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## *HEALTH OF WOMEN IN THE NORTHERN RUSSIAN CITIES OF ARKHANGELSK AND MURMANSK*

Nutrition and other risk factors for  
non-communicable diseases

Project Report

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## ABSTRACT

In 1998, the Russian Federation began developing the guidebook "Healthy Nutrition: A Plan of Action to Develop Regional Programmes in Russia. This effort was coordinated by the State Research Centre for Preventive Medicine of the Ministry of Health of the Russian Federation and the Research Institute of Nutrition of the RAMS. The working group also included representatives of the State Sanitary and Epidemiological Surveillance, the Centre for Medical Prevention, the medical university, city administration and other institutions and organisations in Arkhangelsk and Murmansk. To develop a science-based programme of healthy nutrition, a range of statistical and epidemiological data on the health and nutrition of the population are required. As such data had not previously been collected in a uniform way, the project "The health of women in the cities of Arkhangelsk and Murmansk: nutrition and other risk factors for non-communicable disease" was launched. Activities within the project included training personnel in conducting nutrition surveys and analysis and interpretation of data. Information on the health status, nutrition and other behavioural risk factors of women in the northern cities will be used to develop healthy nutrition programmes and other prevention programmes in Arkhangelsk and Murmansk.

### Keywords

WOMEN'S HEALTH  
NUTRITION  
RISK FACTORS  
NONCOMMUNICABLE DISEASES  
RUSSIAN FEDERATION

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WHO Regional Office for Europe, Copenhagen

TOWARDS A HEALTHY RUSSIA

**HEALTH OF WOMEN IN THE NORTHERN RUSSIAN CITIES  
OF ARKHANGELSK AND MURMANSK:**

**NUTRITION AND OTHER RISK FACTORS  
FOR NON-COMMUNICABLE DISEASE**

**PROJECT REPORT**

**2002**

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## SUMMARY

In 1998, Russia began developing the guidebook "Healthy Nutrition: A Plan of Action to Develop Regional Programmes in Russia." This effort was co-ordinated by the State Research Centre for Preventive Medicine of the Ministry of Health of the Russian Federation and the Research Institute of Nutrition of the RAMS. The working group set up to develop this guidebook also included representatives of the service of the State Sanitary and Epidemiological Surveillance, the Centre for Medical Prevention, the medical university, city administration and other institutions and organisations in Arkhangelsk and Murmansk. To develop a science-based programme of healthy nutrition, a range of statistical and epidemiological data on the health and nutrition of the population was required. It is known, however, that this information is not collected in full, and is not monitored at all. It is for this reason that the project "The Health of Women in the Cities of Arkhangelsk and Murmansk: Nutrition and Other Risk Factors for Non-Communicable Disease" was launched. It comes in the wake of the activities to develop a policy of healthy nutrition in Russia. The project is being implemented with the support of the WHO Regional Office for Europe and the Government of Norway.

The overall objective of the project is to provide opportunities in the regions for collecting and monitoring nutrition indicators in the population in order to develop science-based healthy nutrition programmes. The aims of the project included:

- to train personnel in methods of organising and conducting a survey, in analysing and interpreting the data obtained with a view to providing an assessment of the situation and developing a healthy nutrition programme;
- to conduct a random sample survey of the population of the cities of Arkhangelsk and Murmansk in order to assess nutrition and other risk factors for non-communicable disease;
- to disseminate the method of studying nutrition and other behavioural risk factors to other regions of the CINDI Programme.

**Selection of the sample:** the survey has been conducted using random samples of women between 19 and 64 years of age selected from among the residents of Arkhangelsk and Murmansk who, at the time of the survey, actually resided at their respective addresses, were not pregnant and did not breast-feed their babies. The initial sample consisted of 1035 women in the age bracket mentioned above in Arkhangelsk and of 1000 women in Murmansk. After exclusion from the sample of the women that were not to be surveyed (see section 3.2), the size of the "purged" sample was 887 in Murmansk and 897 in Arkhangelsk. The response rate in the purged sample was 84.8% in Arkhangelsk and 88% in Murmansk. 6.8% of women refused to participate in the survey in Murmansk and 9.1% in Arkhangelsk. The age breakdown of the women surveyed was practically the same as that of the women living in the two cities and of the women that were included in the random sample. Therefore, the data obtained on the health status, nutrition and risk factors reflect the situation among the women between 19 and 64 years of age living in these cities.

The designers of the questionnaire drew on the questionnaires that had already been used in a similar survey in Latvia, at the Institute of Nutrition of the RAMS, in the Finnish-Baltic survey FINNBALAT, in the BRFSS project in Moscow (monitoring behavioural risk factors), and in the CINDI Programme. The questions on the risk factors were borrowed from the questionnaires that had been used in the project of monitoring behavioural risk factors (BRFSS). The section on nutrition included questions on foods, as well as the food frequency method of studying dietary intake and the 24-hour recall method.

15 interviewers took part in the survey in each of the cities. Four-day's training courses were organised for the interviewers, at which they were trained in standard methods of conducting a survey and measuring height and weight. An interview took 40 minutes, on average.

The statistical analysis was carried out using the statistical programme SPSS, separately in the regions and in Moscow. The data base on foods in an electronic format was provided by the Institute of Nutrition of the RAMS to be used in the regions. For the first time, the regions carried out a statistical analysis on their own, using the data base on foods. This data base included all the known foods consumed in Russia, and consisted of the food's code and its content of protein, fat, carbohydrates, minerals, vitamins and the energy value.

The mean age of the women surveyed in Arkhangelsk and Murmansk was practically the same – 42.4 and 42.0 years, respectively. Differences in the age subgroups were insignificant, and no standardisation was done in comparing the regions.

Most of the women (60%) in both cities are married. There is little difference in the level of their education. Thus, nearly 28% of women have higher education and 50% - secondary special education.

The number of women with poor health is the same in both cities – 11.7%. The percentage of women who estimate their health as very good or good in Arkhangelsk is slightly less than in Murmansk (27.5% and 31.4%, respectively).

As mentioned above, nutrition was studied using a risk factors questionnaire, a dietary habits questionnaire, the food frequency method and the 24-hour recall method. It was the first time such a comprehensive nutrition study was undertaken in Arkhangelsk and Murmansk. It was important not only to obtain as much information as possible on the current situation with women's nutrition in the cities concerned, but to assess the possibility of using the methods applied and the data obtained to monitor indicators, to develop regional healthy nutrition programmes and to evaluate their effectiveness, as well.

The results of the survey reflect both general trends in women's nutrition and the differences that are there. On the basis of the data obtained in the survey, the nutrition of women may be characterised in the following way:

The proportion of protein, fat and carbohydrates in the women's daily food intakes agrees, on average, with the values recommended by the WHO:

- fat accounts for 32-34% of the total energy in the daily food intake, the value recommended by the WHO being 30% or less;
- protein provides 12-13% of the total energy in the diet, which agrees with the recommended value of 12%;
- carbohydrates contribute 53-55% of the total daily energy intake, which, too, is in compliance with the WHO recommendation of 55-75%.

The results obtained correspond with the tendencies indicated by the data of the surveys undertaken by the State Committee for Statistics of the RF and the Institute of Nutrition, i.e. decreasing fat and protein intakes and lower energy value of the diet.

On average, the daily energy intake of women, of whom the overwhelming majority have low levels of physical activity and among whom the prevalence of overweight is high, is 1500-1700



Kcal. The WHO-recommended daily energy intake for non-pregnant and non-breastfeeding women is 1900 Kcal.

Despite this quite satisfactory situation with the average protein, fat and carbohydrate intakes, in most of the women surveyed the intake values do not correspond with the recommended dietary intake and the principles of healthy eating:

- almost 50% of women consume more than 45 g of protein per day (12% of the daily energy intake);
- an input of fat in the daily dietary energy intake in excess of 30% is observed in 60 percent of women;
- in 90 percent of women, the energy input of simple carbohydrates is over 10 percent of the total calories ingested daily, and that of complex carbohydrates is less than 50%.

The amount of vitamin C and calcium in the daily food intake of women is, on average, in agreement with the values recommended by the WHO. There is some vitamin B<sub>1</sub> deficiency in both cities, and vitamin B<sub>2</sub> and iron deficiency in Murmansk.

Dietary habits in most of the women surveyed do not correspond with the principles of healthy eating:

- only 15-26% of women consume fruit and vegetables in recommended amounts every day;
- 25-50% of women consume ordinary milk (with a fat content of 3.2-3.5%), while nearly 90% of those surveyed reported that there was always a choice of dairy products in food stores with varying fat contents;
- over 50% of women use butter for sandwiches;
- nearly 40% of women consume salt in excessive amounts, with only 20% of women consuming iodised salt.

The frequency of eating such foods as cereals, pasta, milk and dairy products, fruit and vegetables is inadequate.

The level of awareness of the principles of healthy eating among the women in Arkhangelsk and Murmansk is inadequate, which must be taken into account in developing healthy nutrition programmes.

The use of the methods of studying food intake mentioned above (dietary habits, food frequency methods, 24-hour food recall) allows complete information on the population nutrition to be obtained. However, this is quite a labour-consuming process requiring certain resources. As for the use of the food frequency method and the method of studying dietary habits, both of which are simple and affordable approaches to data collection, it makes it possible to have an indirect judgment on the population nutrition and to apply them to monitor these indicators at short intervals of time.

Data on the behavioural risk factors, such as overweight, smoking, hypertension, low physical activity, showed a high prevalence of these among the women in the northern cities.

The prevalence of smoking among the women of the northern cities is very high compared to what had been observed in Russia before the mid-90's. It is the first time that such a relatively high prevalence of smoking is observed: 24.1% of women smoke in Arkhangelsk and 30.4% in Murmansk.

The prevalence of hypertension as determined by the criterion of the arterial blood pressure level reported by the women surveyed, is 37% (35.8% in Arkhangelsk and 37.7% in Murmansk). More than half of the women – 53.8% in Arkhangelsk and 56.8% in Murmansk – control their arterial blood pressure by taking antihypertensive drugs. However, only 15.2% and 15.8% of women, respectively, do this with effect, i.e. have their arterial blood pressure within the normal values.

Every third woman reported that she had had her blood tested for cholesterol – somewhat more in Murmansk (31%) than in Arkhangelsk (24%). A high blood cholesterol level was observed in 23% and 19% of women, respectively.

Mammography as a method of early detection of breast cancer was reported to have been performed in only 38% of women in the 45-54 years age group and in 35% of women in the 55-64 years age group in Murmansk. In Arkhangelsk, these indicators are much lower - as low as 19% and 22%, respectively.

Thus, for the first time in the northern cities, nutrition, dietary habits, food intake frequency, and a range of other important behavioural risk factors were studied using random samples of women. No significant differences between the regions were detected, although certain peculiarities do exist. At the same time, the studies showed that in order to effectively influence the status of public health by changing nutrition and behavioural risk factors, these data need to be collected and monitored. Such a system of monitoring these indicators should be introduced in the State Sanitary and Epidemiological Surveillance Service in every region.

The information on the health status, nutrition and other behavioural risk factors of women in the northern cities should be used in developing healthy nutrition programmes and other prevention programmes that are currently being developed in Arkhangelsk and Murmansk.

## **1. Introduction**

In 1998, Russia began to develop the guidebook "Healthy Nutrition: A Plan of Action to Develop Regional Programmes in Russia". The effort was co-ordinated by the State Research Centre for Preventive Medicine of the MoH of the RF and the Research Institute of Nutrition of the RAMS. The working group set up to draft the guidebook also comprised representatives of the State Sanitary and Epidemiological Surveillance Service (State Sanepid Service), the centre of medical prevention, the medical university, city administrations, and other institutions and organisations in the cities of Arkhangelsk and Murmansk. As the document was drafted, studies aimed at assessing nutritional needs were conducted among representatives of various institutions dealing with nutrition. In parallel to the drafting of the guidebook, coalitions were built and working groups set up in the two cities to develop regional healthy nutrition programmes. A range of statistical and epidemiological data on the population health and nutrition was needed to develop science-based programmes. It is known, however, that this information is not collected in the regions in full and is not monitored at all. To have these data available in the regions, a system needs to be established that would include trained personnel and technical capacity, and would be able to collect the necessary data and information, to assess the situation with nutrition and to use these data in designing prevention programmes and in assessing them afterwards.

Such is the background for the project "The Health of Women in Arkhangelsk and Murmansk: Nutrition and Other Risk Factors for Non-Communicable Disease." It is a follow-up activity in the area of developing a policy of healthy nutrition in Russia. The project is being sponsored by the WHO Regional Office for Europe and the Government of Norway.

The project was developed and implemented in several stages:

- Developing a design, a work plan and a protocol of the study – September-December 2000;
- Recruiting and training personnel for the survey – December 2000-January 2001;
- Selecting a random sample for the survey and designing a questionnaire – January 2001;
- Conducting the survey – February-May 2001;
- Building a database and carrying out statistical analysis, drafting a report – June-September 2001.

## **2. The Aim of the Project**

The overall aim of the project was to provide opportunities in the regions for collecting and monitoring nutrition indicators in the population to support science-based development of healthy nutrition programmes. The objectives of the project included:

- training personnel in methods of organising and conducting a survey, analysing and interpreting the data to be obtained in order to assess the situation and develop healthy nutrition programmes;
- conducting a survey using a random sample of the population in Arkhangelsk and Murmansk to assess nutrition and other risk factors for non-communicable disease;
- disseminating the method of studying nutrition and other behavioural risk factors in other CINDI regions.

### 3. Materials and methods

#### 3.1 Random sample

**Selecting the sample:** the survey was conducted using random samples of women between 19 and 64 years of age, selected from among all the women living in the cities of Arkhangelsk and Murmansk, who, at the time of the survey, actually resided at their respective addresses and were neither pregnant nor breastfeeding. The original sample in Arkhangelsk was 1035 women, in Murmansk – 1000 women of the age bracket mentioned above. After exclusion from the sample of those women who were not to be surveyed (see section 3.2), the number of participants in the "purged" sample was 887 women in Murmansk and 897 in Arkhangelsk.

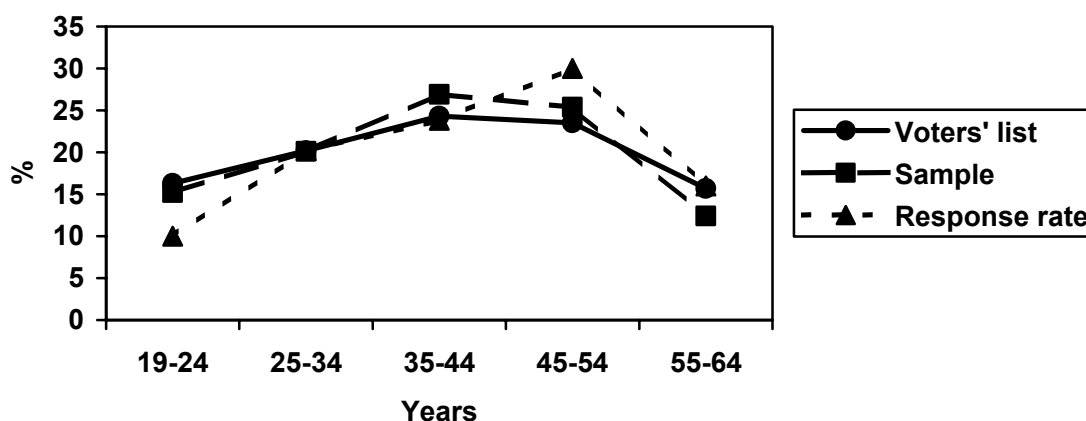
In the course of the work, various possibilities were discussed for selecting a random sample, namely, using the services of the State Committee for Statistics (Goskomstat), election commissions, medical insurance companies. The members of the project studied all the avenues of selecting a sample through these institutions. Election commissions turned out to be the most optimal way of getting a sample. It was found that lists of the entire population above 18 years of age were available in an electronic format at the election commissions of Arkhangelsk and Murmansk. In the end, the random sample in Murmansk was selected on the basis of the voters' lists of the city. In Arkhangelsk, selection of the sample coincided in time with local elections, which made it difficult to get a sample through that service. The sample was finally obtained through the regional passport and visa service.

The number of women in the 19-64 years age bracket living in Arkhangelsk is 127,786. The random sample was taken from the lists of all women. The data of the sample thus obtained were then compared to the data on the population numbers of Arkhangelsk provided officially by the Arkhangelsk regional department of statistics. Data on the age breakdown of the women in the sample and on the numbers of the women population of Arkhangelsk are shown in Table 1 and in Figure 1. Comparing the numbers of women in each age group, the number of women of the 55-64 years age group in the random sample was 3.3% less than the number of women of this age living in the city. Therefore, it was decided to recruit another 35 women of this age. As can be seen in the figure, differences in other age groups were negligible.

*Table 1. Comparison of women living in the city of Arkhangelsk with the sample and respondents by age*

	19-24 years		25-34 years		35-44 years		45-54 years		55-64 years		19-64 years	
	N	%	N	%	N	%	N	%	N	%	N	%
Voters list	20798	16.3	25838	20.2	31051	24.3	30027	23.5	20072	15.7	127786	100
Sample	152	14.7	201	19.4	269	26.0	254	24.5	159	15.4	1035	100
Respondents	76	10.0	154	20.2	181	23.8	228	30.0	122	16.0	761	100
Rate of response		50.0		76.6		67.3		89.8		76.7		73.5

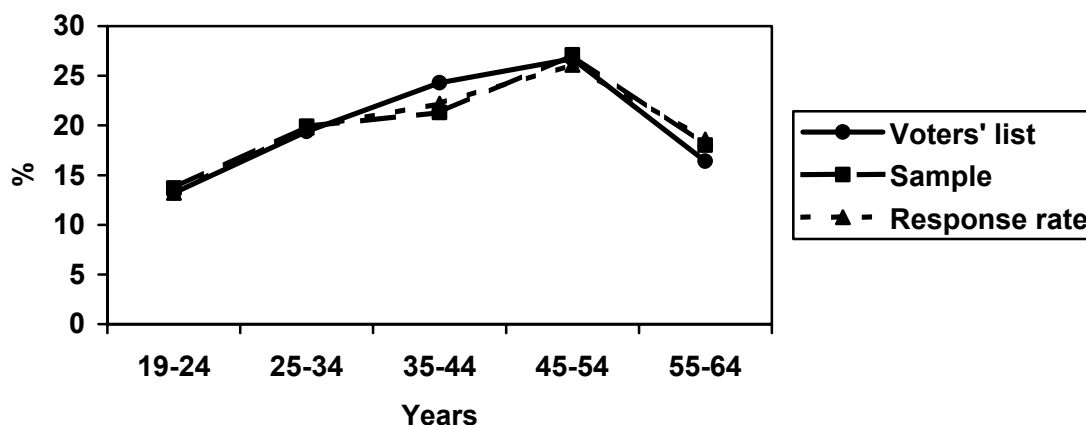
*Figure 1. Comparison of women living in the city of Arkhangelsk with the sample and respondents by age*



*Table 2. Comparison of women living in Murmansk with the sample and respondents by age*

	19-24 years		25-34 years		35-44 years		45-54 years		55-64 years		19-64 years	
	N	%	N	%	N	%	N	%	N	%	N	%
Voters list	17025	13.2	25264	19.4	31748	24.3	34868	26.7	21369	16.4	130274	100
Sample	137	13.7	199	19.9	213	21.3	271	27.1	180	18.0	1000	100
Respondents	103	13.2	154	19.8	173	22.2	203	26.1	145	18.6	778	100
Rate of response		75.2		77.4		81.2		74.9		80.6		77.8

*Figure 2. Comparison of women living in Murmansk with the sample and respondents by age*



In Murmansk, voters lists including all the population above 18 years of age were used to select a random sample. Out of the total population of Murmansk (399 thousand), the number of voters is 300,094 persons, of which 130,274 are women aged between 19 and 64 years, i.e. 43.4% of the total number of voters. The random sample was 1000 women. As can be seen from Table 2 and Figure 2 above, the number of women in each age group in the sample practically corresponds with the numbers of those actually living in the city. There is only a small difference in the 35-44 years age group, amounting to 3%, which is well within the acceptable limits.

Thus, the random samples obtained can be regarded as representative of the women population of the two cities aged between 19 and 64 years.

### 3.2 Response rate in the survey

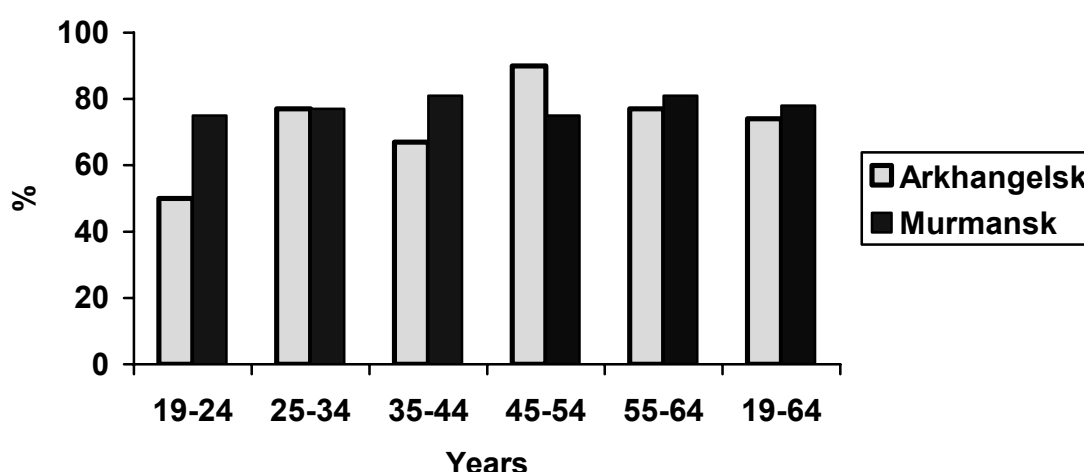
All the women listed in the random sample were visited by the interviewers at the address indicated in the list. The rules allowed three repeated visits if, during the first visit, the woman was not at home. Women who were pregnant or were breastfeeding their baby at the time of the survey were excluded from the sample and were not to be surveyed. The percentage of such women was 2.4% in Arkhangelsk and 1.6% in Murmansk. Also excluded from the sample were the women who did not reside at the addresses indicated in the list, as they had been included in the list by mistake – 9.7% in Murmansk and 10.9% in Arkhangelsk (Table 3). Sampling errors were 11.3% in Murmansk and 13.3% in Arkhangelsk. These women were excluded from the sample as the response rate was calculated. As a result, the "purged" sample was 887 women in Murmansk and 897 in Arkhangelsk.

The rate of response in relation to the purged sample was 84.8% in Arkhangelsk and 88% in Murmansk. 6.8% of women refused to take part in the survey in Murmansk and 9.1% in Arkhangelsk.

**Table 3. The number of women surveyed and causes of non-participation in the survey in Murmansk and Arkhangelsk**

	Sample	Number of those surveyed	Number of pregnant and breastfeeding women	Wrong address	Deceased	Absent at the time of the survey	Refused to participate in the survey	Other
Arkhangelsk								
Abs.	1035	761	25	113	4	50	82	-
%	100.0	73.5	2.4	10.9	0.4	4.8	7.9	-
Murmansk								
Abs.	1000	778	16	97	1	44	60	4
%	100.0	77.8	1.6	9.7	0.1	4.4	6.0	0.4

**Figure 3. Response rate among the women of Arkhangelsk and Murmansk**



As can be seen in Figure 3, the response rate in the original sample was high among the women in both cities - 73.5% in Arkhangelsk and 78.7% in Murmansk. In Murmansk, women in all age groups responded well to the survey. The greatest difference was 6% between the group of 19-24 years (75.2%) and the group of 35-44 years of age (81.2%). Considerable differences were

observed in the response rate in Arkhangelsk. Thus, in the 19-24 years group the response rate was as low as 50%, and was the lowest. However, in the age group of 45-54 years, it went up to 90%.

This high response rate in the survey was achieved due to the serious preparatory work conducted by the organisers of the study in the field. Special radio and TV broadcasts had been prepared by means of which the population was made aware of the forthcoming survey. Additionally, all women in the random survey were personally informed by letter of the fact that they had been randomly selected for the survey, and of the visit an interviewer would pay them. During the visit, each woman was presented with a booklet on healthy eating published specially for the survey on the basis of the WHO pamphlet on healthy nutrition of pregnant and lactating women.

Thus, it can be seen in Figures 1 and 2 that the age breakdown of the women surveyed was virtually no different from the age of the women - residents of the cities and of the women included in the random sample. Therefore, the data obtained on the status of health, nutrition and risk factors do reflect the situation among the women aged between 19 and 64 years and living in these cities.

### ***3.3 Survey questionnaire***

The designers of the questionnaire drew on the questionnaires that had been used before in a similar study in Latvia, at the Institute of Nutrition of the RAMS, in the Finnish-Baltic study (FINBALT), in the BRFSS project in Moscow (monitoring behavioural risk factors) and in the CINDI Programme. Questions on the risk factors were borrowed from the questionnaire used in the project of monitoring behavioural risk factors (BRFSS) (Annex 1). The questionnaire consisted of 16 sections that included the following questions:

1. General questions about health
2. Access to health care
3. Anthropometric measurements (height and weight)
4. Smoking
5. Hypertension (without taking arterial blood pressure)
6. Physical activity at work, at leisure, walking
7. Fruit and vegetables
8. Consumption of alcohol
9. Awareness of cholesterol
10. Cardio-vascular disease
11. Diabetes mellitus
12. Women's health (mammographies performed)
13. Background (marital status, education, composition of the family, income)
14. Awareness of the principles of healthy eating
15. Dietary habits
16. Daily food intake diary (24-hour recall method of studying food intake)

### ***3.4 Study of the food intake***

The section on the dietary habits included questions on the use of fat for cooking, consumption of milk, availability of milk with various fat contents in the trade outlets, consumption of salt, including iodised salt, consumption of breads fortified with vitamins. This section also included the food frequency method of studying food intake. Questions were asked about the frequency of eating basic foods: meat and fish products, milk products, potatoes, vegetables and fruit, cereals,

pasta, sweets, bread and eggs. Some of the questions on the awareness of healthy eating, consumption of vegetables and fruit and alcohol were also included in the questionnaire on the risk factors (see section 3.3).

