets of household measures, photographs and/or drawings of foods were used to facilitate the estimation of portion sizes. However, the

interviewers only had one day of training and only some of them were nutritionists. As the surveys were conducted during the summer, food consumption may have been affected by seasonal food choices. For example, the usual consumption of fresh vegetables and fruits may have been overestimated. Dietary intake estimates were also subject to the general limitations associated with the use of different nutrient databases to derive the nutrient composition of an individual's diet.[46] However, the Estonian version of the Finnish Micro-Nutrica Nutritional Analysis Program and the Russian food composition database were the most complete ones adapted for diet in the Baltic countries.

The surveys were based on self-reported information and may thus have been affected by recall or reporting bias. However, as the questions were generally non-stigmatizing, reporting bias should be small. As for alcohol intake, we assumed that in countries such as these, where heavy drinking is common, there may be less social stigma about admitting to it. Because the surveys were primarily designed to obtain data on nutrition, the questions on other health behaviours were rather basic. The number of questions on physical activity and smoking were limited and the questionnaire did not include any of the standard instruments to detect problem drinking, binge drinking, or to generate a quantity/frequency matrix for alcohol consumption. Nonetheless, the surveys do provide information against which future trends can be measured.

4.5 Conclusions

The Baltic Nutrition and Health Surveys were the first national surveys on eating habits performed in the Baltic States. They provided a vast amount of nutrition-related information that will be useful for the formulation, implementation, monitoring and evaluation of effective policies and programmes to improve nutritional wellbeing in the Baltic region. The results of the surveys highlighted several aspects of the diet that could be improved, including the very low intake of vegetables and fruits and the high intake of dietary fat. They also revealed the need for further nutritional education in the Baltic countries. Further exploration of the survey data will contribute to defining the determinants of poor dietary patterns and other unhealthy lifestyle behaviours in the Baltic region and help identify the most nutritionally vulnerable population sub-groups. However, a more comprehensive assessment of individual dietary intakes will be necessary to estimate the proportion of the population who is not meeting current dietary guidelines. Finally, the implementation of national surveillance systems of dietary habits, obesity and lifestyle behaviours in the Baltic countries will facilitate the planning of nutrition and public health promotion campaigns designed to improve the general health of the population and reduce premature mortality.

5. PRACTICAL OUTCOMES OF THE STUDY

As a result of the Baltic Nutrition and Health Surveys, each country has recently developed a series of educational brochures and posters (e.g., healthy food pyramid) to promote information on healthy diet and help improve the population’s eating habits. Food-based dietary guidelines for healthy adults have also been developed.

5.1 Estonian Food-Based Dietary Guidelines

1. Eat a variety of foods
2. Eat the right amount of foods to keep a healthy weight
3. Eat more fruits and vegetables
4. Eat more milk and milk products
5. Eat more rye bread and cereals

6. Eat more fish and poultry
7. Choose low-fat foods
8. Prefer healthy cooking
9. Limit the consumption of sweets and soft drinks
10. If you drink alcohol, do it in moderation

5.2 Latvian Food-Based Dietary Guidelines

1. Eat a variety of foods every day
2. Balance food intake to physical activity in order to maintain desirable weight
3. Increase grain products
4. Increase vegetables and fruits
5. Use oil, margarine, butter and fatty meat sparingly
6. Decrease sugar
7. Decrease salt
8. Increase liquids, especially water
9. Alcohol should be used in moderation, and by adults only
10. Enjoy eating healthy foods

5.3 Lithuanian Food-Based Dietary Guidelines

1. Eat a variety of foods (there should be about 40 different ingredients in your diet each day)
2. Choose foods that are rich in complex carbohydrates
3. Eat at least 5 times per day
4. To prevent overweight, eat less and to be more active
5. Do not avoid some foods, but eat smaller amounts of them
6. Eat at regular times
7. Drink at least 1.5 litre of fluids each day
8. Exercise
9. Make the changes progressively
10. Maintain a healthy body weight

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