Essentially, the idea of the **24-hour food recall method** is to determine the amounts of the foods and dishes ingested, where the respondent recalls in the course of the survey what he/she ate during the 24-hour period preceding the interview. Using questions, the interviewer asked each woman in the survey to recall the foods ingested during the 24-hour period preceding the interview. The interviewer was an active participant in the survey, describing, together with the respondent, the kind and amount of the ingested food using the food album. The characteristics and amounts were recorded by the interviewer in a special questionnaire form by completing appropriate sections (see Annex 1).

The survey covered the preceding 24-hour period from the first meal in the morning of the previous day to the last meal in the evening or night preceding the day of the interview. The food ingested in the morning or afternoon of the current day after waking up was not included in the survey.

The 24-hour recall questionnaire is a form of the non-formalised type, i.e. it does not include fixed standard questions or a list of foods/dishes. The questionnaire only contains names of compulsory sections (questions) that are to be completed, whatever the character of the survey using the 24-hour food recall method might be. It was mandatory to indicate the time of the meals to enable the schedule and frequency of dietary intake to be identified. The place where the meal had been taken was also marked in the appropriate question.

The principal chapter in the questionnaire is the description and characterisation of food and methods of cooking and consuming it, contained in the question "Name and composition of the food, dish or beverage". This question describes in a concise way all the characteristics of the food. Each kind of food and dish was given a name and described briefly, and the method of cooking and consumption was indicated. The amount of the food was estimated in household measures: spoons, glasses, cups, plates, ones of a kind, pieces, etc. Albums with full-scale drawings and photographs of various portion and dish sizes were also used to estimate the amounts of food ingested. The albums with photographs or drawings were shown the women during the interview in the process of or after describing the characteristics of a dish.

After the survey, specially trained staff-members of the State Sanepid Service in each region coded each dish recorded in the questionnaire. The codes were taken from the list of all the dishes and foods encountered in the region at the time of the study. All the dishes are listed in the alphabetic order. Later, information from all the sections and questions of the questionnaire was entered in the computer data base, excepting the food name. The dish code was indicated instead of the name.

### ***3.5 Training personnel for the survey***

15 interviewers participated in the study in each of the cities. In Murmansk, women from the labour exchange were invited to do this work along with eight 4<sup>th</sup>- and 5<sup>th</sup>-year students of the psychology department who were at that time having their on-the-job training at the Centre for Medical Prevention. In Arkhangelsk, the interviewers were staff-members of the Sanepid Centre, both doctors and junior health workers, as well as 6 students of Arkhangelsk Medical University who had some experience of doing a similar survey in the students' scientific club.



Four-days' training courses were organised for the interviewers, during which they were trained in standard methods of conducting surveys and measuring weight and height (the instructions are enclosed herewith in Annex 2). After the theoretical course, practical exercises were also conducted.

To supervise the correctness of interviewing and the quality of completing the questionnaire, 3-4 specialists from the State Sanepid Service were designated in both cities. Their job was also to encode the dishes in the 24-hour food record. The supervisors assessed the quality of completing the questionnaire that had been completed by the interviewers in the survey. The quality of completing the questionnaires was evaluated by the supervisors in the presence of experts from the State Research Centre for Preventive Medicine (SRCPM) of the MoH of the RF and from the Institute of Nutrition of the RAMS.

An interview took 40 minutes on average. The shortest interviews were between 10 and 20 minutes, while the longest took 90 to 120 minutes.

### ***3.6 Statistical data analysis***

A common data input programme was designed in the Delfi system to enter the data obtained during the survey. This programme was provided to the regions to work with. Later, all the data were checked and input errors were corrected.

An electronic version of the data base on foods was provided by the Institute of Nutrition of the RAMS to be used in the regions. This data base included all the known dishes and foods consumed in Russia, with their codes and the contents of protein, fat, carbohydrates, minerals, vitamins, caloric value.

The regional data base where the codes of the foods ingested were also indicated in the 24-hour food diary, was combined with the data base on foods by the code. As a result, each food consumed during the preceding 24-hour period had information on its biochemical composition attached to it. Later, the biochemical information on each food for each respondent was summarised taking into account the amount of the food. In its ultimate form, the data base contained information on the total intake of protein, fat, carbohydrates, minerals and vitamins, as well the energy intake during the preceding 24-hour period.

The report provided an analysis of the indicators for 5 age groups and generally for the women aged between 19 and 64. Mean values and indicators of the prevalence of a factor were calculated. Since there was no significant difference in age groups between the women surveyed in the two cities, data standardisation was not carried out. Besides, it was not the purpose of the project to compare data between the regions. The statistical analysis was carried out using the statistical programme SPSS separately in the regions and in Moscow. Permanent consultations were maintained.

## 4. Results and discussion

### 4.1 Socio-demographic characteristics and self-reported health status

The average age of the women surveyed in Arkhangelsk and Murmansk was practically the same – 42.4 and 42.0 years, respectively.

Table 4 and Figure 4 show the numbers of the women surveyed in various age groups. As mentioned before (Fig.3), there were no significant differences in the age breakdown of the women, and the samples surveyed in both cities are comparable by age. In the present report, we neglect minor differences and compare the data obtained without standardisation. Besides, it was not the aim of the project to compare data between the cities.

The majority of the women surveyed were between 45 and 54 years old – 30% in Arkhangelsk and 26.1% in Murmansk. The proportion of the women between 19 and 24 years of age was the smallest – 10% and 13.2%, respectively.

**Table 4. The proportion of the women surveyed in Arkhangelsk and Murmansk by age**

	19-24 years		25-34 years		35-44 years		45-54 years		55-64 years		19-64 years	
	N	%	N	%	N	%	N	%	N	%	N	%
Arkhangelsk	76	10.0	154	20.2	181	23.8	228	30.0	122	16.0	761	100.0
Murmansk	103	13.2	154	19.8	173	22.2	203	26.1	145	18.6	778	100.0

**Figure 4. The proportion of the women surveyed in Arkhangelsk and Murmansk by age**

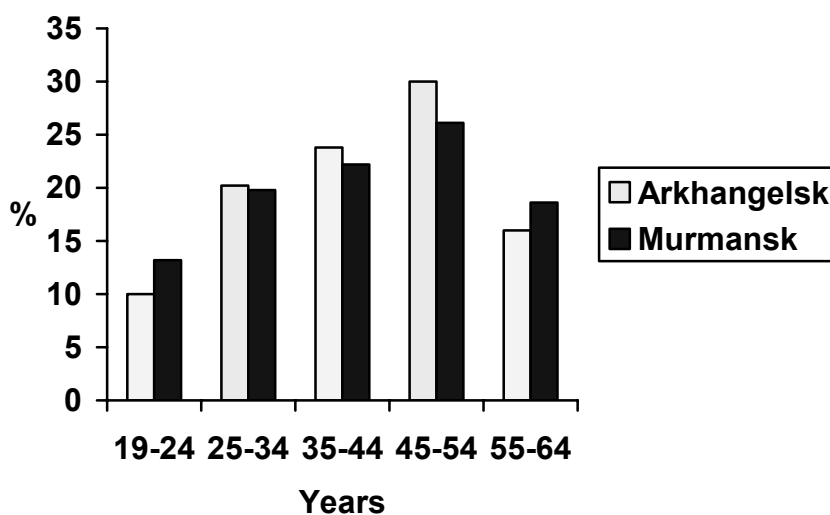


Table 5 presents social characteristics of the women. Most of the women (60%) in both cities are married. There are somewhat more divorced women in Arkhangelsk – 19.6% against the 15.3% in Murmansk. There are more unmarried women and widows in Arkhangelsk than in Murmansk – 13%, 12% and 8.4%, 11.1%, respectively.

The level of education of women in the cities does not seem to be much different. Thus, nearly 28% of women have higher education, 50% have secondary special education. 19.2% of women in Murmansk and 13.5% in Arkhangelsk have secondary education. There are more women with an education below secondary in Arkhangelsk (7.2%) than in Murmansk (4.4%). If the number

of years of schooling is used as an indicator of the level of education, it is somewhat higher in Arkhangelsk than in Murmansk – 13.1 and 12.8 years, respectively. To compare these data with those obtained in the BRFS project in Moscow, almost 48% of women in Moscow have higher education [1].

In Murmansk, more women have medium and high incomes per person than in Arkhangelsk: 66.4%, 12.4% and 61.5%, 10.4%, respectively. More women have low incomes in Arkhangelsk (28.1%) than in Murmansk (21.2%).

**Table 5. Social characteristics of the women surveyed in Arkhangelsk and in Murmansk**

	Arkhangelsk		Murmansk	
	N	%	N	%
<b>Marital status</b>				
<b>Married</b>	454	59.7	471	60.9
<b>Divorced</b>	116	15.3	152	19.6
<b>Never been married</b>	99	13.0	86	11.1
<b>Widow</b>	91	12.0	65	8.4
<b>Total</b>	760	100.0	774	100.0
<b>Education</b>				
<b>Lower than secondary</b>	55	7.2	34	4.4
<b>Secondary</b>	103	13.5	149	19.2
<b>Secondary special</b>	387	50.9	380	48.9
<b>Higher</b>	216	28.4	214	27.5
<b>Total</b>	761	100.0	777	100.0
<b>Income per family member</b>				
<b>Low - less than 1000 rbl. (35\$)</b>	206	28.1	154	21.2
<b>Middle - 1000-3000 rbl. (35-105\$)</b>	451	61.5	482	66.4
<b>High – 3000 rbl. and more (105\$ and more)</b>	76	10.4	90	12.4
<b>Total</b>	733	100.0	726	100.0

The self-reported health status that was used in this survey is of great prognostic value for the assessment of the population health status and mortality rate. In the population subgroups that assess their own health as poor, mortality is higher than in the subgroups assessing their health as excellent or good. The proportion of women with poor health is the same in both cities – 11.7%. The proportion of those assessing their health as excellent or good is slightly less in Arkhangelsk – 27.5% against 31.4% in Murmansk.

An overwhelming majority of women (66%) in the cities had not been on sick leave during the preceding 30 days. Nearly 17% had been temporarily disabled for more than 5 days. 42.5% of women in Murmansk and 54.7% in Arkhangelsk reported having some chronic disease. 65% of women in Murmansk and 79% in Arkhangelsk had seen a doctor for one reason or another during the preceding year. Only 6% of women in Murmansk, and 21% of women in Arkhangelsk had been to the doctor more than 5 times. Out of all the women who had seen the doctor, 36% in Murmansk and 45% in Arkhangelsk had turned to their local community physician. An overwhelming majority of the women use state health establishments, with only 17% in both cities going to private or commercial clinics.

**Table 6. Self-reported health status of women**

	Arkhangelsk		Murmansk	
	N	%	N	%
<b>Excellent</b>	9	1.2	9	1.2
<b>Very good</b>	13	1.7	20	2.6
<b>Good</b>	186	24.6	214	27.6
<b>Satisfactory</b>	459	60.8	441	57.0
<b>Poor</b>	88	11.7	90	11.6
<b>Total</b>	755	100.0	774	100.0

## 4.2 Study of dietary intake

Dietary intake in this survey was studied using a CVD risk factor questionnaire, a dietary habit questionnaire, the food frequency method and the 24-hour recall method. It was the first time such an integrated study of dietary intake was undertaken in Arkhangelsk and Murmansk. It was important not only to obtain as full information as possible on the current situation with women's nutrition in the cities concerned, but to assess the possibility of applying the methods used and the data obtained to monitoring indicators, developing regional healthy nutrition programmes and evaluating their effectiveness. The results of this study presented in respective chapters of this report reflect both the general trends and the current differences in women's nutrition in these cities.

While assessing dietary intake, we were guided by the following recommendations of the WHO and CINDI Programme:

### ***Twelve Steps to Healthy Eating***

1. Eat a variety of foods, most of which should be vegetable, rather than animal products.
2. Bread, bakery foods, cereals, potatoes should be eaten several times a day.
3. Eat a variety of fruit and vegetables, preferably fresh and locally grown, several times a day (at least 400 g per day).
4. A moderate daily physical activity is needed to maintain the body mass within the recommended range (a body-mass index of 20 to 25).
5. Control your dietary fat intake (it should provide not more than 30% of total daily calories) and substitute fat of vegetable oils for animal fat.
6. Replace fat meat and meat products with pulses, cereals, fish, poultry, or lean meat.
7. Eat low-fat milk and milk products with a low fat and salt content, such as kefir, sour milk, yoghurt and cheese.
8. Select low-sugar foods and make your sugar intake moderate, limiting the amount of sweets and sweet drinks.
9. Eat less salt. The total content of salt in the diet, including the salt in bread, processed, cooked or preserved food, should not exceed one tea-spoonful, or 6 grammes, per day. Iodised salt should be consumed
10. If you drink alcoholic beverages, the total amount of pure alcohol in them should not exceed 20 grammes per day.
11. Cooking should ensure safety of food. Steaming, microwaving, baking or boiling will help reduce the amounts of fat, butter, salt and sugar used in the process of cooking.
12. Promote exclusive breastfeeding of infants for about the first 6 months. Complementary food should be introduced gradually, without stopping breastfeeding altogether.

### ***4.2.1 Awareness of the principles of healthy eating***

To study women's awareness of the principles of healthy eating, the respondents were asked questions on the amount of fresh fruit and vegetables (excluding potatoes) one had to eat every day. The results of this study are shown in Table 7. On average, nearly 60% of women in

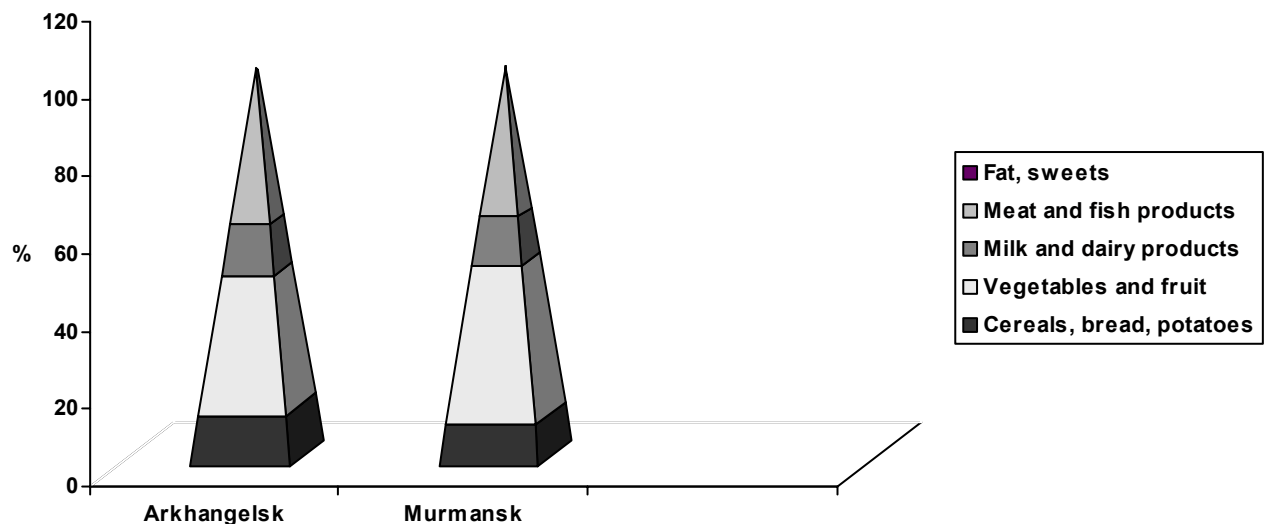
Arkhangelsk and 70% in Murmansk believe that one should eat more than 400 grammes of fresh fruit and vegetables daily. This was more frequently reported by younger women in Murmansk, with no such differences observed in Arkhangelsk.

**Table 7. Percentage of women who believe that one should eat 400 grammes or more of fresh fruit and vegetables every day**

Age groups	Arkhangelsk			Murmansk		
	N	Abs.	%	N	Abs.	%
19-24 years	76	43	56.6	103	79	76.7
25-34 years	154	96	62.3	154	117	76.0
35-44 years	181	112	61.9	173	129	74.6
45-55 years	228	131	57.5	203	142	70.0
55-64 years	122	69	56.6	145	85	58.6
19-64 years	761	451	59.3	778	552	71.0

Also surveyed was the women's opinion of the foods that are the basis of healthy nutrition. The women in the survey were offered a list of foods to select two food groups that were, to them, the most important ones that should serve the basis for healthy nutrition. All answers were then summed up for each food group. Figure 5 shows the distribution of the answers summed up for each food group. In both cities, women indicated that the basis of the diet should be fruit and vegetables (38%) and meat and fish products (37%). Cereals, bread and potatoes only got 12.5%, dairy products were mentioned by 12%. Fats and sweets got 0.5% of votes.

**Figure 5. Food groups that, according to the women in the survey, should serve the basis for healthy nutrition**



*Illustration for Figure 5. Healthy Food Pyramid*



Minimal amounts: confectionery, sweets, sodas, butter, margarine, salt

In equal proportions: fish, meat, dairy products, poultry, pulses

Vegetables, fruit

Potatoes

Maximum amounts: bread, cereals, pasta, rice

Comparing these data with the WHO recommendations and with the healthy food pyramid, one can see that the women undervalue significantly the importance of cereals and bread for healthy nutrition, and overvalue meat and fish products. The number of women observing that cereals, bread, potatoes, vegetables and fruit should serve the basis of healthy nutrition, is shown in Table 8 [2].

**Table 8. Percentage of women who indicated that the basis of healthy nutrition should be cereals, bread, potatoes**

Age groups	Arkhangelsk			Murmansk		
	N	Abs.	%	N	Abs.	%
19-24 years	73	4	5.5	102	11	10.8
25-34 years	149	9	6.0	154	17	11.0
35-44 years	176	6	3.4	173	11	6.4
45-54 years	225	18	8.0	197	19	9.6
55-64 years	119	14	11.8	140	13	9.3
19-64 years	742	51	6.9	766	71	9.3

Less than 10 percent in both cities mentioned these food groups as being the basis for healthy nutrition: 6.9% in Arkhangelsk and 9.3% in Murmansk. In Arkhangelsk, in virtually all age groups the number of women that gave the same answer to this question is less than in Murmansk.

Thus, results of studying women's awareness of the principles of healthy eating show that the majority of women in both cities (60% in Arkhangelsk and 70% in Murmansk) are aware of the required amount of fresh fruit and vegetables in any form, excluding potatoes, to be consumed daily. Also, a fair proportion of women noted correctly certain groups of food that form the basis of nutrition. This may well be the result of numerous workshops on healthy nutrition conducted by the WHO and sponsored by the Government of Norway for health professionals (in women's consultations, maternity homes, children's polyclinics, centres of State Sanitary and

Epidemiological Surveillance) working directly with the women populations in these cities. Still, the two correct answers to the question on the groups of food that form the basis of nutrition were only given by less than 10% of women.

However, this rather high level of awareness of women of the amount of vegetables and fruit to be consumed daily was not in any way reflected in their dietary habits.

#### ***4.2.2 Dietary habits***

##### **Consumption of fruit and vegetables**

The findings of the study of the frequency of fresh fruit and vegetable consumption, excluding potatoes, are shown in Tables 9 and 10. On average, only one-fifth (22.3%) of the women surveyed in Arkhangelsk and almost one-third (36.5%) of those surveyed in Murmansk eat fresh fruit virtually every day. Every third woman in Arkhangelsk (31.3%) "seldom" or "never" eats fruit, while in Murmansk the number of such women is less – 18.0%. Younger women in the two cities consume fruit daily more frequently than women in the older age groups. For instance, in Murmansk 43.6% of women in the 19-24 years age group consume fruit every day, whereas only 25.5% do so in the 55-64 years group. The situation is better with the consumption of vegetables in any form, excluding potatoes (Table 10). Thus, more than half of those surveyed in both cities eat vegetables practically every day, but again their number is less in Arkhangelsk (55%) than in Murmansk (63.8%). In contrast to fruit consumption, only between 2 and 8 percent of women seldom or never eat vegetables.

Average amounts of daily fresh fruit and vegetable consumption, excluding potatoes, were calculated using the findings of the study of the frequency of consumption of these foods and their amounts in grammes per meal. As can be seen from Table 11, the average consumption of both fresh fruit and vegetables, excluding potatoes, as well as their total consumption is considerably lower in Arkhangelsk. Thus, the average daily consumption of fruit and vegetables is 240 grammes in Arkhangelsk and 340 grammes in Murmansk. In both instances these indicators fall short of the recommended daily intake of these foods (see the "Twelve Principles of Healthy Eating", [2]).

The number of women consuming daily 400 grammes and more of fresh fruit and vegetables, excluding potatoes, is almost twice as low in Arkhangelsk as in Murmansk (15.5% and 26.3%, respectively; see Table 12). As can be seen from this table, the number of women eating the recommended amounts of fruit and vegetables every day decreases with age in Murmansk from 35.6% in the 19-24 years age group to 17.5% in the 55-64 years group. No such relation has been found in Arkhangelsk in any significant form.

A comparison of figures showing awareness of the need to consume fresh fruit and vegetables and those showing their actual consumption reveals a significant difference between the two. Thus, while 60-70% of women are aware that one should eat fresh fruit and vegetables every day, only 16% of women in Arkhangelsk and 26% in Murmansk actually achieved the recommended daily intake value, which is 4-5 times less. In other words, this healthy eating recommendation is being implemented to a much lesser degree.

*Table 9. Frequency of consumption of fresh fruit*

Age groups	Arkhangelsk										Murmansk									
	Never		Seldom		1-2 days a week		3-5 days a week		6 or more days a week		Never		Seldom		1-2 days a week		3-5 days a week		6 or more days a week	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
19-24 years	1	1.3	12	15.8	24	31.6	20	26.3	19	25.0			5	5.0	28	27.7	24	23.8	44	43.6
25-34 years	3	2.0	31	20.3	41	26.8	32	20.9	46	30.1	1	.7	14	9.3	33	21.9	37	24.5	66	43.7
35-44 years	3	1.7	54	30.2	53	29.6	31	17.3	38	21.2	3	1.8	16	9.6	50	29.9	35	21.0	63	37.7
45-55 years	10	4.4	73	32.3	74	32.7	31	13.7	38	16.8	5	2.5	41	20.7	51	25.8	33	16.7	68	34.3
55-64 years	4	3.3	45	37.2	36	29.8	9	7.4	27	22.3	6	4.3	46	32.6	30	21.3	23	16.3	36	25.5
19-64 years	21	2.8	215	28.5	228	30.2	123	16.3	168	22.3	15	2.0	122	16.1	192	25.3	152	20.1	277	36.5

*Table 10. Frequency of consumption of vegetables in any form, excluding potatoes*

Age groups	Arkhangelsk										Murmansk									
	Never		Seldom		1-2 days a week		3-5 days a week		6 or more days a week		Never		Seldom		1-2 days a week		3-5 days a week		6 or more days a week	
	Abs	%	Abs	%	Abs	%	Abs.	%	Abs.	%	Abs	%	Abs	%	Abs	%	Abs.	%	Abs	%
19-24 years					17	22.4	19	25.0	40	52.6	1	1.0	2	2.0	7	6.9	27	26.7	64	63.4
25-34 years	1	.6	7	4.5	23	14.9	43	27.9	80	51.9			5	3.3	14	9.2	32	21.1	101	66.4
35-44 years			9	5.0	33	18.3	36	20.0	102	56.7			3	1.7	14	8.1	42	24.3	114	65.9
45-55 years	3	1.3	9	4.0	28	12.4	59	26.1	127	56.2			4	2.0	23	1.4	50	24.8	125	61.9
55-64 years	1	.8	9	7.5	18	15.0	25	20.8	67	55.8			2	1.4	18	12.8	34	24.1	87	61.7
19-64 years	5	.7	34	4.5	119	15.7	182	24.1	416	55.0	1	.1	16	2.1	76	9.9	185	24.1	491	63.8



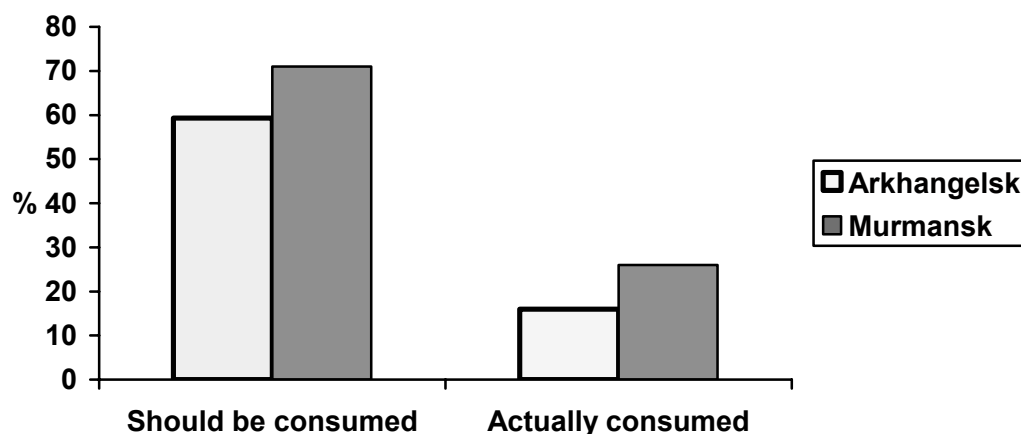
*Table 11. Average consumption of fruit and vegetables*

	Arkhangelsk						Murmansk					
	No. of observations	Mean	St. error	Standard deviation	Min.	Max.	No. of observations	Mean	St. error	Standard deviation	Min.	Max.
Fruit, g/day	755	89.91	5.44	149.52	.00	2100.00	743	158.89	8.85	241.12	.82	3000.00
Vegetables, g/day	756	151.32	4.97	136.53	.00	1050.00	768	177.79	7.01	194.13	2.05	3600.00
Fruit and vegetables, g/day	760	239.84	8.06	222.19	.00	2500.00	739	338.61	12.66	344.06	6.67	4300.00

*Table 12. The number of women consuming less than 400 grammes of fresh fruit and vegetables per day, excluding potatoes*

Age groups	Arkhangelsk			Murmansk		
	N	Abs.	%	N	Abs.	%
19-24 years	76	61	80.3	101	65	64.4
25-34 years	154	129	83.8	154	97	63.0
35-44 years	181	154	85.1	173	131	75.7
45-54 years	227	198	87.2	202	159	78.7
55-64 years	122	100	82.0	143	118	82.5
19-64 years	760	642	84.5	773	570	73.7

**Figure 6. Proportion of women who believe that one should consume 400 grammes of fresh fruit and vegetables per day, and who actually consume it**



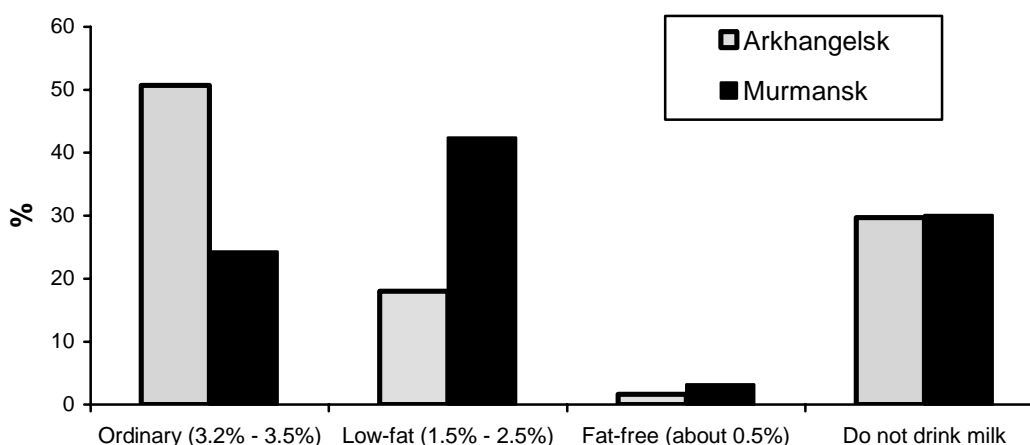
### Consumption of dairy products

The study of dietary habits regarding the consumption of dairy products aimed at estimating not only the type (fat content) of milk commonly consumed, but the availability of dairy products with various fat contents for the general public, as well.

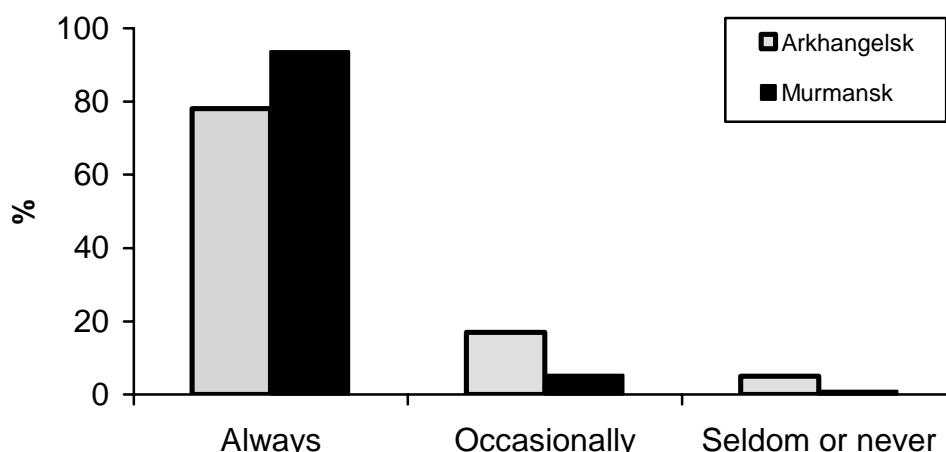
Findings presented in Table 13 and Figure 7 indicate that there are differences in the consumption of milk with various fat contents. Thus, in Arkhangelsk, half of the women in the survey (50.7%) consume ordinary milk with a fat content of 3.2-3.5%, whereas only 24.3% of women consume this type of milk in Murmansk. And, conversely, the number of women consuming low-fat (1.5-2.5%) and fat-free (about 0.5%) milk is twice as large in Murmansk as in Arkhangelsk (45.6% and 19.6%, respectively). The number of those who do not consume milk at all is about the same in the two regions and is nearly 30%.

The study of availability for the general public of dairy products with various fat contents (see Table 14 and Figure 8) showed that almost 70% of respondents in Arkhangelsk and 90% of respondents in Murmansk believed that there was "always" a choice of dairy products with various fat contents in food stores.

**Figure 7. Type (fat content) of milk commonly consumed**



**Figure 8. Availability of dairy products with various fat contents in stores**

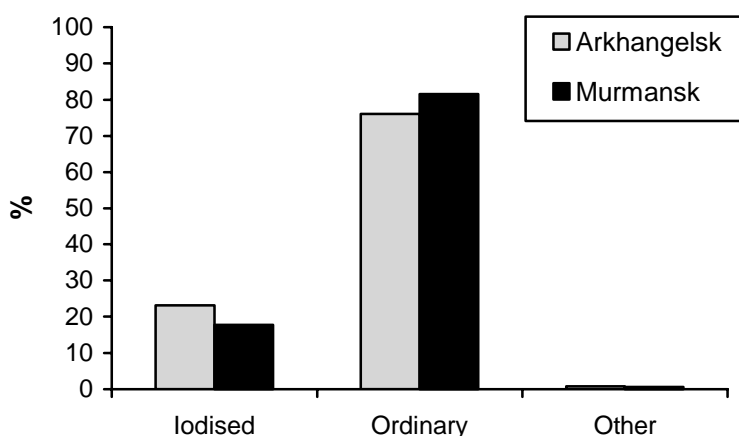


Thus, as far as fat intake is concerned, particularly, fat intake with milk and dairy products, 46% of women consume low-fat and fat-free milk in Murmansk and only 20% do so in Arkhangelsk, despite the fact that the situation with the availability of dairy products with various fat contents in stores is satisfactory (that was indicated by nearly 90% of respondents in both cities).

### **Consumption of salt**

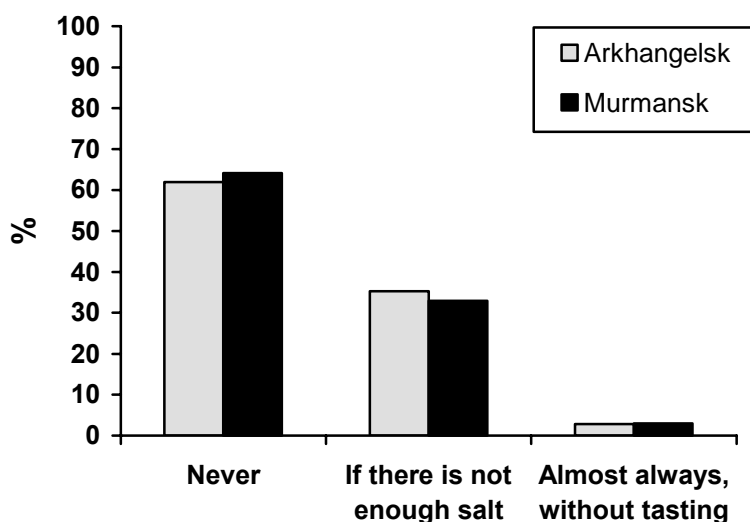
The findings of the study of dietary habits in respect of salt are presented in Figures 9 and 10. On average, nearly 80% of respondents in the two cities consume ordinary salt. Slightly more women consume iodised salt in Arkhangelsk (23.1%) than in Murmansk (17.7%).

**Figure 9. Type of salt commonly consumed**



Almost 40% of women (one in three) both in Arkhangelsk and in Murmansk indicated that they added salt at the table (adding salt to food in the event of insufficient salting and adding salt almost always without trying first).

*Figure 10. Adding salt to food at the table*



The findings of the study of dietary habits regarding salt consumption indicate that nearly 40% of women in the two cities add salt to food at the table if it is not salty enough and add it almost invariably without first trying the food. Considering the fact that humans ingest the amount of salt sufficient for metabolism with natural foods and ready-to-eat foods, such as bread, cheese, sausage, it appears that one woman in three, both in Arkhangelsk and in Murmansk, consumes salt in excessive quantities. As regards the type of salt consumed, about 80% of respondents, on average, in both cities consume ordinary salt. Iodine-deficiency disorders are endemic in the northern regions of Russia, like in many others, and the key measure to prevent them is consumption of iodised salt [3]. However, only 20% of women consume iodised salt.

**Table 13. Type (fat content) of milk commonly consumed**

Age groups	Arkhangelsk									Murmansk								
	N	Ordinary (3.2%-3.5%)		Low-fat (1.5%-2.5%)		Fat-free (about 0.5%)		Never drink milk		N	Ordinary (3.2%-3.5%)		Low-fat (1.5%-2.5%)		Fat-free (about 0.5%)		Never drink milk	
		Abs.	%	Abs.	%	Abs.	%	Abs.	%		Abs.	%	Abs.	%	Abs.	%	Abs.	%
19-24 years	76	39	51.3	13	17.1	4	5.3	20	26.3	103	42	40.8	33	32.0	6	5.8	22	21.4
25-34 years	154	80	51.9	29	18.8	4	2.6	41	26.6	154	42	27.3	60	39.0	4	2.6	48	31.2
35-44 years	181	92	50.8	32	17.7			57	31.5	173	34	19.7	77	44.5	9	5.2	53	30.6
45-55 years	228	113	49.6	36	15.8	2	.9	77	33.8	203	41	20.2	84	41.4	3	1.5	75	36.9
55-64 years	122	62	50.8	27	22.1	2	1.6	31	25.4	145	30	20.7	76	52.4	3	2.1	36	24.8
19-64 years	761	386	50.7	137	18.0	12	1.6	226	29.7	778	189	24.3	330	42.4	25	3.2	234	30.1

**Table 14. Availability of dairy products with various fat contents in food stores**

Age groups	Arkhangelsk								Murmansk							
	N	Always		Sometimes		Seldom or never		N	Always		Sometimes		Seldom or never			
		Abs.	%	Abs.	%	Abs.	%		Abs.	%	Abs.	%	Abs.	%		
19-24 years	76	58	76.3	12	15.8	6	7.9	103	99	96.1	4	3.9				
25-34 years	154	125	81.2	25	16.2	4	2.6	154	149	96.8	3	1.9	2	1.3		
35-44 years	181	146	80.7	31	17.1	4	2.2	173	156	90.2	16	9.2	1	.6		
45-55 years	228	168	73.7	44	19.3	16	7.0	203	190	93.6	11	5.4	2	1.0		
55-64 years	122	97	79.5	17	13.9	8	6.6	145	135	93.1	8	5.5	2	1.4		
19-64 years	761	594	78.1	129	17.0	38	5.0	778	729	93.7	42	5.4	7	.9		

**Table 15. Type of fat used in the preparation of food**

Age groups	Arkhangelsk									Murmansk								
	N	Vegetable oil		Margarine		Butter		All types of fat		N	Vegetable oil		Margarine		Butter		All types of fat	
		Abs.	%	Abs.	%	Abs.	%	Abs.	%		Abs.	%	Abs.	%	Abs.	%	Abs.	%
19-24 years	76	69	90.8	1	1.3			6	7.9	103	82	79.6	1	1.0	2	1.9	18	17.5
25-34 years	154	143	92.9	1	.6	3	1.9	7	4.5	154	121	78.6	5	3.2	5	3.2	23	14.9
35-44 years	181	167	92.3	1	.6	3	1.7	10	5.5	173	140	80.9	9	5.2	1	.6	23	13.3
45-55 years	228	209	91.7			4	1.8	15	6.6	203	177	87.2	5	2.5	1	.5	20	9.9
55-64 years	122	103	84.4	2	1.6	5	4.1	12	9.8	145	126	86.9	1	.7	1	.7	17	11.7
19-64 years	761	691	90.8	5	.7	15	2.0	50	6.6	778	646	83.0	21	2.7	10	1.5	101	13.0

**Table 16. The type of fat used to make sandwiches**

Age groups	Arkhangelsk							Murmansk						
	N	Margarine		Butter		Use neither butter nor margarine		N	Margarine		Butter		Use neither butter nor margarine	
		Abs.	%	Abs.	%	Abs.	%		Abs.	%	Abs.	%	Abs.	%
19-24 years	76	13	17.1	38	50.0	25	32.9	103	24	23.3	61	59.2	18	17.5
25-34 years	154	47	30.5	88	57.1	19	12.3	154	31	20.1	96	62.3	27	17.5
35-44 years	181	64	35.4	97	53.6	20	11.0	173	37	21.4	105	60.7	31	17.9
45-55 years	228	78	34.2	121	53.1	29	12.7	203	62	30.5	96	47.3	45	22.2
55-64 years	122	44	36.1	55	45.1	23	18.9	145	47	32.4	65	44.8	33	22.8
19-64 years	761	246	32.3	399	52.4	116	15.2	778	201	25.8	423	54.4	154	19.8

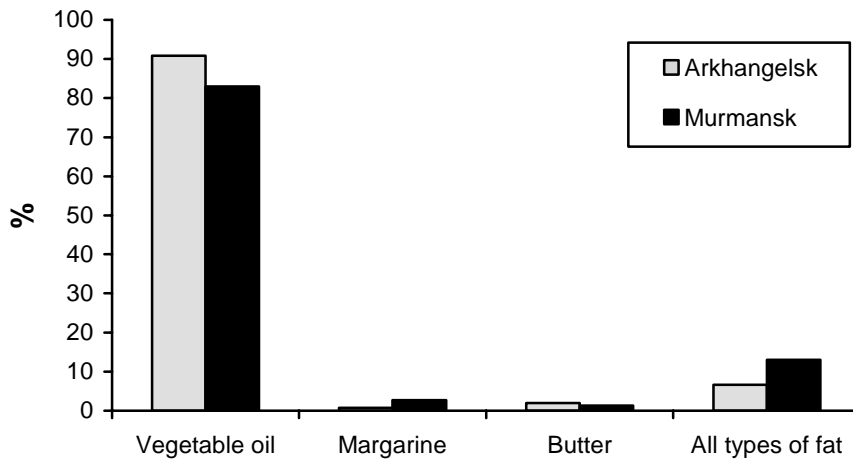
**Table 17. Mean values of alcohol consumption**

	Arkhangelsk						Murmansk					
	N of observations	Mean	St. error	St. deviation	Min.	Max.	N. of observations.	Mean	St. error	St. deviation	Min.	Max.
Beer, g at a time	394	373.97	15.57	309.04	50.00	3000.00	396	390.33	13.42	266.98	50.00	2500.00
Unfortified wine, g at a time	510	205.34	5.10	115.10	30.00	750.00	499	216.98	5.73	127.96	25.00	1000.00
Fortified wine, g at a time	308	168.96	6.01	105.47	25.00	500.00	246	184.74	6.39	100.17	20.00	700.00
Hard liquor, g at a time	493	134.14	4.14	91.95	5.00	750.00	497	131.11	4.15	92.46	10.00	1000.00
Total pure alcohol, g/day	699	4.41	.32	8.44	.01	130.90	694	4.95	.39	10.19	.01	172.08

## The type of fat used

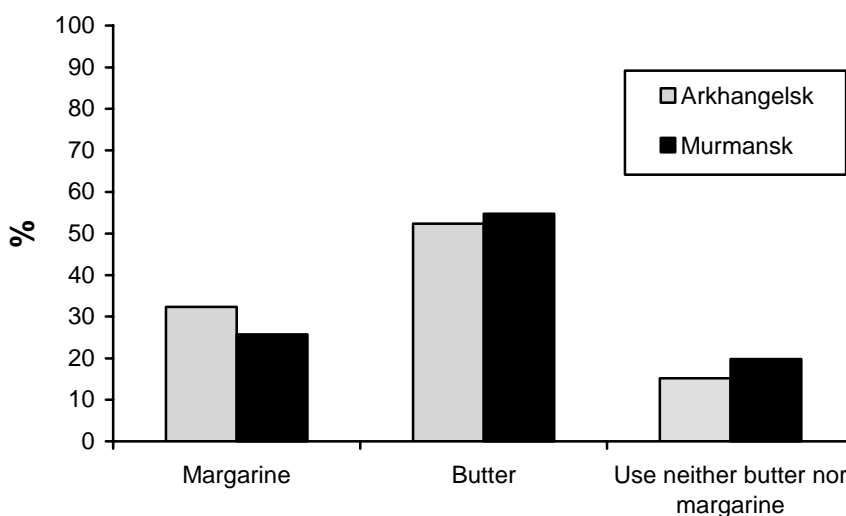
The type of fat most commonly used in both cities in the preparation of food is vegetable oil, and there is little difference between the age groups by this indicator (Figure 11, Table 15). This type of fat is used more commonly in Arkhangelsk (90.8%) than in Murmansk (83.0%). Butter is used in the preparation of food by 2% of women in Arkhangelsk and by 1.3% in Murmansk. A very small percentage of the women surveyed in both cities use margarine.

*Figure 11. Type of fat used in the preparation of food*



The study showed that, on average, nearly half of the women in Arkhangelsk (52.4%) and in Murmansk (54.4%) use butter to make sandwiches (Figure 12 and Table 16). In both cities, there is a tendency towards a decrease in the number of women using butter: from 50% in the 19-24 years age group to 45.1% in the 55-64 years age group in Arkhangelsk and from 59.2% in the 19-24 years age group to 44.8% in the 55-64 years age group in Murmansk.

*Figure 12. Type of fat used to make sandwiches*



Thus, nearly 90% of women use vegetable oil, but over half of them in both cities use butter to make sandwiches, and only about one-fifth of women use neither butter nor margarine for sandwiches.

## Alcohol consumption

Alcohol consumption was studied using the risk factors questionnaire and the 24-hour food recall method. The mean values of consumption of alcoholic beverages are presented in Table 17. The table shows that in Arkhangelsk the mean intake of all alcoholic beverages at a time is somewhat lower than in Murmansk. Thus, the mean beer consumption at a time is 374 g in Arkhangelsk and 390 g in Murmansk, that of unfortified wine – 205 g and 217 g, respectively, of fortified wine – 169 g in Arkhangelsk and 185 g in Murmansk, of hard liquor – 134 g and 131 g, respectively. The mean daily intake of pure alcohol is 4.41 g/day in Arkhangelsk and 4.95 g/day in Murmansk.

According to the WHO guidelines, the intake of pure alcohol (for those who do consume alcohol) should not exceed 20 grammes per day [2]. It was interesting to see what the number would be of those who consume 20 or more grammes of pure alcohol per day (Table 18).

**Table 18. The number of women consuming 20 or more grammes of pure alcohol per day**

Age groups	Arkhangelsk			Murmansk		
	N	Abs.	%	N	Abs.	%
19-24 years	74	4	5.4	88	3	3.4
25-34 years	145	10	6.9	144	10	6.9
35-44 years	172	7	4.1	167	4	2.4
45-54 years	209	9	4.3	186	5	2.7
55-64 years	99	1	1.0	109	2	1.8
19-64 years	699	31	4.4	694	24	3.5

On the whole, the number of women consuming more than 20 grammes of pure alcohol per day is somewhat higher in Arkhangelsk, and is 4.4% compared to 3.5% in Murmansk.

The survey also showed that the greatest number of women consuming over 20 grammes of pure alcohol per day fell within the age group of 25-34 years in both cities (7%), decreasing in the older age groups.

Close mean values of daily consumption of pure alcohol were obtained in the survey using the risk factor questionnaire and the dietary habits questionnaire.

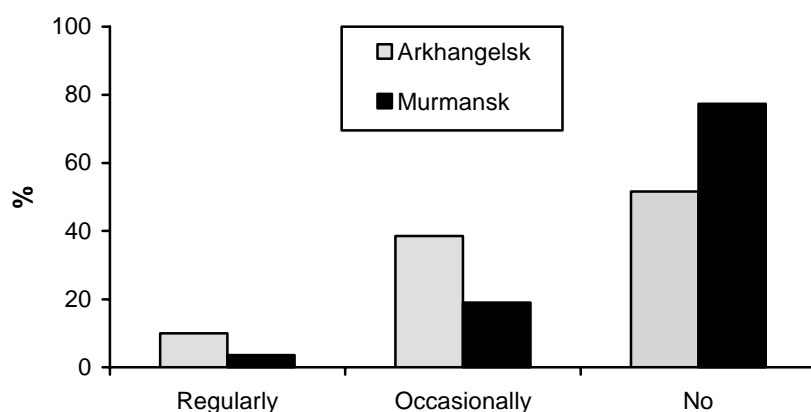
## Consumption of vitamin-fortified breads

The study of consumption of vitamin-fortified breads (Figure 13) showed that only 10% of women in Arkhangelsk and about 4% in Murmansk eat these regularly. 19% of women eat such breads occasionally in Murmansk and 38.5% in Arkhangelsk. More than half of the women in both cities, however, do not eat vitamin-fortified breads at all.

The question on the consumption of vitamin-fortified breads had been included in the section on dietary habits at the request of the cities participating in the survey, as measures are being taken there at the city level to fortify bread with vitamins. This question is very important from the marketing point of view: the consumption of such breads by women is very low (as the survey showed), hence it is very low in the population as a whole, which calls for additional efforts, perhaps on a larger scale, to intensify promotion and awareness-raising activities among the population.



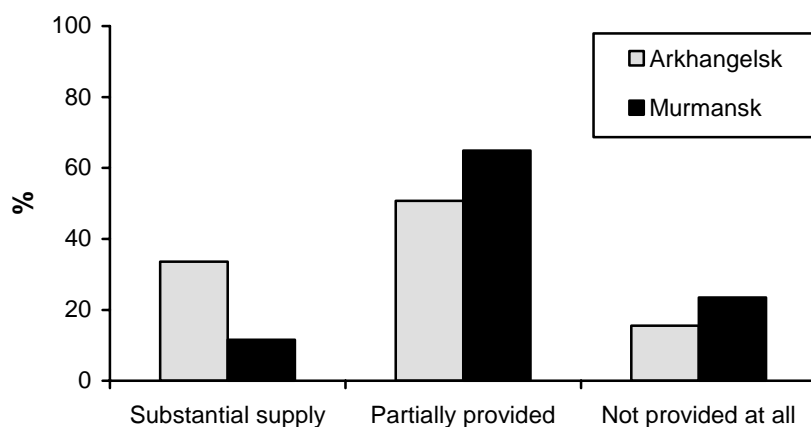
**Figure 13. Consumption of vitamin-fortified breads**



**Supply of home-grown or home-produced foods or foods gathered in the forest**

The degree of the respondents' dependence on foods grown or produced on their private garden plots or foods gathered in the forest varies quite significantly in the two cities (Figure 14). There are more women who have a substantial supply of foods grown or produced by themselves in Arkhangelsk (33.6%) than in Murmansk, where the figure is only 11.6%. At the same time, 15.6% of women in Arkhangelsk and 23.5% in Murmansk do not have such foods at all. Half of the women in Arkhangelsk and more than half in Murmansk are partially provided with their own foods.

**Figure 14. Supply of foods grown or produced at home or gathered in the forest**



Despite the fact that the northern areas of Russia are zones of "high-risk" farming, the supply of foods grown or produced by respondents on their private garden plots or gathered in the forest is quite substantial in both cities. Thus, in Arkhangelsk about one-third of the women reported that they are fully provided with such foods, and half of them are partially provided. In Murmansk women fully provided with these foods account for nearly 12% (perhaps because it is a region located farther to the north), and those partially provided account for over 60% of the total. It appears that this is a major contribution to the family food security, considering that about 30% of women in Arkhangelsk and 20% in Murmansk have low incomes.

Thus, the study of women's awareness of the principles of healthy eating makes it possible:

- to assess the current situation with women's nutrition as at the time of the survey;
- to use the data obtained as indicators for evaluating the healthy nutrition programmes that are being implemented in the two cities;
- to assess the impact of the awareness of the principles of healthy eating on changes in the dietary behaviour.

### ***4.2.3 Frequency of intake of certain food groups***

The frequency of food intake was conducted for 11 food groups using the CINDI food frequency questionnaire (Table 19).

It can be seen from the table that half of the women in both cities consume meat and meat products every day or almost every day. Nearly one-fifth of the women in Arkhangelsk (22.1%) and in Murmansk (22.5%) eat meat once a day or more frequently.

More than half of the respondents in Arkhangelsk (66.5%) and in Murmansk (56.9%) eat fish and fish products once or several times a week.

Milk and dairy products are quite seldom consumed in these cities. Only 13.1% of women in Arkhangelsk and 21.0% in Murmansk consume milk and dairy products every day. About one-fifth of the respondents eat these products every day. About as many never or seldom consume milk.

Two-thirds of the respondents in Arkhangelsk and Murmansk eat potatoes daily or almost daily. The situation with vegetables other than potatoes is practically the same (Figures 15 and 16).

Fruit and berries are seldom consumed in these cities: only 30% of the women in Arkhangelsk and Murmansk eat them every day or almost every day, which is quite a low figure. The largest proportion of the women (25.1% in Arkhangelsk and 27.9% in Murmansk) consume fruit several times a week, with almost half of the women in both cities consuming fruit and berries less than once a week (Figures 15 and 16).

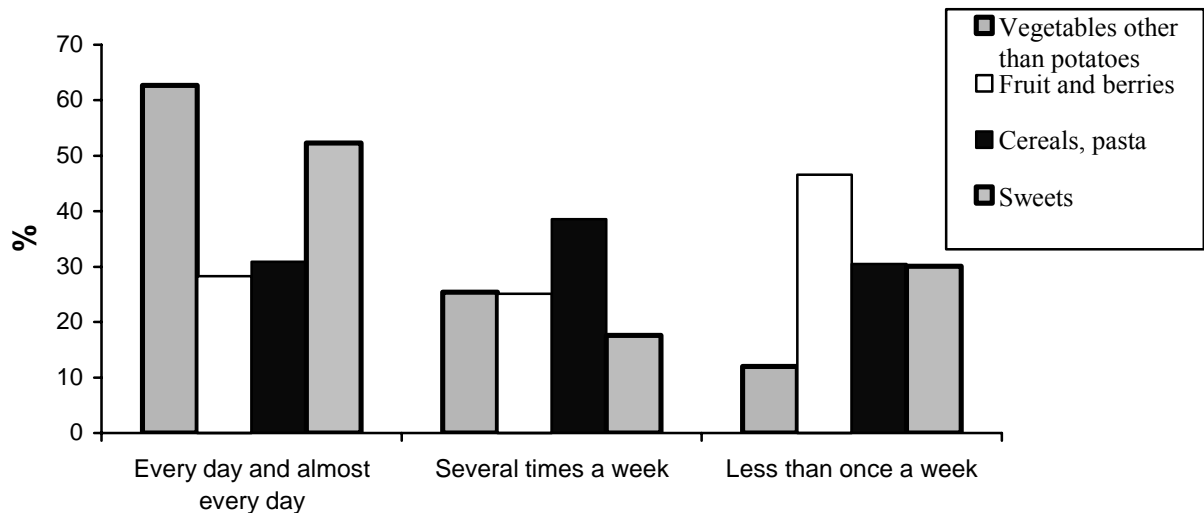
An almost similar situation is observed in both cities with the consumption of cereals and pasta (Figures 15 and 16): 20% of the respondents eat them almost every day. Only 10% of the women eat these products daily.

Interestingly, sweets are consumed by the majority of women in both cities almost twice as frequently as fruit and berries (Figures 15 and 16).

Most of the women in both Arkhangelsk (81.2%) and Murmansk (83.8%) eat bread and bakery products every day.

The consumption of eggs is approximately the same in the two cities: on average, most of the women in Arkhangelsk (35.5%) and in Murmansk (34.3%) eat eggs several times a week.

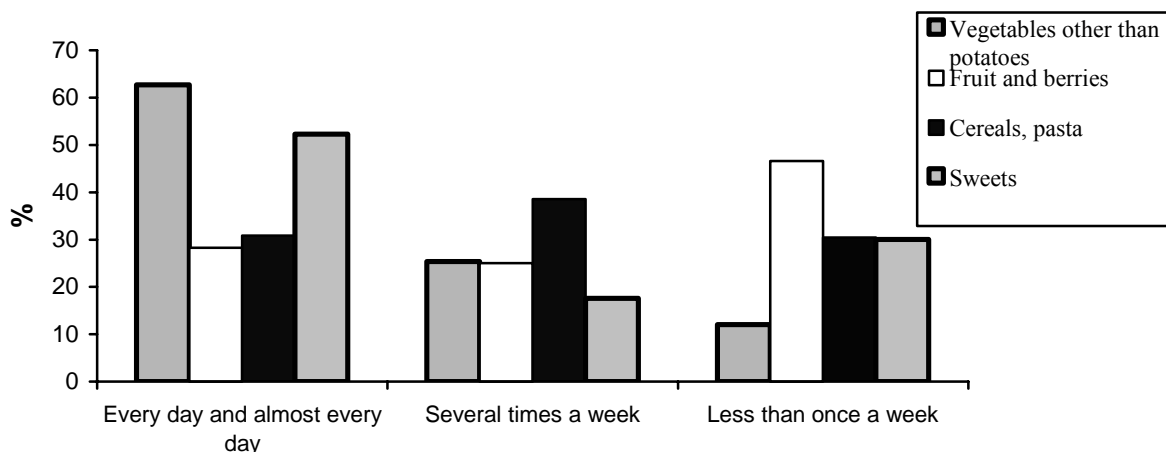
**Figure 15. Frequency of intake of certain food groups in Arkhangelsk**



As mentioned before, the food frequency method of studying nutrition was used in this survey both to assess the current situation with the frequency of intake of foods as part of the development of regional healthy nutrition programmes, and to identify the reference values of food intake frequency with a view to monitoring these values in future studies using the frequency method.

The results of studying dietary intake by the frequency method, while showing how often a product is consumed, allow a judgment to be formed with a certain degree of accuracy on the possible deficiency or excess of nutrients, vitamins or minerals. Undoubtedly, food intake frequency alone is not enough to characterise nutrition, and ideally one should have data on the quantities of nutrients ingested. Nevertheless, certain assumptions regarding the character of nutrition could be made using the results of the frequency method of studying nutrition.

**Figure 16. Frequency of intake of certain food groups in Murmansk**



Thus, data on the frequency of meat and fish consumption obtained in this survey suggest that the women's dietary intake of protein, fat, iron and phosphorus is sufficient.

The inadequate frequency of dairy product consumption as revealed by the survey suggests that there might be a deficiency of calcium.

As regards the frequency of consumption of fruit and vegetables – the principal source of vitamin C – it would be wrong to assume that there is a vitamin C deficiency, because, although the survey showed an inadequate frequency of fruit intake, the situation with the frequency of consumption of vegetables and potatoes – another good source of vitamin C – is in general quite favourable. Besides, vitamin C is present in other foods, as well.

One should note the infrequent consumption by women of such foods as cereals and pasta and, therefore, a possibly inadequate intake of complex carbohydrates and a reduced total energy value of the diet.

*Table 19. Frequency of consumption of certain food groups*

Age groups	Arkhangelsk							Murmansk						
		Once a day or more frequently	Almost every day	Several times a week	Once a week	Once or several times a month	Seldom or never	N	Once a day or more frequently	Almost every day	Several times a week	Once a week	Once or several times a month	Seldom or never
	N	%	%	%	%	%	%	Abs.	%	%	%	%	%	%
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Meat products</b>														
19-24 years	76	17.1	28.9	39.5	7.9	5.3	1.3	103	19.4	34.0	31.1	6.8	4.9	3.9
25-34 years	154	25.3	31.2	28.6	8.4	3.2	3.2	154	21.4	33.8	23.4	8.4	3.2	9.7
35-44 years	181	27.6	31.5	26.0	8.3	3.9	2.8	173	28.3	29.5	25.4	9.8	4.6	2.3
45-55 years	228	17.5	33.8	24.1	11.4	7.0	6.1	203	23.6	26.1	31.0	7.9	5.9	5.4
55-64 years	122	21.3	26.2	25.4	10.7	6.6	9.8	145	17.2	15.2	27.6	22.1	6.9	11.0
19-64 years	761	22.1	31.0	27.2	9.6	5.3	4.9	778	22.5	27.4	27.6	10.9	5.1	6.4
<b>Fish and sea foods</b>														
19-24 years	76	2.6	6.6	39.5	25.0	21.1	5.3	103	2.9	5.8	28.2	32.0	21.4	9.7
25-34 years	154	1.3	13.0	38.3	31.2	14.3	1.9	154	1.3	8.4	34.4	25.3	22.7	7.8
35-44 years	181	2.2	13.8	42.5	27.6	9.4	4.4	173	3.5	7.5	27.2	28.3	24.3	9.2
45-55 years	228	4.4	14.0	50.0	19.7	8.3	3.5	203	2.5	4.4	31.5	26.6	19.2	15.8
55-64 years	122	8.2	19.7	30.3	22.1	16.4	3.3	145	.7	11.0	29.0	22.8	22.1	14.5
19-64 years	761	3.7	13.9	41.7	24.8	12.4	3.5	778	2.2	7.3	30.2	26.7	21.9	11.7
<b>Milk and dairy products</b>														
19-24 years	76	14.5	15.8	19.7	19.7	17.1	13.2	103	25.2	13.6	30.1	11.7	6.8	12.6
25-34 years	154	18.8	16.2	29.2	14.3	10.4	11.0	154	24.7	17.5	18.8	13.0	7.8	18.2
35-44 years	181	11.6	21.0	26.5	14.4	8.8	17.7	173	19.7	18.5	23.1	15.0	5.2	18.5
45-55 years	228	9.2	16.2	32.9	12.3	9.6	19.7	203	18.7	21.7	23.2	11.8	8.4	16.3
55-64 years	122	14.8	13.1	33.6	11.5	9.0	18.0	145	18.6	22.8	15.2	20.0	5.5	17.9
19-64 years	761	13.1	16.8	29.4	13.8	10.2	16.6	778	21.0	19.3	21.7	14.3	6.8	17.0
<b>Potatoes</b>														
19-24 years	76	38.2	34.2	19.7	3.9	2.6	1.3	103	31.1	35.0	24.3	5.8	1,9	1.9
25-34 years	154	41.6	32.5	17.5	5.8	1.9	.6	154	38.3	26.6	26.0	7.1		1.9
35-44 years	181	34.8	35.4	23.8	3.3	.6	2.2	173	23.1	35.8	31.2	5.8	1,2	2.9
45-55 years	228	41.2	36.8	16.7	3.1	2.2		203	26.1	36.9	26.6	5.9	2.5	2.0
55-64 years	122	40.2	36.1	18.0	2.5	1.6	1.6	145	27.6	36.6	24.1	4.1	3.4	4.1
19-64 years	761	39.3	35.2	19.1	3.7	1.7	1.1	778	28.8	34.3	26.7	5.8	1.8	2.6

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Vegetables (excluding potatoes)</b>														
19-24 years	76	38.2	21.1	28.9	9.2	2.6		103	35.9	26.2	32.0	2.9	1.9	1.0
25-34 years	154	35.1	33.1	21.4	4.5	4.5	1.3	154	45.5	20.8	21.4	7.8	3.2	1.3
35-44 years	181	30.9	28.2	27.1	8.3	3.9	1.7	173	42.2	24.9	24.3	5.8	2.3	.6
45-55 years	228	32.9	33.8	22.4	4.4	4.4	2.2	203	36.9	20.7	33.0	6.9	2.5	
55-64 years	122	32.8	23.0	31.1	4.9	4.1	4.1	145	38.6	16.6	31.0	6.9	2.8	4.1
19-64 years	761	33.4	29.3	25.4	5.9	4.1	2.0	778	40.0	21.6	28.3	6.3	2.6	1.3
<b>Fruit, berries</b>														
19-24 years	76	15.8	13.2	28.9	19.7	18.4	3.9	103	26.2	15.5	35.0	14.6	7.8	1.0
25-34 years	154	21.4	16.9	26.6	15.6	13.0	6.5	154	29.9	14.9	29.9	11.7	9.1	4.5
35-44 years	181	13.8	13.3	27.1	15.5	19.9	10.5	173	28.3	8.1	32.4	13.9	11.6	5.8
45-55 years	228	8.3	11.8	23.7	21.5	19.3	15.4	203	19.7	12.8	25.6	18.2	14.8	8.9
55-64 years	122	12.3	19.7	20.5	12.3	23.8	11.5	145	15.9	14.5	18.6	11.7	21.4	17.9
19-64 years	761	13.7	14.6	25.1	17.2	18.8	10.6	778	23.8	12.9	27.9	14.3	13.2	8.0
<b>Cereals, pasta</b>														
19-24 years	76	11.8	19.7	38.2	15.8	5.3	9.2	103	10.7	14.6	41.7	16.5	8.7	7.8
25-34 years	154	7.1	19.5	41.6	19.5	7.8	4.5	154	12.3	17.5	38.3	16.9	5.8	9.1
35-44 years	181	12.2	18.8	42.0	13.8	7.7	5.5	173	4.6	22.0	40.5	19.7	5.8	7.5
45-55 years	228	11.4	20.6	39.5	13.6	8.8	6.1	203	9.9	19.2	42.4	16.3	6.4	5.9
55-64 years	122	12.3	21.3	28.7	13.9	13.1	10.7	145	20.0	17.9	32.4	14.5	7.6	7.6
19-64 years	761	10.9	20.0	38.6	15.1	8.7	6.7	778	11.2	18.6	39.2	16.8	6.7	7.5
<b>Sweets (candies, jam, honey)</b>														
19-24 years	76	34.2	25.0	22.4	7.9	3.9	6.6	103	29.1	21.4	29.1	8.7	4.9	6.8
25-34 years	154	29.9	22.1	15.6	13.6	8.4	10.4	154	30.5	16.9	16.2	9.7	10.4	16.2
35-44 years	181	27.1	22.7	15.5	13.8	11.0	9.9	173	22.0	17.3	23.7	12.1	10.4	14.5
45-55 years	228	25.0	27.6	17.1	11.8	9.6	8.8	203	22.7	15.3	22.7	11.8	11.3	16.3
55-64 years	122	28.7	23.0	21.3	6.6	7.4	13.1	145	22.1	25.5	17.9	6.2	9.7	18.6
19-64 years	761	28.0	24.3	17.6	11.4	8.8	9.9	778	24.8	18.8	21.6	10.0	9.8	15.0
<b>Bread and bakery products</b>														
19-24 years	76	78.9	14.5	2.6	1.3	1.3	1.3	103	74.8	14.6	3.9	1.9	1.0	3.9
25-34 years	154	74.0	18.2	3.2	1.3	1.3	1.9	154	79.9	11.0	1.9	2.6		4.5
35-44 years	181	80.7	12.2	4.4	1.1		1.7	173	87.9	5.2	1.2	1.7	.6	3.5
45-55 years	228	85.1	11.4	2.6			.9	203	86.7	6.9	3.0	.5	.5	2.5
55-64 years	122	85.2	13.1	.8	.8			145	85.5	10.3	1.4	1.4		1.4
19-64 years	761	81.2	13.5	2.9	.8	.4	1.2	778	83.8	9.0	2.2	1.5	.4	3.1

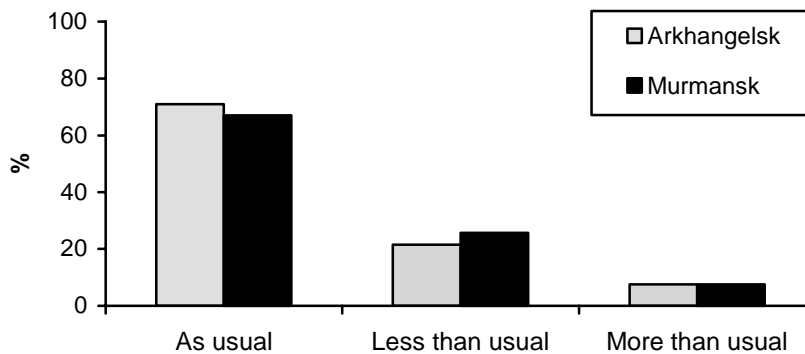
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<b>Eggs</b>														
19-24 years	76	5.3	11.8	36.8	18.4	15.8	11.8	103	2.9	4.9	40.8	19.4	17.5	14.6
25-34 years	154	3.9	13.0	39.6	26.0	11.7	5.8	154	5.8	7.1	33.8	27.9	16.9	8.4
35-44 years	181	7.2	12.7	37.0	22.7	11.0	9.4	173	5.2	7.5	37.6	24.3	13.9	11.6
45-55 years	228	3.9	7.9	34.6	31.6	9.6	12.3	203	3.0	8.4	34.0	28.6	12.8	13.3
55-64 years	122	3.3	8.2	28.7	26.2	23.0	10.7	145	2.1	4.8	26.9	25.5	21.4	19.3
19-64 years	761	4.7	10.5	35.5	26.1	13.1	10.0	778	3.9	6.8	34.3	25.7	16.1	13.2

#### 4.2.4 Intake of energy, nutrients, vitamins, minerals and foods

##### Details of food intake the day before

When food intake was studied using the 24-hour recall method, women were asked questions as to how typical their food intake was on the previous day, and how their diets correlated with their doctor's recommendations, special dietetic requirements or religious traditions (Annex 1). It turned out that the food intake on the previous day was not typical with 29% of women in Arkhangelsk and 33% of women in Murmansk (Figure 17).

*Figure 17. Typical food intake during the previous 24 hours*



The correlation of the food intake on the previous day with the doctor's recommendations, special dietetic requirements or religious traditions is shown in Table 20.

*Table 20. Causes of the women's food intake being unusual on the previous day*

Age groups	Arkhangelsk							Murmansk						
	N	Doctor's recommendation		Following a special diet		Religious traditions		N	Doctor's recommendations		Following a special diet		Religious traditions	
		Abs	%	Abs	%	Abs	%		Abs	%	Abs	%	Abs	%
19-24 years	76		0.0	7	9.2	1	1.3	102		0.0	7	6.9	2	1.9
25-34 years	154	1	0.7	14	9.1	1	0.6	153	1	.7	12	7.8	5	3.3
35-44 years	181	4	2.2	16	8.8	6	3.3	173	3	1.7	6	3.5		0.0
45-54 years	228	10	4.4	12	5.3	4	1.8	202	5	2.5	8	4.0	2	1.0
55-64 years	122	11	9.1	18	14.8	8	6.6	145	5	3.4	2	1.4	5	3.5
19-64 years	761	26	3.4	67	8.8	20	2.6	775	14	1.8	35	4.5	14	1.8

One can see from the Table that, on average, a very small proportion of women in the two cities reported that their food intake the day before had been related to any of the suggested causes of changes in the usual diet. Nevertheless, there are almost twice as many such women in Arkhangelsk as in Murmansk. Thus, 3.4% of the respondents in Arkhangelsk and 1.8% in Murmansk reported correlation between their food intake the day before and their doctor's recommendations, and 8.8% and 4.5% of them, respectively, reported correlation with observance of a special diet. Changes in the food intake on the previous day due to religious traditions were only reported by 2.6% of women in Arkhangelsk and 1.8% of women in Murmansk.



## Daily energy intake

The average intakes of energy, nutrients, vitamins and minerals are presented in Tables 21-24. The average daily energy intake of women in Arkhangelsk is 1686 kcal, in Murmansk – 1470 kcal. But the lowest daily energy intake is observed in the 55-64 years age group in both cities, and is 1617 kcal in Arkhangelsk and 1356 kcal in Murmansk. In all age groups, the calorific value of the daily food intake in Arkhangelsk is lower than in Murmansk. Thus, the greatest difference is observed in the 45-54 years group – 300 kcal. In the 35-44 years group this difference is the smallest, amounting to 70 kcal. As for the other age groups, the average difference is 200-250 kcal.

According to the WHO guidelines, the daily energy intake of adult non-pregnant women should be 1900 kcal [4]. Comparing the energy intakes identified in this survey with the WHO recommendations, they are somewhat lower than what the WHO recommends. However, one should take into consideration the typicalness of food intake and the distribution of energy in the population. The food intake of nearly 30% of respondents was not typical on the day of the survey, and over 20% of women had eaten less than usual on that day. Besides, this method is associated with a 10 to 15% bias, as the result of which the values obtained were somewhat lower than they actually were.

The women's daily energy intake began to go down as early as in the mid-90's. Thus, according to surveys conducted in 1992, the daily dietary energy intake of adult women was, for example, in the Bryansk oblast between 1560 and 1887 kcal, in the Sverdlovsk oblast – 1888 kcal [5]. Similar data on diminishing average daily energy intakes in low-income families in Russia were reported by the programme "Poverty in Russia" [6].

According to the study of the population nutrition conducted in 1999 in the Baltic states also using the 24-hour recall method, the average energy intake among women varies between 1640 kcal/day in Estonia and 1953 kcal/day in Latvia [7].

Reduced energy intakes are probably related to the low levels of physical activity of most of the women in the cities surveyed, both at work and at leisure. As early as in 1994, they discussed the issue of a certain inconsistency between the low value of daily energy intake and, at the same time, the high prevalence of overweight among women, reaching 50%. That could have been explained by underestimation of the actual food intake (mostly at the expense of fat), as well as by the fact that the total energy intake had just begun to diminish and had not by then resulted in a reduction of body mass [5]. In this survey, too, the prevalence of overweight was 52% (see section 4.3).

## Nutrient intake

High energy intakes among the women in Arkhangelsk are due to a somewhat higher intake of nutrients: protein, carbohydrates, fat, alcohol. The input of nutrients in the energy content of the diet varies but insignificantly among the women of all age groups in both cities (see Table 22). Carbohydrates account for 53-55% of the energy content, proteins provide, on average, 12-13%, and fat – 32-34% of energy (Figure 18).

**Table 21. Intake of energy and nutrients**

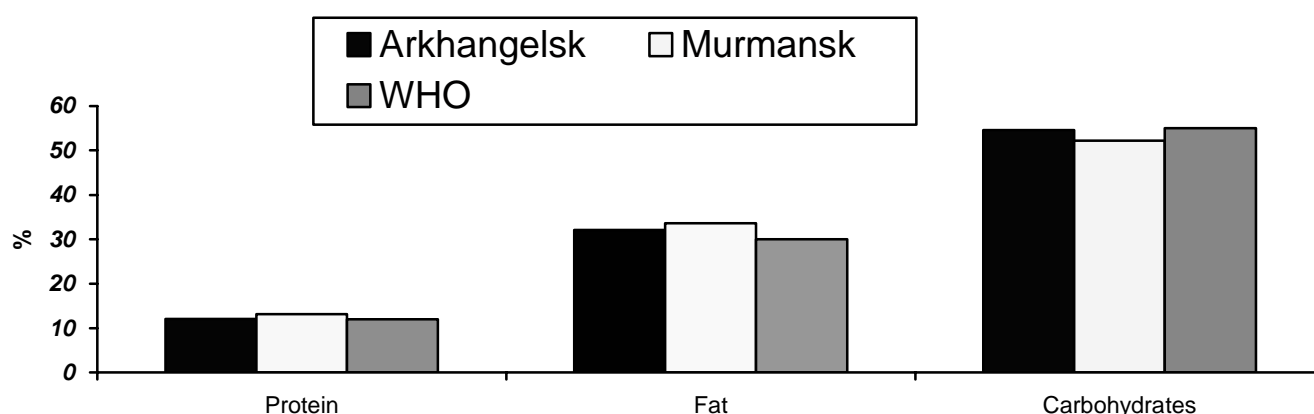
	Arkhangelsk						Murmansk					
Age, years	19-64	19-24	25-34	35-44	45-54	55-64	19-64	19-24	25-34	35-44	45-54	55-64
N of observations	761	76	154	181	228	122	778	103	154	173	203	145
<b>Energy (kcal)</b>												
Mean	1686.13	1743.50	1703.37	1624.48	1741.12	1617.32	1470.31	1544.88	1479.99	1548.48	1440.28	1355.85
St.error	28.33	84.21	58.81	52.32	63.56	53.20	25.56	83.38	59.81	54.37	46.89	51.66
St.deviation.	781.57	734.14	729.76	703.95	959.81	587.62	712.92	846.22	742.17	715.17	668.12	622.07
Minimum	108.00	332.28	117.60	108.00	168.37	538.69	46.05	190.20	223.08	46.05	180.21	224.96
Maximum	8504.33	3510.10	3891.84	4900.05	8504.33	3303.50	5694.40	5694.40	5636.07	4187.29	3421.19	3732.02
<b>Carbohydrates, g</b>												
Mean	225.27	227.62	223.61	217.61	228.11	231.97	185.76	195.53	176.50	192.93	184.21	182.27
St.error	3.65	11.41	8.35	7.20	7.17	7.96	3.07	8.92	6.45	6.76	5.91	7.09
St.deviation	100.61	99.47	103.64	96.91	108.31	87.94	85.58	90.50	80.03	88.87	84.23	85.37
Minimum	9.40	24.74	9.40	25.60	34.12	80.22	11.01	32.80	18.32	11.01	16.54	22.05
Maximum	734.44	523.48	592.81	550.35	734.44	577.35	492.48	492.48	439.62	460.11	467.99	416.80
<b>Protein, g</b>												
Mean	50.24	51.89	50.16	48.21	52.69	47.73	47.58	47.97	47.83	50.36	46.81	44.80
St.error	.89	2.98	1.90	1.69	1.86	1.74	.90	2.96	1.99	1.85	1.71	1.96
St.deviation	24.47	25.97	23.58	22.67	28.10	19.20	25.08	30.04	24.66	24.31	24.33	23.55
Minimum	.10	11.13	4.55	1.40	.10	8.29	.15	1.40	3.52	.15	1.40	4.45
Maximum	194.12	153.12	130.12	138.20	194.12	114.50	164.76	164.76	126.37	144.37	164.61	132.42
<b>Protein, g/kg</b>												
Mean	.77	.93	.84	.72	.76	.69	.72	.84	.78	.76	.66	.63
St.error	.02	.06	.04	.03	.03	.03	.02	.06	.04	.03	.03	.03
St.deviation.	.42	.50	.44	.41	.41	.33	.42	.57	.44	.39	.37	.35
Minimum	.00	.18	.08	.02	.00	.14	.00	.03	.05	.00	.02	.06
Maximum	3.58	3.00	2.50	2.94	3.58	2.03	3.39	3.39	2.16	2.41	2.27	1.72
<b>Fat, g</b>												
Mean	61.39	65.57	63.83	59.91	63.48	53.96	57.41	61.23	61.62	61.37	55.43	48.27
St.error	1.26	4.19	2.71	2.47	2.56	2.60	1.37	4.27	3.53	2.82	2.50	2.60
St.deviation.	34.84	36.54	33.63	33.25	38.73	28.70	38.31	43.34	43.79	37.15	35.65	31.36
Minimum	.00	8.70	6.40	.00	.03	8.72	.16	.79	.95	.16	1.37	4.64
Maximum	254.63	207.66	170.99	197.85	254.63	188.92	370.65	280.30	370.65	252.84	177.38	188.65

Alcohol, g												
Mean	4.52	5.05	4.84	3.14	6.65	1.84	2.89	2.83	4.00	3.29	2.47	1.88
St.error	.89	2.22	1.27	1.20	2.55	.83	.42	1.14	1.01	1.16	.67	.77
St.deviation	24.66	19.35	15.74	16.13	38.52	9.19	11.83	11.55	12.53	15.28	9.55	9.22
Minimum	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Maximum	432.90	101.59	116.55	141.60	432.90	83.25	108.93	78.45	83.25	108.93	69.15	83.25

*Table 22. Energy input of nutrients (%)*

Age, years	Arkhangelsk						Murmansk					
	19-64	19-24	25-34	35-44	45-54	55-64	19-64	19-24	25-34	35-44	45-54	55-64
N of observations	761	76	154	181	228	122	778	103	154	173	203	145
Carbohydrates												
Mean	54.59	52.95	52.67	54.72	54.50	57.99	52.22	53.23	49.48	51.38	52.78	54.65
St.error	.41	1.29	.90	.85	.77	.89	.45	1.12	1.00	1.01	.89	1.00
St.deviation	11.26	11.21	11.16	11.50	11.56	9.78	12.57	11.38	12.44	13.26	12.65	12.07
Minimum	13.37	20.61	13.37	17.89	23.24	27.14	18.13	29.93	20.30	18.13	18.64	22.12
Maximum	99.63	73.68	82.61	94.81	99.63	84.99	95.61	93.74	87.81	95.61	91.34	85.61
Protein												
Mean	12.10	12.13	12.09	11.95	12.29	11.96	13.13	12.29	13.24	13.32	13.18	13.31
St.error	.12	.41	.28	.24	.23	.29	.15	.37	.35	.36	.29	.35
St.deviation	3.40	3.57	3.45	3.26	3.52	3.22	4.28	3.71	4.34	4.76	4.08	4.27
Minimum	.24	4.57	4.30	5.16	.24	4.38	1.32	2.7	3.46	1.32	2.70	5.48
Maximum	28.60	22.76	28.44	26.49	28.60	22.40	39.48	24.40	30.58	39.48	26.93	26.76
Fat												
Mean	32.11	33.36	33.51	32.40	31.99	29.32	33.65	33.51	35.83	34.49	33.15	31.15
St.error	.35	1.13	.79	.74	.64	.78	.39	1.02	.93	.81	.77	.89
St.deviation	9.73	9.82	9.85	10.02	9.72	8.61	10.95	10.35	11.49	10.70	10.91	10.68
Minimum	.00	11.39	10.85	.00	.14	6.17	3.07	3.49	3.82	3.07	5.95	4.76
Maximum	69.13	64.80	66.42	69.13	58.87	52.55	62.46	59.21	62.46	60.84	62.22	59.68
Alcohol												
Mean	1.21	1.56	1.73	.93	1.22	.72	1.00	.97	1.45	.82	.89	.89
St.error	.17	.71	.41	.32	.30	.37	.14	.31	.35	.28	.23	.38
St.deviation	4.74	6.21	5.10	4.37	4.52	4.05	3.82	3.10	4.39	3.63	3.25	4.54
Minimum	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Maximum	40.29	34.12	28.74	35.15	35.63	40.29	41.34	15.59	29.76	23.87	20.51	41.34

*Figure 18. Average energy input of nutrients for the cities (%)*



The average protein input in the total energy value of the diet is very close to the values recommended by the WHO (not more than 12%), and amounts to 12.2-13.1% of the total energy content of the daily food intake, or 0.7-0.8 g/kg body mass. No differences between age groups are observed. In Murmansk, however, the intake of protein is somewhat higher in all age groups and on the whole. These data suggest that women in both cities are not protein-deficient. This is also suggested, though indirectly, by data on the frequency of meat and fish consumption.

The mean protein intake, in grammes, is 50.2 g/day in Arkhangelsk and 47.6 g/day in Murmansk. Protein intake in accordance with the current standards in this country has always been higher than is recommended in other countries. Thus, in the USA the 1989 recommendation for adult women was 46-50 g/day of protein, in the UK (1991) it was 47 g/day, while in Russia the norm was 58-87 g/day [8]. The findings of this survey indicate that the protein intake figures are close to the European guidelines.

It is well-known that a high fat intake is associated with a high risk of development of cardiovascular disease and cancer [9, 10]. Very important data on the intake of fat have been obtained in this survey. On average, fat provides between 32 and 34% of total energy in the diet in both cities. A lower fat input in the dietary energy intake in the 55-64 years age group in Arkhangelsk is quite noteworthy: 29.3% against 31.1% in Murmansk. No differences have been observed in other age groups. The recommended contribution of fat in the daily energy intake, according to the WHO, should not be more than 15-30%. In other words, the values observed exceed these guidelines. However, the input of fat in the total energy of the diet of 60% of women is above these figures. It should be noted that fat intake in the 80's was even higher. Thus, in the 1992 study, the proportion of fat in the diets of women in the Kaluga oblast was almost 38% [5]. Therefore, one could talk about a positive trend in nutrition. This reduction in fat intakes can also account for a lower energy value of the diets.

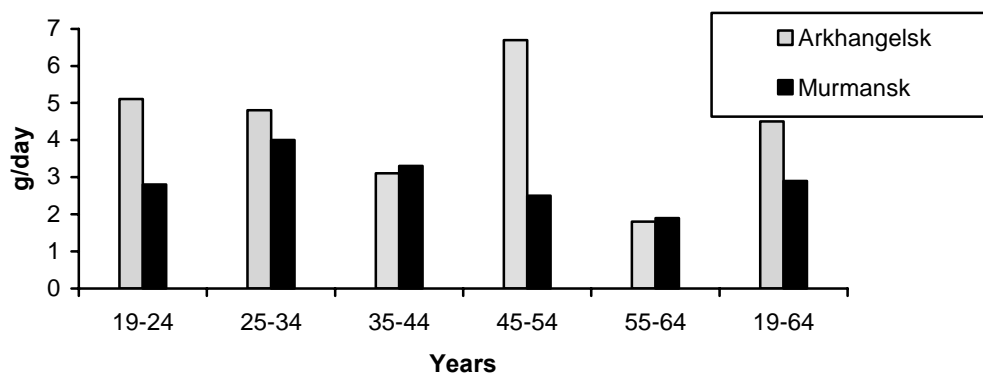
In contrast to fat intake, the energy input of carbohydrates is, on average, lower than the values recommended by the WHO (55%-75%) and amounts to 55% in Arkhangelsk and 52% in Murmansk. In absolute terms, the intake of carbohydrates is, respectively, 225 g/day and 186 g/day. No significant differences have been observed between age groups. However, one can note that in the 55-64 years age group the intake of carbohydrates is highest and amounts to 58% in Arkhangelsk and 55% in Murmansk.

There is also an imbalance between the intake of complex and simple carbohydrates in the overwhelming majority of the women surveyed. Complex carbohydrates provide less than 50% of the total energy ingested, and simple carbohydrates provide more than 10% of energy.

While such foods as bread and potatoes (sources of complex carbohydrates) are eaten fairly frequently, according to the findings of the study of food intake using the food frequency method, such foods as cereals and pasta that are also good sources of complex carbohydrates are consumed rather rarely, which is something they do not deserve. The main reason for this seems to be a lack of awareness of the principles of healthy eating (with only one-fifth of those surveyed in the two cities believing that bread, cereals and pasta should form the basis of the diet), and a wide-spread belief among the population that consumption of these foods leads to overweight.

Alcohol, on average, does not account for more than 1-2% of the total energy ingested in all age groups in both cities. The average intake of pure alcohol is higher in Arkhangelsk (4.5 g/day) than in Murmansk (2.9 g/day). The highest average alcohol intake is up to 6.7 g/day in the 45-54 years age group in Arkhangelsk and up to 4.0 g/day in the 25-34 years group in Murmansk (see Figure 19).

**Figure 19. The average intake of pure alcohol (g/day)**



On the whole, the findings of the survey correspond with the trends identified in the studies undertaken by the Goskomstat of the Russian Federation and the Institute of Nutrition, i.e. a reduction in fat and protein intakes and in the energy value of the diet [11, 12].

### **Vitamin and mineral intake**

The mean values of vitamin intake are presented in Table 23. The average intake of vitamin C in both cities agrees with the WHO standard of 30 mg/day [4]. Thus, in Arkhangelsk, the average vitamin C intake is 58.3 mg/day, while in Murmansk it is even slightly higher – 59.3 mg/day. No differences between the ages have been observed. However, in Arkhangelsk the 45-54 years age group had the lowest intake of vitamin C (51.1 mg/day), which could be due to a considerably lower consumption of fruit and vegetables in this age group (356 grammes per day) compared to others (see "Food Intake").

The recommended intake of vitamin B<sub>1</sub> is 0.8 mg per 1000 kcal, which amounts to 1.52 mg/day, given the recommended energy intake of 1900 kcal per day [4]. The values obtained in this survey were lower than those recommended. Thus, the mean vitamin B<sub>1</sub> value was 0.95 mg in Arkhangelsk and 0.81 mg in Murmansk. This could be explained, in particular, by an inadequate intake of cereals that are a good source of the group B vitamins.

The recommended dietary intake of vitamin B<sub>2</sub> is 1.1 mg/day [4]. In Murmansk, the mean value of vitamin B<sub>2</sub> intake is 0.93, which is slightly lower than recommended. In Arkhangelsk the intake of vitamin B<sub>2</sub> corresponds with the recommended values.

The mean values of mineral intake are shown in Table 24. Iron intake is 13.6 mg/day in Arkhangelsk and 12.3 mg/day in Murmansk. The recommended iron intake is 12.5 mg/day [4]. In Murmansk, iron intake is below it in virtually all age groups, excepting the 35-44 years group. In Arkhangelsk, all age groups comply with the recommendation.

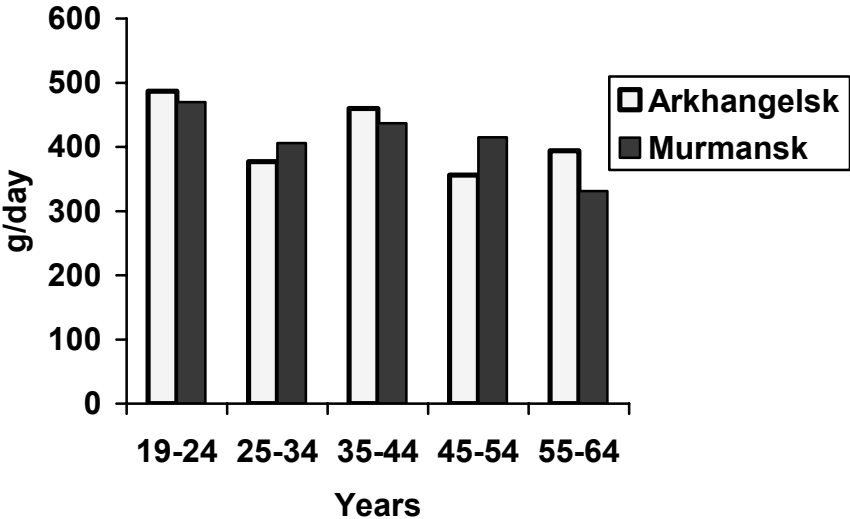
Calcium intake is 482 g in Arkhangelsk and 450 g in Murmansk. The recommended intake values are between 400 and 1000 mg per day. Since there is no scientific evidence today to substantiate high intakes of calcium, the WHO recommends between 400 and 700 mg/day [2, 4]. The values obtained in this survey meet these recommendations, but are nearer the lower end of the range.

Thus, as far as vitamin and mineral intakes are concerned, the findings of the study of food intake using the 24-hour recall method show that, although the survey was conducted in winter and spring, there was, on average, no deficiency of the vitamins and minerals of interest, excepting vitamin B<sub>1</sub> deficiency in both cities and vitamin B<sub>2</sub> and iron deficiency in Murmansk.

**Food intake**

Data on the average intakes of foods are presented in Table 25. As can be seen from the table, there is no significant differences in the data, in general, although intakes of certain foods do differ.

*Figure 20. Intake of fresh fruit and vegetables in various age groups*



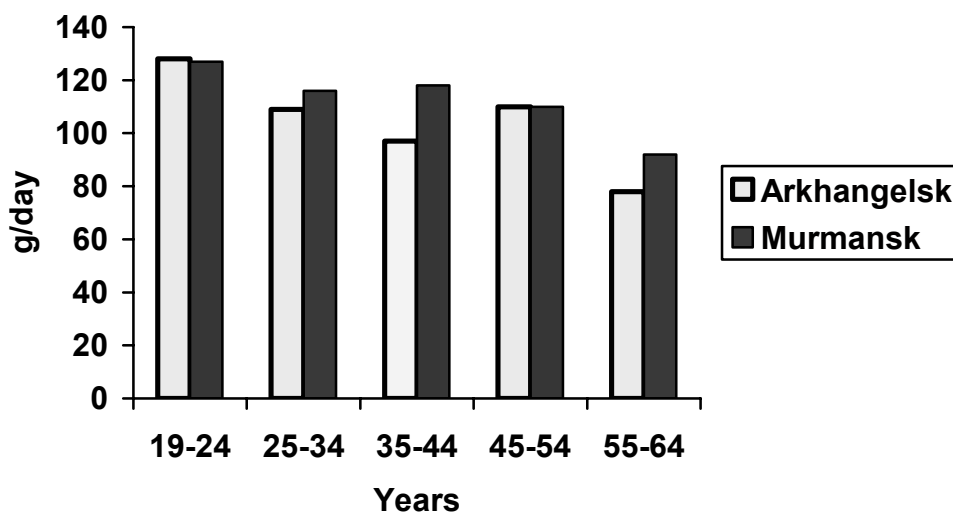
The average consumption of fresh fruit and vegetables in relation to age is shown in Figure 20. The recommended amount of fruit and vegetables to be eaten every day is 400 grammes [2]. One can see in the diagram that this and higher amounts of fruit and vegetables are consumed by women of 19-24 and 35-44 years of age. The lowest amounts of fruit and vegetable intake are observed in the 55-64 years age group. In other groups their intakes are slightly below the recommended amount. It should be noted, however, that despite this seemingly high intake of fruit and vegetables, in nearly 70% of women the intakes are inadequate. This is due to a broad variation in the intake values – from 0.3 g/day to 2725 g/day.

The consumption of potatoes that are a good source of vitamin C, too, ranges from 158 to 204 grammes per day.

Thus, the high average intake of fruit and vegetables, as well as of potatoes, accounts for the level of vitamin C which is quite high among the women surveyed in both cities.

As for meat, it should be noted that the world report on cancer published in 1997 [2, 13] recommended a consumption of not more 80 grammes per day. In this survey, women eat more meat – 92 to 128 g/day, excepting the 55-64 years age group in Arkhangelsk in which the consumption is 78 g/day (see Figure 21). In Murmansk, the figures in all age groups are somewhat higher than in Arkhangelsk. A reduction of meat consumption with age is observed in both cities.

*Figure 21. Meat consumption by age groups among the women surveyed*



Different tendencies are observed in the consumption of fish depending on age in the two northern cities. Figure 22 shows fish consumption in relation to age. In Murmansk, fish consumption is higher than in Arkhangelsk in all age groups, with the exception of the 19-24 years group. The trend lines in the Figure show a decrease in the consumption of fish with age in Arkhangelsk and an apparent increase in fish consumption with age in Murmansk. Thus, in the 55-64 years group, 120 grammes of fish is consumed per day in Murmansk and 98 grammes in Arkhangelsk. This should be the result of the "Cheap Fish, Cheap Milk" programme being implemented in Murmansk in recent years. The programme provides for a considerable reduction of retail prices of these foods when these are sold to elderly people.

An analysis of food intake will also show a low consumption of cereals and pasta, amounting to only 52-72 grammes per day. This food group should be the basis of the diet.

The consumption of sugar, candies and sweets is high – from 58 to 103 grammes, the figure in Arkhangelsk being higher in all age groups than in Murmansk.

**Table 23. Vitamin intake**

	<i>Arkhangelsk</i>						<i>Murmansk</i>					
<b>Age, years</b>	<b>19-64</b>	<b>19-24</b>	<b>25-34</b>	<b>35-44</b>	<b>45-54</b>	<b>55-64</b>	<b>19-64</b>	<b>19-24</b>	<b>25-34</b>	<b>35-44</b>	<b>45-54</b>	<b>55-64</b>
No. of observations	761	76	154	181	228	122	778	103	154	173	203	145
<b>Vitamin C (mg)</b>												
Mean	58.29	60.07	56.61	65.81	51.17	61.46	59.27	67.46	58.19	56.93	61.78	53.87
St. error	2.09	6.61	4.22	5.35	2.94	5.48	2.20	6.46	5.05	3.69	4.56	5.45
St. deviation	57.57	57.61	52.43	72.01	44.45	60.58	61.41	65.52	62.71	48.58	64.90	65.64
Minimum	.03	.04	.06	.03	.05	1.05	.00	.00	.01	.00	.03	.31
Maximum	423.62	240.61	317.05	423.62	283.60	357.78	515.46	378.22	473.32	252.02	390.46	515.46
<b>Vitamin B<sub>1</sub> (mg)</b>												
Mean	.95	1.03	.89	1.06	.90	.88	.81	.81	.84	.80	.81	.82
St. error	.04	.18	.06	.13	.04	.06	.02	.06	.06	.04	.05	.05
St. deviation	1.12	1.60	.71	1.72	.60	.71	.65	.63	.75	.47	.69	.66
Minimum	.00	.15	.02	.05	.00	.17	.00	.05	.11	.00	.05	.12
Maximum	16.38	13.41	5.97	16.38	5.61	7.07	6.35	4.34	6.34	2.95	6.35	4.41
<b>Vitamin B<sub>2</sub> (mg)</b>												
Mean	1.20	1.63	1.01	1.62	.99	.96	.93	.83	.94	.91	.91	1.05
St. error	.13	.66	.07	.45	.08	.11	.04	.07	.09	.06	.06	.11
St. deviation	3.60	5.78	.87	6.10	1.14	1.17	1.00	.72	1.07	.85	.90	1.32
Minimum	.01	.09	.13	.04	.01	.17	.00	.06	.09	.00	.05	.06
Maximum	60.66	50.56	7.48	60.66	11.45	10.65	12.06	5.48	10.50	7.63	5.52	12.06
<b>Niacin (mg)</b>												
Mean	10.41	11.43	10.44	10.10	10.75	9.52	9.71	9.82	9.57	10.36	9.85	8.80
St. error	.25	.94	.59	.46	.47	.47	.23	.69	.44	.52	.47	.52
St. deviation	6.82	8.15	7.38	6.23	7.13	5.18	6.46	7.02	5.48	6.84	6.65	6.24
Minimum	.04	1.40	.20	.44	.04	2.27	.19	.64	1.16	.19	.94	.84
Maximum	56.05	50.40	53.33	43.20	56.05	42.97	66.45	36.70	37.32	66.45	47.26	35.84
<b>Retinol (µg RE)</b>												
Mean	885.19	1266.86	829.77	1135.30	769.04	563.42	784.34	519.29	896.46	738.36	981.98	631.71
St. error	86.05	368.77	176.56	241.26	118.64	86.09	59.72	53.13	133.10	105.74	165.47	105.51
St. deviation	2373.77	3214.89	2191.00	3245.77	1791.47	950.86	1665.68	539.16	1651.79	1390.79	2357.52	1270.53
Minimum	.04	1.00	5.05	.63	.04	16.32	.00	4.81	3.11	.00	.02	5.98
Maximum	29466.55	21456.57	24981.82	29466.55	20120.23	7528.08	18554.88	3876.62	10221.21	10629.56	18554.88	12503.27



**Table 24. Mineral intake**

	Arkhangelsk						Murmansk					
Age, years	19-64	19-24	25-34	35-44	45-54	55-64	19-64	19-24	25-34	35-44	45-54	55-64
No. of observations	761	76	154	181	228	122	778	103	154	173	203	145
<b>Iron (mg)</b>												
Mean	13.61	14.92	13.62	13.04	13.64	13.60	12.31	12.17	11.87	13.14	12.39	11.77
St. error	.27	1.26	.59	.49	.47	.62	.26	.68	.50	.58	.52	.63
St. deviation	7.48	10.98	7.31	6.60	7.14	6.86	7.20	6.86	6.18	7.67	7.37	7.60
Minimum	.12	3.10	.12	.60	.54	3.29	.09	2.30	2.15	.09	.94	1.71
Maximum	75.57	75.57	47.05	36.00	61.20	42.66	59.29	37.25	42.94	52.94	59.29	46.87
<b>Calcium (mg)</b>												
Mean	481.92	451.50	494.13	474.17	482.90	495.13	449.67	462.67	463.96	445.12	452.73	426.42
St. error	10.71	36.03	22.90	21.31	20.01	27.27	10.60	30.61	22.67	20.62	23.17	23.16
St. deviation	295.53	314.06	284.21	286.64	302.16	301.21	295.74	310.67	281.35	271.16	330.18	278.90
Minimum	26.27	87.14	95.70	56.92	26.27	147.15	17.91	73.84	58.53	57.17	17.91	81.43
Maximum	2310.43	1676.22	1626.98	1801.95	2310.43	1972.28	3144.77	1883.29	1617.20	1530.60	3144.77	1674.53
<b>Phosphorus (mg)</b>												
Mean	848.80	822.92	852.65	812.90	876.72	861.14	782.00	788.02	777.61	801.59	782.34	758.55
St. error	14.35	48.91	32.55	29.27	27.23	30.44	14.09	44.52	30.04	28.04	28.99	30.83
St. deviation	395.77	426.41	403.90	393.75	411.18	336.23	392.89	451.85	372.77	368.83	412.99	371.24
Minimum	4.12	211.96	112.16	26.00	4.12	254.89	2.16	39.32	89.62	2.16	39.05	86.35
Maximum	2807.11	2342.55	2577.31	2313.21	2807.11	1814.65	3080.94	2652.07	1937.63	1816.43	3080.94	1826.23
<b>Potassium (mg)</b>												
Mean	2321.30	2310.05	2249.20	2311.39	2336.93	2404.84	2100.17	2159.94	2061.09	2220.84	2068.80	1999.13
St. error	42.47	145.80	92.58	91.11	79.45	90.57	40.44	118.93	79.75	94.03	79.20	88.87
St. deviation	1171.52	1271.03	1148.85	1225.78	1199.63	1000.37	1127.90	1206.97	989.65	1236.80	1128.37	1070.18
Minimum	15.19	390.60	128.15	119.41	15.19	540.81	48.23	323.05	246.83	48.23	127.87	197.43
Maximum	7935.57	5348.82	5753.28	7365.98	7935.57	6990.46	7217.60	7217.60	5141.10	7214.19	6064.43	5191.47
<b>Magnesium (mg)</b>												
Mean	243.44	237.62	237.46	240.38	247.53	251.54	223.98	223.35	223.72	222.65	217.07	235.97
St. error	4.48	14.15	10.02	9.36	8.49	9.97	4.37	12.95	9.13	9.20	7.59	11.83
St. deviation	123.46	123.36	124.40	125.91	128.22	110.12	121.96	131.43	113.32	120.97	108.09	142.46
Minimum	7.30	41.71	27.29	28.59	7.30	59.66	18.98	35.64	39.24	26.26	18.98	41.21
Maximum	1063.71	645.76	874.49	795.55	1063.71	641.28	870.50	695.12	655.93	870.50	612.83	832.39

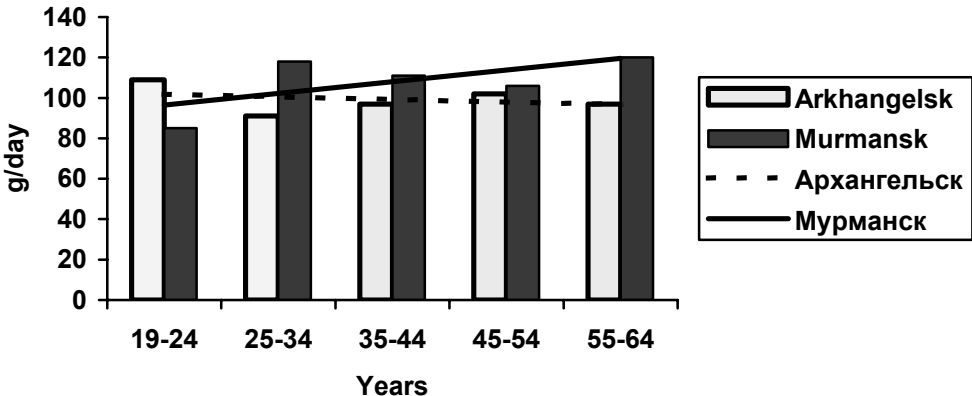
*Table 25. Mean food intake values (g/day)*

	Arkhangelsk					Murmansk				
Age, years	19-24	25-34	35-44	45-54	55-64	19-24	25-34	35-44	45-54	55-64
	1	2	3	4	5	6	7	8	9	10
No. of observations	76	154	181	228	122	103	154	173	203	145
<b>Meat and meat products</b>										
Mean	127.50	109.28	96.91	109.96	77.86	127.20	116.45	117.73	109.56	92.38
St. error	10.32	7.16	6.66	6.71	6.56	12.30	8.06	8.15	5.93	7.24
St. deviation	79.95	80.95	81.00	88.99	61.21	105.05	90.49	97.44	76.15	69.83
Minimum	16.00	6.67	8.00	4.00	5.00	2.00	16.71	1.18	2.37	.71
Maximum	368.66	470.56	526.72	673.68	290.10	490.33	615.60	697.78	353.19	337.44
<b>Fish and fish products</b>										
Mean	109.06	91.05	96.99	102.26	97.45	84.79	118.43	110.67	106.24	120.44
St. error	17.84	9.86	6.98	9.99	10.90	12.04	10.11	10.97	12.08	11.09
St. deviation	85.56	64.67	57.99	98.91	77.07	70.23	70.03	89.76	95.09	83.74
Minimum	5.00	15.00	12.50	10.00	5.00	1.81	11.11	19.08	10.00	4.85
Maximum	291.78	270.83	292.55	478.01	321.79	357.65	289.00	459.54	541.31	325.00
<b>Milk and milk products</b>										
Mean	377.85	401.16	386.41	411.92	450.68	410.25	414.06	406.70	447.58	419.39
St. error	50.76	27.64	26.17	26.75	39.70	39.37	29.25	30.68	31.90	38.63
St. deviation	376.41	310.21	311.82	355.85	391.03	375.55	339.87	363.02	400.91	412.48
Minimum	4.14	8.75	4.97	2.76	8.83	2.76	15.00	5.52	9.80	15.20
Maximum	1544.37	1522.00	1812.71	2036.50	1802.92	2395.40	1968.74	2270.92	2924.46	2624.59
<b>Potatoes</b>										
Mean	203.69	180.54	193.83	202.92	199.49	164.35	175.35	170.15	158.41	194.13
St. error	17.38	13.18	11.97	9.63	13.50	14.28	13.15	13.39	9.62	13.92
St. deviation	128.93	138.26	143.17	133.75	138.33	121.21	136.62	157.89	119.37	146.62
Minimum	15.97	10.00	15.24	14.33	19.05	19.05	19.05	12.00	7.94	15.24
Maximum	495.36	704.78	666.00	619.20	525.30	554.70	627.60	743.04	621.00	655.24
<b>Vegetables (other than potatoes)</b>										
Mean	148.67	158.39	151.80	144.26	148.86	159.95	140.24	151.43	158.30	123.16
St. error	13.89	10.72	7.97	7.65	12.87	14.03	9.43	9.00	9.51	7.90
St. deviation	117.04	127.79	105.17	112.23	139.78	131.63	111.93	111.66	129.00	89.01
Minimum	5.33	.16	1.46	3.00	4.95	2.00	1.20	1.46	5.00	3.71
Maximum	525.79	650.63	544.75	747.14	1016.10	600.00	659.26	541.41	683.97	385.66

	1	2	3	4	5	6	7	8	9	10
<b>Fruit and berries</b>										
Mean	337.87	218.46	307.67	211.37	245.56	310.09	265.38	285.46	256.23	208.20
St. error	60.79	26.56	44.11	31.82	36.45	43.89	35.70	39.98	24.01	42.05
St. deviation	412.31	260.22	438.90	341.26	309.29	348.40	333.02	407.72	248.41	336.43
Minimum	.08	.11	.03	.03	.03	.08	.05	.05	.05	.05
Maximum	1500.19	1271.50	2500.00	2725.00	1575.00	2000.00	1570.00	2227.78	1392.05	2000.00
<b>Cereals and pasta</b>										
Mean	62.70	60.03	52.03	60.14	70.71	56.20	64.10	51.74	55.35	74.61
St. error	6.09	6.26	3.33	3.91	4.98	4.48	5.29	3.90	3.19	5.10
St. deviation	40.86	59.74	36.36	46.80	44.82	35.24	48.79	36.78	35.80	49.17
Minimum	4.54	2.57	3.32	2.50	5.00	5.00	3.48	3.32	4.00	10.00
Maximum	175.00	496.73	181.42	257.50	189.00	160.00	269.34	183.77	238.00	245.40
<b>Sugar, candies, sweets</b>										
Mean	102.62	92.93	86.19	91.64	81.39	68.75	66.27	76.50	61.90	58.10
St. error	8.09	5.62	4.91	5.62	5.62	5.89	4.59	4.87	3.30	3.68
St. deviation	69.57	67.64	65.36	83.78	62.09	58.57	54.67	63.36	46.59	43.71
Minimum	.45	2.00	7.00	.11	2.17	1.58	4.35	2.22	1.60	1.43
Maximum	356.00	337.88	398.38	585.00	367.03	314.00	287.91	360.31	235.85	214.00
<b>Bread and bakery products</b>										
Mean	138.77	153.77	146.02	163.69	154.57	144.44	119.02	133.62	129.97	127.65
St. error	10.08	8.44	7.49	6.23	7.98	10.08	7.38	6.99	5.75	7.21
St. deviation	86.14	103.06	98.83	92.14	87.38	97.24	85.73	89.22	80.29	85.35
Minimum	6.33	.22	1.60	25.00	3.56	2.93	6.22	1.80	.60	2.40
Maximum	373.97	550.00	700.00	720.00	550.06	414.00	558.87	645.00	375.00	506.44
<b>Eggs</b>										
Mean	26.13	31.90	29.58	31.05	27.50	27.55	26.07	33.38	24.77	19.96
St. error	6.20	3.12	3.33	2.57	3.83	3.71	3.81	3.74	3.00	3.30
St. deviation	37.70	29.07	29.44	27.97	27.32	26.73	32.12	34.91	27.54	24.72
Minimum	.73	1.22	.73	.91	.73	1.22	.37	.91	.73	.37
Maximum	181.82	141.17	111.27	141.00	106.97	103.80	142.78	151.90	97.58	96.41
<b>Fat and vegetable oil</b>										
Mean	17.50	18.25	20.39	21.00	19.86	16.91	16.40	19.87	15.39	17.96
St. error	1.52	1.16	1.24	1.04	1.62	1.37	1.35	1.33	.96	1.23
St. deviation	12.37	13.60	16.21	15.41	17.35	13.33	15.19	16.53	12.90	14.35
Minimum	1.03	1.48	2.00	.83	2.50	.36	1.58	.86	.61	1.28
Maximum	64.50	82.50	98.38	76.05	128.48	74.24	110.47	125.70	85.00	75.19

Thus, there exist certain characteristics of food intake in the cities that determine the intake of nutrients and daily calories.

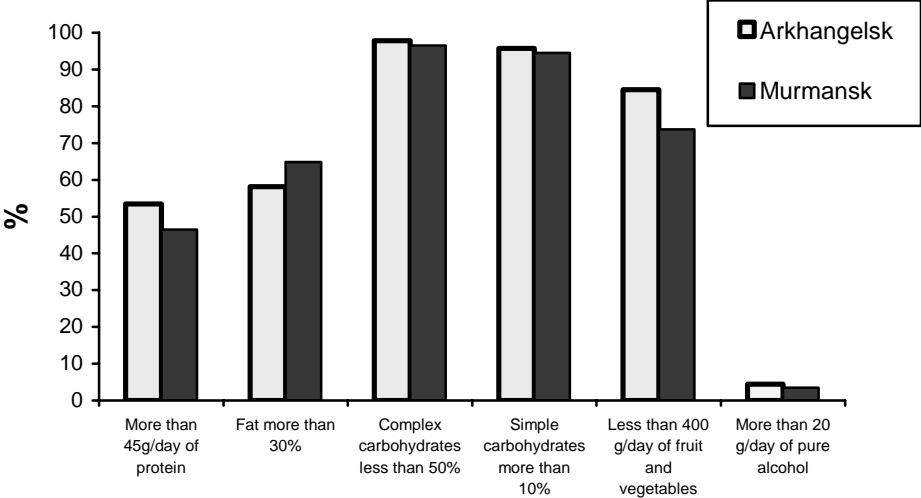
*Figure 22. Consumption of fish in relation to age in the women surveyed*



**Compliance with the principles of healthy eating**

An analysis of the findings of this survey allows the number of women whose nutrition does not comply with the principles of healthy nutrition to be determined (Figure 23).

*Figure 23. The number of women whose nutrition does not comply with the principles of healthy eating*



As can be seen from the figure above, non-compliance with the principles of healthy eating is rather common among the women in both cities. Thus, approximately half of the women in the northern cities consume more than 45 g of protein per day. In 60% of the women, dietary fat accounts for over 30% of energy intake. More than 90% of the women consume complex carbohydrates in inadequate amounts, and about as many consume excessive quantities of simple carbohydrates. More than 70% of the women do not eat enough fruit and vegetables every day (less than 400 grammes).

Thus, the study of energy, nutrient, vitamin and mineral intake in Arkhangelsk and Murmansk that has been conducted using the 24-hour recall method, provided, for the first time, data on the nutrition and dietary patterns of the women's population of these cities. While the average values of protein, fat and carbohydrate intake were found to be close to those recommended by

the WHO, the distribution of these indicators shows that the diets of a great number of women do not follow the healthy eating guidelines.

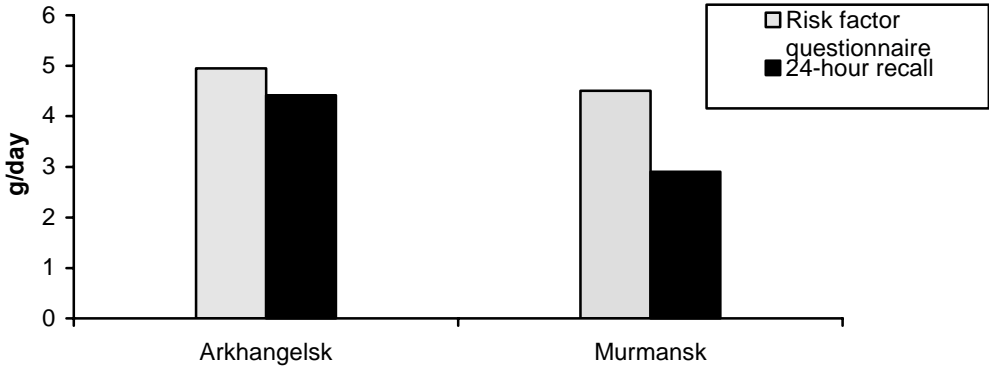
**4.2.5 Comparison of the studies of the consumption of alcohol, fruit and vegetables using the 24-hour recall method and the risk factor questionnaire**

Data on the consumption of alcohol, fruit and vegetables were obtained in this survey using two methods:

1. Data on the intake of these foods as reported by the women (the questions aimed at studying the intake were part of the risk factor questionnaire).
2. Studying the intake of these foods using the 24-hour recall method.

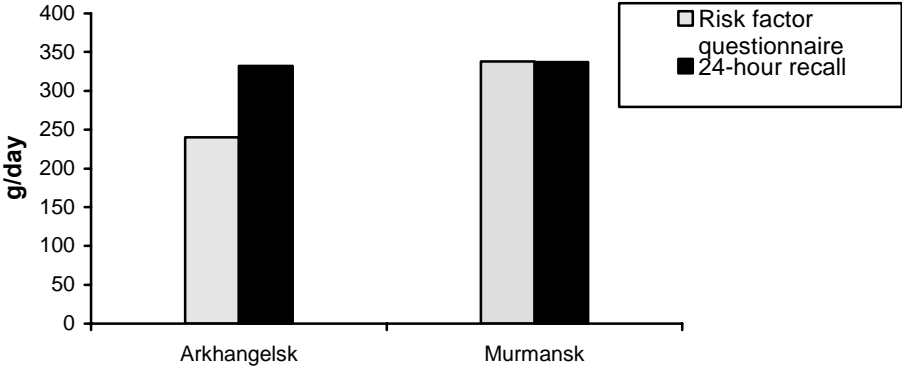
Figures 24 and 25 present a comparison of the study of alcohol, fruit and vegetable intake using the 24-hour recall method and the study using the risk factor questionnaire.

**Figure 24. Average intake of pure alcohol (g/day)**



Alcohol intake according to the risk factor questionnaire happens to be slightly higher than the value of intake obtained through the 24-hour recall. In Murmansk this difference is 1.6 g/day, in Arkhangelsk only 0.5 g/day (Figure 24).

**Figure 25. Average intake of fresh fruit and vegetables other than potatoes (g/day)**



It can be seen from Figure 25 that there is practically no difference between the data on the intake of fruit and vegetables obtained by different methods in Murmansk, whereas in Arkhangelsk the data do differ. The average consumption of these foods identified in the study

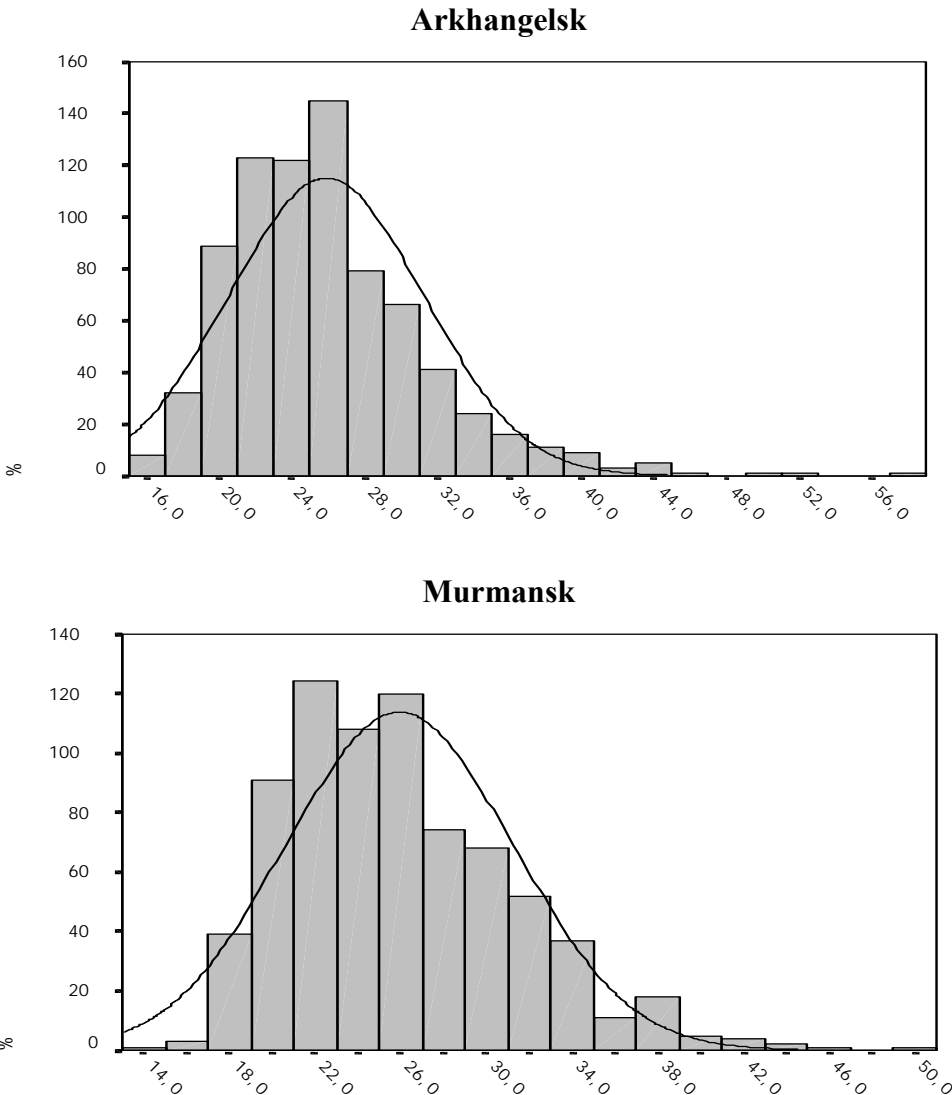
of the risk factors is lower than the figure obtained by the 24-hour recall method, the difference being 92 grammes.

On the whole, one could say that the values obtained through the questions on the intake of alcohol and fruit and vegetables in the risk factor questionnaire and the values obtained using the 24-hour recall method are fairly close. This allows the risk factor questionnaire to be used in estimating and monitoring the consumption of these foods.

**4.3 Overweight**

Incorrect nutrition and low physical activity are the two factors contributing to overweight which has a high prevalence in many countries, including Russia. In this survey, we classified the values of the body mass index (BMI) in the following way: BMI over 25 was taken to be overweight, BMI over 30 was obesity, BMI of 18.5 or less was viewed as a low body mass. The BMI values between 18.5 and 25 were regarded to be a normal body mass. Figure 26 shows the distribution of the BMI among the women surveyed. This distribution is quite similar. The mean BMI value was practically the same in both cities and amounted to 25.9.

*Figure 26. Distribution of the body mass index among women*



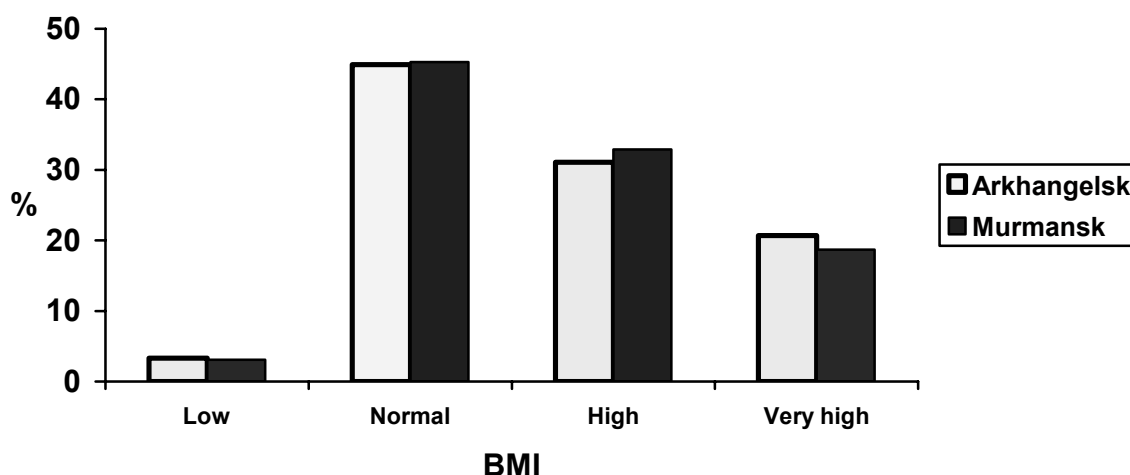
**Table 28. Classification of BMI into groups and distribution of the women surveyed between the groups**

	Low body mass $\leq 18,5$		Normal body mass $>18,5$ and $<25$		High body mass (overweight) $>25$ and $<30$		Very high body mass (obesity) $>30$		Total	
	N	%	N	%	N	%	N	%	N	%
<b>Arkhangelsk</b>	25	3.3	341	44.9	236	31.1	157	20.7	759	100.0
<b>Murmansk</b>	24	3.1	352	45.3	256	32.9	145	18.7	777	100.0

According to the data shown in Figure 27 and Table 26, the distribution of women by BMI in both cities is nearly similar. Almost half of the women – 45% - have a normal weight. But about 52% of the women are overweight and obese, the prevalence of obesity being 20.7% in Arkhangelsk and 18.7% in Murmansk, which is very high. Only 3% of women in both cities have a low body weight.

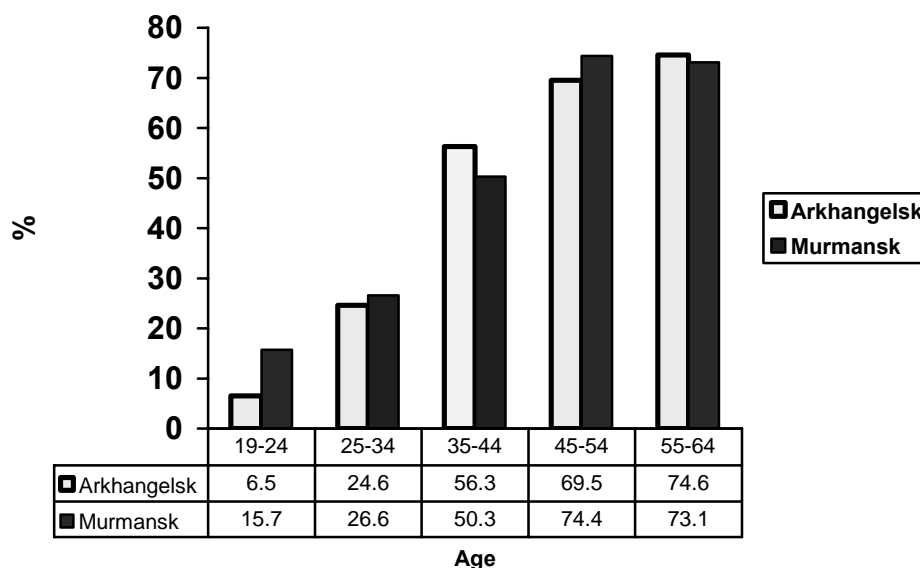
Body weight changes significantly with age. Thus, Figure 28 shows that overweight and obese women account for 6.5% in the youngest age group, while in the oldest age group the percentage goes up to 74.6, which is almost 12 times more. A similar pattern is observed in Murmansk. What is noteworthy, however, is that in Murmansk the prevalence of overweight and obesity in the youngest age group of 19-24 years is 2.4 times higher and is 15.7%.

**Figure 27. Distribution of the women surveyed by the body mass index**



Thus, every other woman in the northern cities is overweight (BMI above 25). Comparing this parameter with other cities of Russia, in 1994, 65% of women in this age group were overweight in Novosibirsk, 64% in Elektrostal (Moscow Region), and in 2001 in Moscow, according to a survey by telephone, 52% of women were overweight [14, 1]. The data obtained are close to those obtained in a similar survey in the Baltic countries in the summer of 1997. Thus, in Latvia the prevalence of overweight among women 25-64 years of age is 50.4%, in Lithuania – 51% [7]. Unfortunately, it is not possible to judge on the trends in the prevalence of overweight, as these data are not monitored in the regions. However, according to the data obtained in the MONICA programme in Novosibirsk and in the CINDI programme in Elektrostal, there has been a trend towards reduced prevalence of overweight in women since the mid-80's. Thus, in Elektrostal the prevalence of overweight reduced between 1987 and 1994 by 6.3% - from 70.1% to 63.8%. In Novosibirsk, there was also a reduction in the prevalence of overweight in women in the period from 1985 to 1994, from 71.5% to 65% [14].

**Figure 28. Prevalence of overweight (BMI above 25) among the women surveyed**



Probably, this reduction in the prevalence of overweight was the result of considerable changes in the population nutrition that had taken place since the start of the socio-economic transformation in Russia. To be able to speak of a trend with certainty, we need to monitor this parameter.

#### **4.4 Smoking**

In this survey, smokers were those persons who smoked every day or occasionally. The prevalence of smoking in these cities was very high. Thus, in Arkhangelsk 24.1% and in Murmansk 30.4% of women smoke. As can be seen from Table 27 and Figure 29, the prevalence of smoking decreases with age. Women smoke most often in the 19-44 years age bracket. But even in the 45-54 years age group the prevalence of smoking goes as high as 17-20%. In Murmansk, the highest percentage of smoking women is in the 25-34 years age group – 42.2%. In general, one could say that smoking is more common in virtually all age groups.

Not only is the frequency of smoking higher in Murmansk, but the duration of this habit is longer, and the intensity is higher, too. Thus, women in Murmansk, on average, have been smoking for 13 years with an intensity of 9 cigarettes per day. In Arkhangelsk, it is somewhat shorter and less intensive – 11.5 years and 8 cigarettes a day.

78% of the smoking women in Arkhangelsk would like to give up smoking. But in Murmansk this percentage is much lower, with only 61% of women wishing they could get rid of this harmful habit.

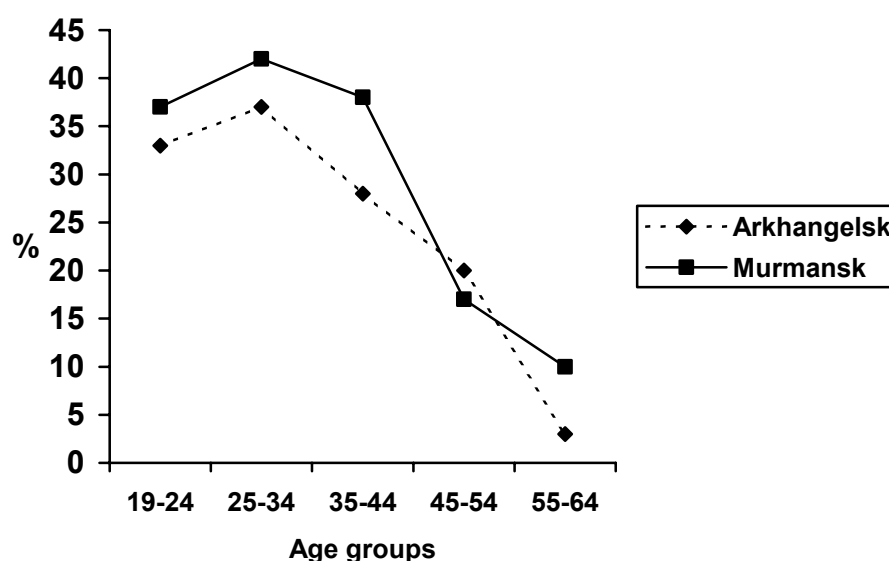
More than half of non-smoking women in both cities are exposed to passive smoking at home or at work. Unfortunately, health workers do not advise women often enough to give up smoking. Thus, only 12% of women in Murmansk and 10.4% in Arkhangelsk reported that a health professional had advised them to give up smoking.



*Table 27. Prevalence of smoking by age*

	Arkhangelsk			Murmansk		
	N	% of all respondents	% of the group	N	% of all respondents	% of the group
19-24	25	32.9	13.7	38	36.9	16.1
25-34	57	37.0	31.1	65	42.2	27.5
35-44	51	28.2	27.9	66	38.2	28.0
45-54	46	20.2	25.1	52	17.2	22.0
55-64	4	3.3	2.2	15	10.3	6.4
19-64	183	24.0	100.0	236	30.3	100.0

*Figure 29. Prevalence of smoking by age*



Owing to the prevailing culture and traditions in Russia, smoking has never been wide-spread among women. The prevalence of smoking among the women in this survey happens to be much higher than the values reported by other authors. Thus, in the survey of a national sample of Russia in 1992, with 1 cigarette or more per day as the criterion of smoking, the prevalence of smoking among women in the 25-64 years age bracket was 8.1% [15]. In Novosibirsk in 1994, according to the MONICA programme (1 cigarette or more per day as the criterion of smoking), the prevalence of smoking among women was 13.1% [14]. In Elektrostal in 1996 (the same criterion) the prevalence of smoking was 11%. If the same criterion is used for comparison as the criteria used in the surveys mentioned above, i.e. smoking every day, then the prevalence of smoking among the women in this survey will still be 1.2-3 times higher. Thus, in Arkhangelsk, the prevalence of smoking (smoking every day being the criterion) is 15.3%, in Murmansk it is 23.8%. Therefore, the prevalence of smoking among women was higher than that identified in other surveys in Russia. However, all those surveys were conducted in the early 90's. The survey of the behavioural risk factors BRFSS conducted in 2000-1 in Moscow jointly with the Centre for Disease Control (CDC, USA) using the method of telephone interviews, showed that the prevalence of smoking among women of 25-64 years of age was 27% (smoking every day and occasionally being the criterion of smoking) [1]. This agrees with the values obtained in the northern cities in this survey.

The data obtained testify to a significant increase in the prevalence of smoking among the women in Russia. Foreign researchers suggested this as long as 10-15 years ago, warning of a possible epidemic of smoking among women [16, 17, 18], particularly in the economies in

transition. The changes that have taken place and are still going on in the socio-economic life of the country are conducive to higher rates of increase in the prevalence of smoking, especially among women and adolescents. Societal attitudes toward smoking in women are changing. Until recently, society had a certain opinion of smoking: it was viewed as normal among men, whereas smoking in women would arouse negative attitudes with the majority of society. Therefore, many smoking women tended to hide their habit of smoking, also doing so during such surveys. Owing to the socio-economic changes in recent years, the attitude toward smoking in women is becoming more liberal. This promotes smoking among women and more openness in answering the question on smoking.

Undoubtedly, the data on the high prevalence of smoking among women obtained in the survey indicate that there is a need to further monitor this parameter, and to co-ordinate action by health institutions and the public opinion to prevent this harmful habit from spreading in the population, especially among women.

#### ***4.5 Hypertension***

Hypertension as a risk factor was identified based on women's reporting, without taking the arterial blood pressure. Previous studies show that there is a good correlation between the values of arterial blood pressure (ABP) as reported by the respondent and the measurement that follows.

Values of ABP above or equal to 140/90 mmHg, or values below this, provided antihypertensive drugs were taken, were used as a hypertension criterion. The problem with identifying all the persons with hypertension using this criterion was that not all the women surveyed knew their arterial blood pressure.

Another hypertension criterion was information the respondent obtained from her doctor that she had high arterial blood pressure.

Data on the prevalence of hypertension in this survey are based on these two criteria. Questions on controlling ABP, i.e. taking antihypertensive drugs, are also considered. Two groups of women with hypertension were identified – those who control their blood pressure effectively (reporting ABP below 140/90 mmHg) and ineffectively (having ABP above these values).

Of all the women surveyed, only 67.8% of women in Arkhangelsk and 62.7% in Murmansk knew their blood pressure. Among those who knew their blood pressure, hypertension was detected in 35.8% in Arkhangelsk and 37.7% in Murmansk (see Table 28). 53.8% of women with hypertension in Arkhangelsk and 56.8% in Murmansk control their blood pressure by taking antihypertensive drugs (see Table 29). Yet only 28.3% and 27.9% of the women, respectively, do this effectively, i.e. have their blood pressure values within the norm. This accounts for 15.2% and 15.8%, respectively, of all the women with hypertension.

The prevalence of hypertension by the criterion of having information on high ABP from the doctor is 37.6% in Arkhangelsk and 34.4% in Murmansk (see Tale 30). Of these women, 17.7% and 19.4%, respectively, did not know what their blood pressure was. Of those who knew their ABP, 42.3% in Arkhangelsk and 49% in Murmansk took antihypertensive drugs. Of these, 27.1% and 25.5%, respectively, controlled their blood pressure effectively, i.e. had a normal ABP. This accounts for only 12.8% and 13%, respectively, of those women who were told by their doctor that they had a high blood pressure. About one-third of the women reported that they did not take these drugs and had a normal pressure.

Comparing these data with the data obtained through a telephone survey in Moscow, where the prevalence and control of hypertension were also evaluated on the basis of what the respondent reported, without actually measuring blood pressure, it turned out that the prevalence of hypertension among women in the 25-64 years age bracket in Moscow was 34.8% by the ABP value criterion [1]. This figure is very close to the one obtained in the northern cities. Almost 60% of women with hypertension in Moscow control their ABP by taking antihypertensive drugs, which is slightly higher than in the northern cities.

Almost 40% of women in Moscow were told by their doctors that they had high ABP. This is somewhat more than in this survey.

**Table 28. Prevalence of hypertension among the women surveyed as estimated by different criteria**

	By the criterion of being informed by the doctor		By the ABP value criterion	
	N	%	N	%
Arkhangelsk	286 (N=761)	37.6	184 (N=514)	35.8
Murmansk	268 (N=778)	34.4	183 (N=485)	37.7

**Table 29. Control of hypertension (as estimated by the ABP criterion) and its effectiveness among the women surveyed**

	ABP $\geq$ 140/90 mmHg				ABP < 140/90 mmHg and taking drugs		Total	
	Not taking drugs		Taking drugs		N	%	N	%
	N	%	N	%				
Arkhangelsk (515 persons surveyed)	85	46.2	71	38.6	28	15.2	184	100.0
Murmansk (485 persons surveyed)	79	43.2	75	41.0	29	15.8	183	100.0

**Table 30. Control of hypertension (as estimated by the criterion of being informed by the doctor) and its effectiveness among the women surveyed**

	ABP $\geq$ 140/90 mmHg				ABP < 140/90 mmHg				Total	
	Not taking drugs		Taking drugs		Not taking drugs		Taking drugs		N	%
	N	%	N	%	N	%	N	%		
Arkhangelsk (515 persons surveyed)	55	24.2	70	30.8	76	33.5	26	11.5	227	100.0
Murmansk (485 persons surveyed)	53	26.5	73	36.5	49	24.5	25	12.5	200	100.0

Thus, the data obtained on the prevalence of hypertension are very close to the findings of other studies, particularly in Moscow. Hypertension is very common among women, but is not controlled by all of them, and where it is, the control is mostly ineffective.

## 4.6 Low physical activity

Along with other risk factors, low physical activity has its impact on health. The following indicators were used as criteria for low physical activity in this survey:

1. Physical activity at work which is mostly sedentary. Unemployed women were excluded from analysis using this criterion.
2. Walking for 30 minutes or less per day.
3. Physical activity at leisure less than 2 times a week. Women who had never been physically active due to illness were also referred to the category of low physical activity.

All the indicators above were used as criteria of low physical activity for women having employment. For women who are not employed, the last two indicators – walking and physical activity at leisure – were used.

**Table 31. Prevalence of low physical activity among women**

	Arkhangelsk		Murmansk	
	N	%	N	%
Low physical activity at work	255 (N=576)	44.3	245 (N=528)	46.4
Low physical activity – walking	142 (N=746)	19.0	192 (N=751)	25.6
Low physical activity at leisure	525 (N=707)	74.9	545 (N=752)	72.5
Overall low physical activity for those who are employed	43 (N=527)	8.2	55 (N=532)	10.3
Overall low physical activity for those who are not employed	20 (N=163)	12.3	37 (N=195)	19.0

As can be seen from Table 31, nearly 45% of women have a low level of physical activity at work. Every third woman's work involves walking. Between 2% and 5% of women have physically strenuous work.

On average, women in Murmansk walk less than those living in Arkhangelsk – 71 minutes against 83 minutes, respectively. There are more women in Murmansk (25.6%) who walk less than 30 minutes a day, i.e. have low physical activity, than in Arkhangelsk (19.0%). Every third woman walks more than 60 minutes a day.

At leisure, the overwhelming majority of women in both cities are not physically active. Almost 75% of women engage in exercise for at least 20 minutes resulting in short breath and sweat less than two times a week. Half of the women reported that they never or seldom engaged in this kind of exercise at leisure. Low physical activity at leisure is most frequent among the women in the older age group (55-64 years) in Arkhangelsk – 41%.

Overall low physical activity by all the three criteria – sedentary work, walking for 30 minutes or less per day, and doing exercise at leisure less than 2 times a week – was observed in 8.2% of working women in Arkhangelsk and in 10.3% of working women in Murmansk. In women who are not employed, low physical activity by the criteria of walking and low physical activity at

leisure is observed in 12.3% in Arkhangelsk and in 19% in Murmansk, which is 1.5-1.8 times higher than the figure for the working women.

Low physical activity results in increased body weight and is a major risk factor for the development of cardio-vascular and other non-communicable disease. Data obtained in the northern cities indicate that the prevalence of overall low physical activity among women is not very high, which suggests that most of the women do have a rather high level of physical activity either at work or at leisure, or through walking. But, talking about physical activity separately, for instance, at work, half of the women have it low, as their work is mostly sedentary. The overwhelming majority of women practically do not engage in exercise at leisure. But the fact that women do walk quite a lot, compensates for the low physical activity at work and at leisure. All these data require further observation, since the correlation between low physical activity and overweight, the prevalence of which is high among women, is well-known.

#### ***4.7 High blood cholesterol***

31% of women in Murmansk and 24% of women in Arkhangelsk reported that, according to their doctors, they had had their blood tested for cholesterol. Of these, 23% and 19%, respectively, had elevated levels of cholesterol. To compare with Moscow, blood tests for cholesterol were performed in 31.7% of women there, which is practically the same as in Murmansk but slightly higher than in Arkhangelsk. However, almost 32% of women reported a high cholesterol level in Moscow, which is much more than in the northern cities [1]. It would be premature to conclude that the incidence of hypercholesterolemia in Moscow may be higher, as the criteria of the cholesterol level used by the doctors undertaking the analysis in these cities are not known. These data can only describe the performance of the health service in monitoring such a risk factor in the population.

#### ***4.8 Health care, awareness of diseases***

Most of the women in Arkhangelsk – 78.8% - and most of the women in Murmansk – 64.5% - had seen a doctor for some reason or another. Of those who had seen the doctor, the majority had turned to state health establishments, and only 17% of women in Murmansk and 18.3% in Arkhangelsk had visited paid health care institutions. Of all the women who had been received by a doctor, about a half (48.8% in Arkhangelsk and 49.9% in Murmansk) had visited their local community doctor during the past year. On average, women had turned to the health care system for help during the past year 2.2 times in Murmansk and 3.7 times in Arkhangelsk.

One of the questions in the questionnaire was whether their doctor had ever told the women that they had CVD or diabetes mellitus. Based on the information obtained from their doctor, 1.5% of women in the northern cities reported having myocardial infarction, 4.7% of women in Murmansk and 8.3% in Arkhangelsk reported having ischemic heart disease. 1.2% of women in Murmansk and 2.1% in Arkhangelsk reported that they had had a stroke. 3% of the respondents reported having diabetes mellitus detected by the doctor. The figures obtained are very close to those obtained in the telephone survey in Moscow.

The question on mammography was included in the survey because mammography is known to cause a considerable decrease in mortality from breast cancer in some age groups. Unfortunately, data on the proportion of the women's population undergoing this examination are practically not available, while in the USA, for instance, this indicator is monitored on an annual basis in the BRFSS project, and nearly 80-90% of women in older age groups undergo this examination.

In this survey, only 24.9% of women in Murmansk and 15.2% in Arkhangelsk had ever had mammography. The age at which this examination is performed is important, of course. An extremely low coverage of women in the older age groups with mammography is noteworthy. Thus, in Murmansk only 38% of women in the 45-54 years age group and 35% in the 55-64 years age group had undergone this examination. In Arkhangelsk the figures are even lower – 19% and 22%, respectively. In Moscow, according to the telephone survey, mammography had been performed in 45% of women in the 45-54 years age group and in 57% in the 55-64 years group [1]. These figures are 1.5-2.5 times higher than in the northern cities, yet are quite low compared to other countries.

## 5. CONCLUSIONS AND RECOMMENDATIONS

The surveys of the health status, nutrition and other behavioural risk factors were the first such studies ever conducted in the northern cities of Russia – Arkhangelsk and Murmansk.

As mentioned before, nutrition was studied using a risk factor questionnaire, a dietary habit questionnaire, the food frequency method and the 24-hour recall method. This integrated study of nutrition was the first of its kind in Arkhangelsk and Murmansk. As a result, complete information on the current situation with women's nutrition in the cities concerned has been obtained. This provides a scientific basis for programmes of healthy nutrition and other preventive programmes in the regions.

The findings of the survey presented in this report reflect both the general trends in women's nutrition and some differences that exist between the cities. Based on the findings of this survey, women's nutrition can be characterized in the following way:

1. Dietary habits of most of the women surveyed do not comply with the principles of healthy eating:

- Only 15% - 26% of women eat the recommended amounts of fruit and vegetables every day;
- 25% - 50% of women consume ordinary milk (3.2 – 3.5% fat), whereas 90% of the women surveyed reported that there was always a choice of dairy products in food stores with various fat contents;
- over 50% of women use butter to make sandwiches;
- about 40% of women use excessive amounts of salt, with only about 20% using iodised salt.

2. The frequency of intake of such foods as cereals, pasta, milk and dairy products, fruit and vegetables is inadequate. Such a pattern of nutrition is certain to affect the intake of nutrients, vitamins and minerals.

3. The ratio of protein, fat and carbohydrates in the daily food intake of women is, on average, in accordance with the WHO recommendations.

- fat accounts for 32-34% of the total calories in the daily food intake, while the WHO-recommended value is not more than 30%;
- protein provides 12-13% of total energy, which also agrees with the recommended value of 12%;
- carbohydrates provide 53-55% of total energy, which agrees well with the WHO recommendation of 55-75%.

These findings are in agreement with the tendencies identified by the studies performed by the Goskomstat of the Russian Federation and the Institute of Nutrition, i.e. reduced intakes of fat, protein and energy.

4. The average daily energy intake among women is 1500-1700 kcal. The WHO recommends that the daily energy intake of non-pregnant and non-lactating women should be 1900 kcal. It should be born in mind, however, that half of the women have a low level of physical activity at work, the overwhelming majority of women (75%) are physically inactive at leisure, and more than half of the women (52%) are overweight.

5. Despite a rather favourable situation with the average intake of protein, fat and carbohydrates, in most of the women surveyed the intake values exceed the recommended daily intake:

- almost 50% of women consume more than 45 g of protein per day (12% of daily energy);
- fat provides more than 30% of total energy in 60% of women;
- simple carbohydrates provide over 10% of total daily energy, while complex carbohydrates provide less than 50% in nearly 90% of women.

6. The women's daily dietary intake of vitamin C and calcium is, on average, what the WHO recommends. However, inadequate intakes of vitamin B<sub>1</sub> are observed in both cities, and of vitamin B<sub>2</sub> and iron in Murmansk.

7. The degree of awareness of the women in Arkhangelsk and Murmansk of the principles of healthy eating is inadequate, which must be taken into account when developing and implementing healthy nutrition programmes.

8. Data on other behavioural risk factors showed that their prevalence was high among the women in the northern cities.

9. Smoking is wide-spread among the women in the northern cities, compared to what was observed in Russia before the mid-90's. This relatively high prevalence of smoking has been observed for the first time. 24.1% of women smoke in Arkhangelsk and 30.4% in Murmansk.

10. The prevalence of hypertension determined by the criterion of arterial blood pressure as reported by the women in the survey, is 37% (35.8% in Arkhangelsk and 37.7% in Murmansk). Over half of the women – 53.8% in Arkhangelsk and 56.8% in Murmansk - control their blood pressure by taking antihypertensive drugs. However, only 15.2% and 15.8%, respectively, control their arterial blood pressure effectively, i.e. have normal blood pressure.

11. Every third woman reported that she had had her blood tested for cholesterol, the percentage being higher in Murmansk (31%) than in Arkhangelsk (24%). A high cholesterol level was observed in 23% and 19% of women, respectively.

12. Mammography as a method of early detection of breast cancer was reported to have been performed in only 38% of women of 45-54 years of age and in 35% of women of 55-64 years of age in Murmansk. In Arkhangelsk the figures are much lower – 19% and 22%, respectively.

Thus, a study of nutrition, dietary habits, frequency of food intake, and of a number of other important behavioural risk factors has been undertaken for the first time in the northern cities, using random samples of women. No significant differences have been found between the two

regions, although some particular characteristics do exist. At the same time, the study showed that, if the public health status is to be influenced by changing nutrition and behavioural risk factors, these data need to be collected and monitored. A system of monitoring these indicators should be introduced in the State Sanitary and Epidemiological Surveillance service in each region.

The use of the methods listed above (dietary habits, food frequency methods, the 24-hour recall method) in studying food intake allows full information to be obtained on the population nutrition. However, this is a labour-intensive process requiring certain funds. But the use of the food frequency method and the method of studying dietary habits – rather simple and affordable approaches to data collection – provides an indirect assessment of the population nutrition and allows monitoring of these indicators at short intervals.

The information obtained on the health status, nutrition and other behavioural risk factors of women in the northern cities should be used in developing healthy nutrition programmes and other preventive programmes in Arkhangelsk and Murmansk.



## REFERENCES

1. Система мониторинга поведенческих факторов риска сердечно-сосудистых и других неинфекционных заболеваний. Отчет проекта. Москва, 2001 г.

(The System of Monitoring Behavioural Risk Factors for Cardio-Vascular Disease and Other Non-Communicable Disease. Project Report. Moscow, 2001).

2. Руководство CINDI по питанию

(CINDI Dietary Guide. WHO, Regional Office for Europe, 1999. EUR/00/5018028).

3. Г.А. Герасимов, Ф.А. Джатдоева «Что вы хотели бы знать о йод-дефицитных заболеваниях».-М.; «Интерсэп», 1999. – 48 с.

(G. Guerasimov, F. Dzhadtoeva. What Would You Like to Know About Iodine-Deficiency Disorders? Moscow, Intersan Publishers, 1999. p.48)

4. «Здоровая пища и питание женщин и их семей» Учебный курс и рабочий семинар для работников здравоохранения. ВОЗ/ЮНИСЕФ 2000г.

(Healthy Food and Nutrition of Women and Their Families. Training course and workshop for health professionals. WHO/UNICEF, 2000).

5. К здоровой России. Политика укрепления здоровья и профилактики заболеваний: приоритет – основные неинфекционные заболевания. Москва, 1994.

(Towards a Healthy Russia. A Policy of Health Promotion and Disease Prevention: the Focus on Non-Communicable Diseases. Moscow, 1994).

6. Материалы конференции «Питание и здоровье малоимущих семей» Результаты исследований по «Проекту содействия структурной перестройки системы социальной защиты населения». – Самара, 2000.

(Proceedings of the conference "Nutrition and health of low-income families". Findings of the studies in the project "Promotion of restructuring the system of social protection of the population". Samara, 2000).

7. «Nutrition and Lifestyle in the Baltic Republics». Summary Report. WHO, 1999.
8. Nutrition policies in the countries of the former Soviet Union. Tiina Murtu, Mala Sachdeva, Aileen Robertson. Scandinavian Journal of Nutrition. Vol 43:50-55, 1999.
9. WHO. Diet, nutrition and the prevention of chronic diseases. Report of a WHO study group. Technical Report Series 797. Geneva: WHO; 1990.
10. Пищевые продукты и питание: их воздействие на общественное здоровье. Доводы в пользу политики и плана действий в области пищевых продуктов и питания для Европейского региона ВОЗ на 2000-2005 гг. Европейское Региональное Бюро ВОЗ, 2000г.

(Food and Nutrition: Impact on Public Health. A Case for the Food and Nutrition Policy and Action Plan for the WHO European Region for the Period 2000-2005. The WHO European Region, 2000).

11. А.К.Батури́н Разработка системы оценки и характеристика структуры питания и пищевого статуса населения России. Диссертация на соискание ученой степени доктора медицинских наук. Москва, 1998 г.

(A. Baturin. The Development of a System of Evaluation and Characterisation of the Patterns of Nutrition and Nutritional Status of the Population of Russia. Thesis for the degree of Doctor of Science (Medicine). Moscow, 1998).

12. К здоровой России. Здоровое питание: план действий по разработке региональных программ в России. Москва, 2001 г.

(Towards a Healthy Russia. Healthy Nutrition: A Plan of Action to Develop Regional Programmes in Russia. Moscow, 2001).

13. Food, nutrition and the prevention of cancer: a global perspective. Washington, DC, American Institute for Cancer Research, 1997.

14. Мониторинг факторов риска неинфекционных заболеваний, смертности и некоторых других показателей развития программы CINDI. Отчет проекта, Москва, 1999 г.

(Monitoring Risk Factors for Non-Communicable Diseases, Mortality and Some Other Indicators of the Development of the CINDI Programme. Project Report, Moscow, 1999).

15. С.А.Шальнова. Диссертация на соискание ученой степени доктора медицинских наук Москва, 2000 г.

(S. Shalnova. Thesis for the degree of Doctor of Science (Medicine). Moscow, 2000).

16. Прохорская Р., Турнаух М.С. Ожидаемая продолжительность жизни и основные причины смертности населения в Европейском регионе: результаты первой оценки принятой ВОЗ стратегии достижения здоровья для всех к 2000 году. В кн.: Профилактика неинфекционных болезней: опыт и перспективы. Под ред. Е.Лепарского, ВОЗ, Женева, 1991, с. 5-15.

(R. Prohorskas, M. Turnauch. Life Expectancy and Major Causes of Mortality of the Population in the European Region: Findings of the First Assessment of the WHO's Strategy of Achieving Health for All by 2000. In the book: Prevention of Non-Communicable Disease: Experience and the Future. Edited by Ye. Leparski, WHO, Geneva, 1991, pp.5-15).

17. Chollat-Traquet. Women and tobacco use: patterns and trends. Women and Tobacco. WHO, Geneva, 1992. P. 3-9.

18. Fielding J.E. Smoking and women: Tragedy of the majority. N. Engl. J. Med. – 1987, 317: 1343-1345.

# Annex 1. Questionnaire "Women's Health: Nutrition and Other Risk Factors for Non-Communicable Diseases"

Questionnaire "WOMEN'S HEALTH: NUTRITION AND OTHER RISK FACTORS FOR NON-COMMUNICABLE DISEASE"

Identification number	_ _ _ _ _
-----------------------	-----------

Interviewer's code	_ _
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	<b>City code</b>		_
<b>1</b>	<b>Date of administering the survey</b>		_ _ _ _ _ _ _ _ _  Date Month Year
<b>2</b>	<b>Time of administering the survey</b>	<b>Beginning</b>	_ _ _ _ _ _ _ _ _  Hours Minutes
		<b>End</b>	_ _ _ _ _ _ _ _ _  Hours Minutes
<b>3</b>	<b>Date of birth</b>		_ _ _ _ _ _ _ _ _  date month year

### 1. General questions on health

**1.1. What would you say about your health? It is:**

*(Please read)*

- a. Excellent 1
- b. Very good 2
- c. Good 3
- d. Satisfactory 4
- e. Poor 5

- I don't know 7
- Refused to answer 9

**1.2. How many days during the past 30-days' period were you not able to work in your habitual way, or look after yourself or engage in physical activity at leisure because of poor physical or mental health? (If there were no such days, please mark 00)**

- The number of days \_\_\_\_
- I don't know 77
- Refused to answer 99

**1.3 Do you have any chronic illness?**

- a. Yes 1
- b. No 2
- I don't know 7
- Refused to answer 9

**1.4 If "yes", please list them below.....**

.....  
 .....

### 2. Access to health care

**2.1. How many times during the past year did you see a doctor for any reason?**

*(If you did not, please mark 00 and go to question 3.1)*

- I don't know 77
- Refused to answer 99

**2.2 At what type of health establishment did you see the doctor?**

*(Several answers are possible)*

*(Please read)*

- a. State 1
- b. Private or commercial 2
- c. Other 3
- I don't know 7

Refused to answer	9
<b>2.3. Did you see your local community doctor at your district polyclinic during the past 12 months?</b>	
a. Yes	1
b. No	2
I don't know.	7
Refused to answer	9

### 3. Anthropometric measurements

<b>3.1. Weight.</b>	___ ___, __ kg
<b>3.2. Height.</b>	___ ___, __ cm

### 4. Smoking

<b>4.1. Have you smoked more than 100 cigarettes (5 packs) in your life?</b>	
a. Yes	1
b.No. ( <i>Go to question 4.14.</i> )	2
I don't know.	7
Refused to answer.	9
<b>4.2. Do you smoke every day, occasionally or do you not smoke at all?</b>	
a. Every day ( <i>Go to question 4.4.</i> )	1
b. Not every day, occasionally.	2
c. I do not smoke at all. ( <i>Go to question 4.10</i> )	3
Refused to answer. ( <i>Go to question 4.14</i> )	9
<b>4.3. How many days a month do you smoke?</b>	
Number of days	___
I don't know	7 7
Refused to answer.	9 9
<b>4.4. For how many years have you been smoking?</b>	
Number of years ( <i>If you have been smoking for less than 12 months, please mark 00</i> )	___
I don't know	7 7
Refused to answer.	9 9
<b>4.5. How many cigarettes a day, on average, do you smoke?</b>	
The number of cigarettes	___
I don't know	7 7
Refused to answer	9 9
<b>4.6. Would you like to give up smoking?</b>	
a. Yes.	1
b. No.	2
I don't know.	7
Refused to answer.	9
<b>4.7. Have you ever made a serious attempt to give up smoking, such that you did not smoke for at least 24 hours?</b>	
<b>If you have, when was it last time?</b>	
a. Last month	1
b. 1-6 months ago	2
c. 6-12 months ago	3
d. More than a year ago	4
e. Never tried	5
Refused to answer.	9
<b>4.8. Has any of the persons listed below advised you to give up smoking during the past year?</b> ( <i>Please read all the categories of answers. Several answers are possible</i> )	
a. Doctor	1
b. Other health professional	2
b. Members of your family	3
c. Others	4
I don't know	7
Refused to answer.	9
<b>4.9. Are you concerned about the fact that smoking is harmful for your health?</b>	
a. I am very much concerned	1
b. I am concerned	2
c. I am not very much concerned	3
d. I am not concerned at all	4
I don't know	7
Refused to answer	9

Go to question 5.1.

<b>4.10. Did you smoke regularly before?</b>		
Yes		1
I have never smoked regularly ( <i>Go to question 4.14.</i> )		2
I don't know		7
Refused to answer		9
<b>4.11. When did you give up smoking?</b>		
Date	years ago	— —
		Months ago — —
I don't know		<u>77</u>
Refused to answer		99
<b>4.12. For how many years had you smoked?</b>		
Number of years ( <i>If you had smoked for less than 12 months, please mark 00</i> )		— —
I don't know		<u>77</u>
Refused to answer.		99
<b>4.13. How many cigarettes, on average, did you smoke every day?</b>		
The number of cigarettes		— —
I don't know		<u>77</u>
Refused to answer.		99
<b>4.14. Does any of the members of your family smoke at home?</b>		
a. Yes.		1
b. No.		2
I don't know.		7
Refused to answer.		9
<b>4.15. For how many hours do you stay at your work place in a smoke-filled room?</b>		
	Hour	— —
I do not work		1
I don't know		7
Refused to answer		9

#### 5. Questionnaire on hypertension

<b>5.1. Has your doctor or nurse ever told you that you have elevated arterial blood pressure?</b>	
a. Yes	1
b. No	2
I don't know	7
Refused to answer	9
<b>5.2. Do you know the figures of your arterial blood pressure?</b>	
a. Yes	1
b. No ( <i>Go to question 5.5.</i> )	2
I don't know ( <i>Go to question 5.5.</i> )	7
Refused to answer ( <i>Go to question 5.5.</i> )	9
<b>5.3. What is your systolic (upper) arterial blood pressure?</b>	— — —
<b>5.4. What is your diastolic (lower) arterial blood pressure?</b>	— — —
<b>5.5. Have you been taking any antihypertensive drugs during the past two weeks?</b>	
a. Yes	1
b. No	2
I don't know	7
Refused to answer	9
<b>5.6. What are they?</b> _____	

#### 6. Physical activity

**6.1. Which of the levels of physical activity listed below describes your physical activity at work most accurately:**  
(Please read)

a. Mostly sitting	1
b. Mostly walking	2
c. I lift and carry small weights	3
d. I do strenuous physical work	4
e. I do not work	5
I don't know	7
Refused to answer	9
<b>6.2. For how many minutes per day do you walk at leisure, including walking to your workplace and back? (in minutes/day)</b>	

Time in minutes — — — —

I don't know 7 7 7

Refused to answer 9 9 9

**6.3. How often during your leisure time do you have physical activity lasting for at least 20-30 minutes, such that you have short breath or sweat, for instance, doing house work or working at your dacha, brisk walking, doing exercise, etc.?**

a. Per day — —

b. Per week — —

c. Per month — —

d. Seldom or never 1 1

e. I cannot engage in physical activity because of my illness or disability 2 2

I don't know 7 7

Refused to answer 9 9

**6.4 Has any of the persons listed below advised you during the past year to increase your physical activity?**

*(Please read. Several answers are possible)*

a. Doctor 1

b. Other health professionals 2

c. Members of the family 3

d. Others 4

I don't know 7

Refused to answer. 9

#### 7. Fruit and vegetables.

**7.1. How often do you eat fresh fruit?**

a. Per day — —

b. Per week — —

c. Per month — —

d. Per year — —

e. Never 1 1

I don't know 7 7

Refused to answer 9 9

**7.2. How many grammes of fresh fruit, on average, do you eat at a time?**

— — — —

**7.3. How often do you eat vegetables in any form (excepting potatoes)?**

a. Per day — —

b. Per week — —

c. Per month — —

d. Per year — —

e. Never 1 1

I don't know 7 7

Refused to answer 9 9

**7.4. How many grammes of vegetables, on average, do you eat at a time?**

— — — —

#### 8. Alcohol consumption.

**8.1. Have you consumed alcoholic beverages during the past 12 months?**

a. Yes 1

b. Occasionally 2

c. Never (*Go to question 9.1*) 7

Refused to answer (*Go to question 9.1*) 9

**8.2 How often do you drink beer?**

a. Per day — —

b. Per week — —

c. Per month — —

d. Per year — —

e. Never 1 1

I don't know 7 7

Refused to answer	9 9
<b>8.3. How many grammes of beer, on average, do you drink at a time?</b>	
<b>8.4 How often do you drink non-fortified wine (dry wine, champagne, under 12% proof)?</b>	
a. Per day	— —
b. Per week	— —
c. Per month	— —
d. Per year	— —
e. Never	1 1
I don't know	7 7
Refused to answer	9 9

**8.5. How many grammes of non-fortified wine, on average, do you drink at a time?**

— — — —

<b>8.6 How often do you drink fortified wine (port, fruit liqueurs, 16-20% proof)?</b>	
a. Per day	— —
b. Per week	— —
c. Per month	— —
d. Per year	— —
e. Never	1 1
I don't know	7 7
Refused to answer	9 9

**8.7. How many grammes of fortified wine, on average, do you drink at a time?**

<b>8.8 How often do you drink strong alcoholic beverages (vodka, brandy, moonshine)?</b>	
a. Per day	— —
b. Per week	— —
c. Per month	— —
d. Per year	— —
e. Never	1 1
I don't know	7 7
Refused to answer	9 9

**8.9. How many grammes of strong alcoholic beverages, on average, do you drink at a time?**

— — — —

**8.10. Has any of the persons listed below advised you during the past year to reduce your consumption of alcoholic beverages:**

*(Please read. Several answers are possible)*

a Doctor	1
b Other health professionals	2
c Members of the family	3
d Others	4
I don't know	7
Refused to answer	9

### 9. Awareness of cholesterol.

**9.1. Cholesterol is a fatty substance found in blood. Have you ever had your blood tested for cholesterol?**

a. Yes	1
b. No ( <i>Go to question 10.1</i> )	2
I don't know ( <i>Go to question 10.1</i> )	7
Refused to answer ( <i>Go to question 10.1</i> )	9

**9.2. Has your doctor or nurse told you that you had a high cholesterol level?**

a. Yes	1
b. No	2
I don't know	7
Refused to answer	9

### 10. Cardio-vascular disease

**Has your doctor ever told you that you had:**

**10.1. Miocardial infarction**

a. Yes	1
b. No	2

I don't know	7
Refused to answer	9
<b>10.2. Angina pectoris or ischemic heart disease</b>	
a. Yes	1
b. No	2
I don't know	7
Refused to answer	9

<b>10.3. Stroke</b>	
a. Yes	1
b. No	2
I don't know	7
Refused to answer	9

### 11. Diabetes mellitus

<b>11.1. Has the doctor ever told you that you had diabetes mellitus?</b>	
a. Yes	1
b. No	2
I don't know	7
Refused to answer	9

*(If yes, please specify)*

<b>11.2. Was it during your pregnancy?</b>	
a. Yes	1
b. No	2
I don't know	7
Refused to answer	9

### 12. Women's health

To diagnose a tumour in the women's breast, an X-ray examination of women's breasts is conducted, which is called mammography.

<b>12.1. Have you ever undergone mammography?</b>	
a. Yes	1
b. No	2
I don't know	7
Refused to answer	9

### 13. General information

<b>13.1 What is your marital status?</b>	
a. Married or living in civil marriage,	1
b. Divorced or separated,	2
c. Have never been married	3
d. Widower (widow)	4
I don't know	7
Refused to answer	9

<b>13.2. How many full years of schooling have you had?</b>	
Full years	
I don't know	7 7
Refused to answer	9 9

<b>13.3. What education have you got?</b>	
a. Below secondary	1
b. Secondary	2
c. Secondary special	3
d. Higher (including incomplete higher education, if it is 3 or more years)	4
I don't know	7
Refused to answer	9

<b>13.4. Please say how many men and women aged between 25 and 64 years live in your apartment all in all, including you?</b>	
I don't know	7 7
Refused to answer	9 9

<b>13.5. Please say how many of these are men and how many are women, and what age are they.</b>	
	Years
a. Men	— —
	— —
	— —



b. Women

— —  
— —  
— —  
— —  
— —  
— —

I don't know

7 7

Refused to answer

9 9

**13.6. What is the monetary income of your family, on average, per person per month (including all types of income: wage or salary, pensions, stipends, benefits, other payments)?**

a. Less than 1000 roubles .

1

b. 1000 – 3000 roubles

2

v. 3000 and more roubles

3

I don't know

7

Refused to answer

9

#### 14. Awareness of the principles of healthy eating

**14.1 What do you think, how much fresh fruit and vegetables should one eat every day?**

— — g

I find it difficult to answer

777

**14.2 What foods should form the basis of the diet (please mark only 2 of the most important answers)?**

Fats, sweets

1

Meat and fish products

2

Milk and dairy products

3

Vegetables, fruit

4

Cereals, bread, potatoes

5

I find it difficult to answer

7

#### 15. Dietary habits

**15.1 What kind of fat do you normally use at home for cooking?**

Vegetable oil

1

Margarine

2

Butter

3

All kinds of fat

4

**15.2 What kind of fat do you use to make sandwiches most of the time?**

Margarine

1

Butter

2

I use neither butter nor margarine

3

**15.3 What milk do you normally drink?**

Ordinary (fat content about 3.2%-3.5%%)

1

Low-fat (fat content about 1.5%-2.5%)

2

Fat-free (fat content about 0,5%)

3

I do not drink milk

4

**15.4 Is there always a choice of dairy products with various fat contents in your food store?**

Always

1

Occasionally

2

Seldom or never

3

**15.5 Do you normally add salt to food at the table?**

Never

1

Yes, if there is not enough salt in it

2

I always add salt without tasting first 3

**15.6 What salt do you normally use at home?**

Iodised salt 1

Ordinary salt 2

Other salt 3

**15.7 Do you consume vitamin-fortified breads?**

Regularly 1

Occasionally 2

No 3

**15.8 Please say to what extent your family's food supply depends on the foods you grow or produce by yourself or gather in the forest?**

Significantly 1

Partially 2

Does not depend at all 3

**15.9 How often do you eat the following foods? (Please give only one answer for each food.)**

Foods	Once a day or more often	Almost every day	Several times a week	Once a week	Once or several time a month	Seldom or never
Meat products						
Fish and sea foods						
Milk and dairy products						
Potatoes						
Vegetables (other than potatoes)						
Fruit, berries						
Cereals, pasta						
Sweets (candies, jam, honey)						
Bread and bakery products						
Eggs						

## 16. DAILY FOOD INTAKE DIARY

Please describe what you ate and drank in the preceding 24 hours from the moment you got up in the morning until the moment you went to bed. If you ate and drank during the night, describe it, too. Please do not forget to describe what you ate and drank outside of your home. Include all foods and drinks that you ingested. Also indicate where you ate and where the food had been prepared.

- 16.1 Please say if you ate yesterday:**  
 As much as you normally eat  
 Less than normally  
 More than normally  
 YOU FIND IT DIFFICULT TO ANSWER  
 REFUSED TO ANSWER

1			
2			
3			
7			
9			
<b>Yes</b>	<b>No</b>	<b>Difficu lt to answe r</b>	<b>Ref use d</b>
1	2	7	9
1	2	7	9
1	2	7	9

- 16.2 Is your food intake yesterday related to ...**
- Doctor's recommendations  
 Observing a special diet  
 Religious traditions

	<b>Time of having a meal</b>	<b>Place of having a meal</b>	<b>Name and composition of the food, dish or beverage</b>	<b>Cooked</b> At home – 1 Not at home – 2	<b>Amount</b> g (ml)	<b>Код</b>
	<b>H3</b>	<b>H5</b>		<b>H6</b>	<b>H7</b>	<b>H9</b>
<b>01</b>		At home (on a visit) <b>1</b> Public catering ..... <b>2</b> school, kindergarten, etc..... <b>3</b> workplace..... <b>4</b> other..... <b>5</b>		At home <b>1</b>  Not at home <b>2</b>		
<b>02</b>		At home (on a visit) <b>1</b> Public catering ..... <b>2</b> school, kindergarten, etc..... <b>3</b> workplace..... <b>4</b> other..... <b>5</b>		At home <b>1</b>  Not at home <b>2</b>		
<b>03</b>		At home (on a visit) <b>1</b> Public catering ..... <b>2</b> school, kindergarten, etc..... <b>3</b> workplace..... <b>4</b> other..... <b>5</b>		At home <b>1</b>  Not at home <b>2</b>		
<b>04</b>		At home (on a visit) <b>1</b> Public catering ..... <b>2</b> school, kindergarten, etc..... <b>3</b> workplace..... <b>4</b> other..... <b>5</b>		At home <b>1</b>  Not at home <b>2</b>		
<b>05</b>		At home (on a visit) <b>1</b> Public catering ..... <b>2</b> school, kindergarten, etc..... <b>3</b> workplace..... <b>4</b> other..... <b>5</b>		At home <b>1</b>  Not at home <b>2</b>		
<b>06</b>		At home (on a visit) <b>1</b> Public catering ..... <b>2</b> school, kindergarten, etc..... <b>3</b> workplace..... <b>4</b> other..... <b>5</b>		At home <b>1</b>  Not at home <b>2</b>		

INTERVIEWER'S NOTES

How long did it take to complete the questionnaire? \_\_\_\_\_ min.

Please give your comments on this questionnaire


**I hereby certify that I have administered the questionnaire in accordance with the Instructions through a personal interview with the respondent selected in accordance with the Instructions. Signature \_\_\_\_\_**

## **Annex 2. Instructions for conducting the survey**

State Research Centre for Preventive Medicine  
of the Ministry of Health of the Russian Federation

Research Institute of Nutrition of the RAMS

### **SURVEY OF WOMEN'S NUTRITION AND HEALTH INSTRUCTIONS FOR INTERVIEWERS**

Moscow 2001

Dear Colleague,

You are starting the survey of the nutritional status and behavioural risk factors for non-communicable diseases among women aged from 19 to 64 years.

These instructions contain the necessary information on how to complete the questionnaire correctly, how to ask questions, how you should behave in difficult situations where it is difficult to interpret the answer you received.

Several interviewers are taking part in this survey, and to be able to summarise and compare data collected by various interviewers, **it is very important** to ensure that the procedures of personal interviews (the rules and techniques of conducting an interview, the rules of completing the questionnaire) are standardized (one and the same) for all the interviewers.

The Instructions are designed such that the general part of them contains: 1. The rules of conducting an interview. 2. The rules of completing the questionnaire. 3. Measurement techniques and particular details about some of the questions.

Please study the Instructions, and read the questionnaire once again before you start an interview.

**Good luck!**

**Terms used frequently throughout the text:**

- interviewer: a person administering the questionnaire
- respondent: an individual of whom questions are asked
- sample: individuals selected randomly from among the population living in the city

## *The rules of conducting an interview*

- The questionnaire should be administered to those women who are on your list (Form A). They have been randomly selected from among all the women of this age living in your city. Therefore, you may only administer the questionnaire to these women. Once again ask the woman about her age during the interview and record it in form A. If at the time of the survey the woman is pregnant or breastfeeding her baby, record this information in Form A, and then you should not administer the questionnaire to her. In such a case, you should interview someone else of the same age living in this apartment/house.
- If the respondent is not available at home at the first visit, not more than another three visits are allowed with this respondent. All the visits should be recorded in form A. As the entire survey will go on for 2 months, please schedule your subsequent visits such that you make it within this time limit. During the first visit you may ask for the telephone number and agree on the time of your next visit with the respondent.
- Form A must be completed by all means, as it will be a report on your work. All information from the form will be entered in the computer. Please write clearly and neatly. Besides, this form will also be your report for getting financial support.
- Your introduction and talk during the interview should be clear and easy to understand, and your voice should be natural and friendly.
- Always display a positive approach to the respondent. You should not sound apologetic. Do not use negative phrases like "You are not very busy, are you?" or "Do you mind if I ask you several questions?" Instead, tell the respondent: "I would like to ask you a few questions" or "Our interview will only take a few minutes."
- If the respondent has doubts or asks what these data will be used for, tell her once again that the questionnaire and interview are confidential. Explain that all the information to be collected will never be used individually, but will only be used to assess women's health and nutrition as a whole and to develop recommendations for improving health and nutrition.
- Be attentive to those who are in doubt or refuse to answer. It is important that you do your best to persuade the respondent to participate in the interview.
- Take your time as you administer the interview. Ask questions slowly, to make sure they are well understood.
- Ask questions as they are formulated in the questionnaire. If a question is asked in your own words, the meaning might be distorted, and you will get inaccurate information. Later on it will lead to a mistake.
- If the interviewee does not give an answer from the very first, or does not understand the question, you should repeat the question in the same form once again.
- If the interviewee fails to answer or understand the question again, you should ask the question for a third time in other words, but with the same meaning.
- Answers should be recorded as they are formulated by the respondent, without any interpretation by the interviewer. For example, when asked about the arterial blood pressure the respondent may say that her pressure is normal. In such a case you should clarify what the values of the pressure are and write them down in the questionnaire. You should never write that they are 120/80 mmHg. If the respondent has difficulty answering, or does not know the pressure values, but claims they are normal, you should write "I don't know".
- Never prompt an answer or read a list of possible answers, unless there is a specific instruction to do so in the questionnaire.
- You should not put pressure on the respondent to extract answers from her.
- Remain neutral during the interview. If the respondent gives an ambiguous answer, ask her a clarifying question: "Could you explain it in greater detail?" or "I did not catch what you said, could you please say it again?"



- At the end of the interview, thank the respondent for her participation in it. The project's resources are very limited, but we can show our appreciation of the respondent by presenting her with a pamphlet on healthy eating. If the respondent is young - between 19 and 40 – you can also give her another pamphlet on healthy eating during pregnancy and breastfeeding.

### ***The rules of completing the questionnaire***

- The questionnaire must be completed neatly, with all answers entered in the right places - lines, or a circle should be put around the figures for the answers given.
- Use a pen to fill in the questionnaire. If you made a mistake, or if the respondent changed her answer, cross the wrong answer with one line and fill in or put a circle around the right answer. Don't try to efface the wrong answer.
- Make sure you fill in the items at the top of the front page of the questionnaire:  
**Identification number** – the number assigned to respondents during the sample selection. It is indicated before each address in your Form A.  
**City code** – the code assigned to your city: Arkhangelsk – 1, Murmansk – 2.
- Carefully follow the instructions for the interviewers placed in the text of the questions and options of the answers. These instructions are put in brackets and printed in ***bold italics***.
- You should ask all the questions and in the same order as in the questionnaire, except when there is an instruction for the interviewer (***go to question ...***).
- There should only be one answer, except for those questions that contain the instruction for the interviewer "***Several answers are possible***".
- If there is the instruction for the interviewer "***Read or Read if necessary***" before the list of possible answers, read all the options slowly, giving the respondent enough time to think of the answer.
- If the questionnaire has several digits for the answer, but the answer given has fewer digits, then you should add "0" before. For example, the question "Weight" has three digits for the value of the weight, so if it is 70 kg, you should write "070".
- Rounding the figures should be in accordance with the rules of mathematics: any figure following the digital point being 5 or more should be rounded up (e.g. 14.5 = 15), and any figure being less than 5 should be rounded down (e.g. 14.4 = 14).
- If the respondent answers "I don't know", you should put a circle round the figure 7 and ask her no additional questions.
- If the respondent refuses to answer a question, put a circle round the figure 9 and go to the next question.
- Upon completing the interview, carefully check the quality of filling in the questionnaire.

### ***Measurement techniques and peculiarities of some questions***

#### ***Methods of measuring height***

Height is measured using a portable height meter to within 0.5 cm. The portable height meter should be placed on the floor against the wall without a plinth and carpet. Step on the lath and pull the strip as far as it would go. After this, attach the upper end of the strip to the wall or lintel using the hook fixed to the strip. Height is measured as the subject is standing on the floor without footwear. Make sure measurement is taken near the wall without plinth, and with no carpet on the floor.

The arms of the subject should be held down in a relaxed way along the body, with the palms of the hands turned inwards (towards the body), The heels of the subject should be held together

and pressed against the base of the lath. The feet should be placed at an angle of 60° to each other. If the subject's knees touch each other and do not allow her heels to be held together, then the heels may not touch each other, with only the knees being in contact. The shoulder blades and buttocks should also be touching the wall.

However, some people cannot hold the heels, buttocks, shoulder blades and the back of the head against the wall at the same time. In this case, the heels and/or buttocks or the back of the head (i.e. at least two points on the body) should touch the wall.

After making sure that the subject is in the right position, ask her to breathe in deeply (without lifting the heels), and place the horizontal bar of the height meter on her head, pressing the hair. The head of the subject should be positioned such that the line connecting the top edge of the ear's tragus and the external eye corner is horizontal. Readings should be taken after the subject has stepped aside. The value of the height is read in the height meter window where it is shown to within 0.1 cm at the level of the red line, the reading being taken from the top to the red line, and the result is then recorded in the questionnaire.

Both in adults and in children with different length of their legs, height is measured along the longer leg, with a plank or some other support placed under the shorter leg, so that the pelvis should be in a normal position.

#### ***Things to remember in measuring height:***

- height is to be measured without footwear
- the subject should stand upright on a flat level surface
- the belly should be relaxed, the arms put down along the body, the heels pressed together and touching the wooden lath, the head held in a horizontal position
- the subject breathes in deeply and stands upright
- height is measured to within 0.5 cm, and the measurements are recorded in the questionnaire in the appropriate place. E.g. 160.5 cm

#### ***The method of measuring weight***

Weight is measured in a single measurement, without footwear, with light clothes on, using portable electronic scales "Tanita", to within 0.2 kg.

#### **ELECTRONIC SOLAR SCALES "TANITA"**

##### ***Components:***

Base, solar battery, display, on/off button, setting switch.

Before using the scales, place them on a flat hard surface exposed to direct ambient light.

The scales need light of certain brightness. If the light is weaker than needed, the display will show the letters Lo. In that case place the scales in a spot with brighter light. If there is not enough light in the room, the display may not show anything at all.

##### ***Weighing instructions***

The scales are always turned on the moment you step on them. If the scales are used for the first time or have been moved before weighing, press the switch button and make sure the display shows "0.0".

1. Make sure the display shows "0.0". If there is another reading on the screen, press the switch once again.
2. Stand on the scales. The display will show your weight.
3. Step off the scales. The display will show "0.0" again. If "0.0" does not appear on the display after weighing, the weighing was incorrect. Press the switch and repeat it.
4. Warning  
*Press the switch button gently, as sharp movements may cause figures with a minus appearing on the display: "-0.2" or "-0.4". Press the button lightly once again to see that "0.0" is, indeed, displayed.*

#### 5. Special characteristics

The scales operate on solar batteries and work under certain illumination.

The display always shows "0.0" and the scales are always ready for weighing.

To measure weight, one should just stand on the scales. No complicated operations are required.

If weighing has to be carried out on a carpet, fix additional legs into the holes in the four corners at the bottom of the measuring platform.

Switching on the measurement unit indicator:

*The electronic solar scales have the following three indicators of the units of measurement: "kg", "lb/kg" and "st.-lb/kg". Using the switch behind the measuring platform, turn on the required indicator of the units of measurement – "kg".*

The maximum weight allowed to be measured – 150 kg.

#### ***Things to remember in weighing:***

- install the scales on a flat smooth area of the floor
- the subject should have her light home clothes on, and no footwear
- set 00 on the display before the subject is on the scales
- the subject should stand on the scales without swaying, distributing her weight equally between her feet
- the subject is not to support herself with articles around her, she should stand quietly
- repeat the procedure if necessary until you obtain the same values repeatedly.

## *Smoking*

The questionnaire below has been developed by the World Health Organisation. The following general rules should be followed in administering the questionnaire:

- The same language as in the questionnaire should be used.
- If the subject does not give an answer from the very first, or does not understand the question, the question should be repeated in the same form.
- If the subject still does not answer or fails to understand the question, it should be asked for a third time in other words but with the same meaning.
- Answers should be recorded, not interpreted.
- No pressure should be put on the subject as answers are being received.
- All questions should be asked and all answers recorded, unless otherwise specified.

The first two questions in this section are concerned with the situation regarding smoking in general and at present. If the negative answer is given to the first question in this section (4.1), the questions that follow it should not be asked, and you should go to question 4.14 and find out about the situation with passive smoking at home and at work. If you received answer 1 to question 4.2, i.e. every day, then go to question 4.4 and then proceed as the questions go. If the respondent does not smoke - answer 3 – then go to question 4.10 and find out about the situation regarding smoking in the past. Answering question 4.11, one should only indicate the number of months if the respondent gave up smoking less than 12 months ago.

## *Hypertension*

Hypertension is normally identified by elevated values of arterial blood pressure. Quite often this disorder occurs without symptoms, and may manifest itself for the first time by such severe complications as myocardial infarction, cerebral thrombosis, kidney dysfunction, visual impairment.

Measuring arterial blood pressure is the simplest and most accessible method of detecting hypertension before complications develop. Arterial blood pressure is measured with the mercurial or spring sphygmomanometer. In the present survey, data on arterial blood pressure will be recorded as reported by the respondent. Studies show that, in general, data obtained from interviews are very close to the data that are obtainable through measuring blood pressure with an instrument.

Useful hints on how to fill in some of the questions:

- In question 5.1 it is important to clarify who it was exactly – "**the doctor or the nurse**". Answers like "I take my blood pressure myself" or "My neighbour takes it for me" should not be considered.
- If the respondent hesitates in answering questions 5.3 and 5.4, then you should ask her, "What is your blood pressure **normally**?"
- In question 5.5, all the drugs that the respondent enumerated should be recorded.

The answer to the question "Have you been taking any antihypertensive drugs during the past two weeks?" should be recorded as it is given by the respondent. If it turns out during the interview that the respondent has been taking antihypertensive drugs during the past two weeks and the values of arterial blood pressure are normal at the moment of the interview, then this respondent should be referred to the group of those who have elevated blood pressure.

It is also possible that the respondent may not be able to decide for herself whether the drug she has been taking is indeed antihypertensive. If that is the case, you may refer to the list of antihypertensive drugs enclosed herewith, and the respondent herself can determine which group the drug belongs to.

### ***List of antihypertensive drugs***

(This list of antihypertensive drugs may be complemented with the antihypertensive drugs used in a particular region).

Adelfan  
Anapyline propranolol, inderal, obzidan)  
Apressan (hydrallazine, depressan)  
Atenolol (theormine)  
Brinaldix (klopamide)  
Verospiron (aldactone)  
Verapamil (isoptin, finoptine)  
Visken (pindolol)  
Hypothiazide (dichlothiazide)  
Dilthiazeme (cardil)  
Dopeguit (methyldopha, aldomet)  
Captopril (capothene, angiotril)  
Clonidine (hemiton, catapressan, clonidine)  
Crystepine  
Metopropol (betaloc)  
Moduretic  
Nifedipine (adalate, corynfar)  
Oxodoline (hygroton, chlorothalidone)  
Oxprenolol (trasicor)  
Prasosine (minipress)  
Thalinolol (cordanum)  
Tryamterene (dythec)  
Tryampur  
Ureguit (ethacrinic acid)  
Furosemide (laxyx)  
Enalapryl (APO-enal, enap, enam)

### ***Physical activity***

In question 6.1 only one of the options suggested should be marked – the one that most accurately reflects the level of physical activity at work. However, respondents may have difficulty answering this question, and the interviewer should then describe each of the proposed options in greater detail:

- a. **Mostly sedentary** (I walk little during the working hours. Examples: a watchmaker, a radio repair technician, a seamstress, an office worker).
- b. **Mostly walking** (I do not have to lift or carry heavy weights. Examples: a shop assistant, a shop-floor worker doing light manual work, an office worker who has to walk much).
- c. **I lift and carry small weights** (I have to walk much and carry weights or walk up the stairs or uphill frequently. Examples: a postwoman, agricultural work, factory work in severe working conditions).

- d. **I am engaged in hard manual work** (My work is very hard physically, I have to lift and carry heavy weights. Exmaples: heavy agricultural, construction or factory work).

If the respondent does not work, questions 6.2 and 6.3 should be asked without mentioning "leisure time".

### *Food intake: fruit and vegetables*

- Answering questions 7.1 and 7.3 by saying "Every day", please specify "How many times a day?"
- If answers to questions 7.1 and 7.3 are "Never", "I don't know" or "Refused to answer", questions 7.2 and 7.4 should not be asked.
- To determine the quantity eaten by the respondent at a time (questions 7.2 and 7.4), the following weights could be used as a guideline:

Fruit and vegetables	Small	Medium	Large
1 orange	40 g	150 g	320 g
1 apricot	10 g	20 g	40 g
Water-melon, 1 slice	85 g	200 g	370 g
1 banana		100 g	
Grapes, 1 bunch	50 g	250 g	
1 pear	80 g	120 g	
1 apple	100 g	170 g	230 g
1 cucumber	90 g	120 g	400 g
1 tomato	75 g	150 g	300 g
Salad, 1 portion	100 g	150 g	
Mixed grated vegetables (1 table-spoon)	50 g		

### *Alcohol consumption*

The questionnaire on alcohol consumption in the population aims to study the consumption of alcohol by the population as a whole, i.e. what proportion of the population consume alcoholic beverages in general, and what proportion of those who consume them do so in large, moderate or small amounts. The questionnaire is designed to be as easy and clear for all the population to understand as possible. However, questions might arise in the process of filling it in, which the interviewer must be able to answer.

Questions relating to the quantity of beverages with various alcohol contents (8.4, 8.6, 8.8) may be difficult to answer, and the interviewer must be able to determine the category of a beverage:

**Non-fortified wines** include dry, dessert, home-made wines, champagne, i.e. beverages with not more than 12-15% of pure alcohol.

**Fortified** wines include ports, muscats, liqueurs and other beverages containing not more than 20% of pure alcohol.

**Strong beverages** include vodka, whisky, cognac, gin and others containing around 40% of pure alcohol.

- In questions 8.3, 8.5, 8.7, 8.9 the quantities of alcoholic beverages should only be given in grammes. If the respondent defines the quantities of consumption in litres, these should be

translated into grammes and, for instance, instead of 1 litre you should write 1000 grammes.

- If questions 8.2, 8.4, 8.6 and 8.8 are answered "never", "I don't know" or "refused to answer", questions 8.3, 8.5, 8.7 and 8.9 should not be asked.

### *General information*

- The answer to question 13.1 on the marital status should be recorded as it is given by the respondent, without further clarifications. If it is difficult to answer, or if the respondent so requests, you should read out possible options as indicated by letters.
- Answering question 13.2, the number of years of education should be indicated, including secondary school.
- In question 13.3, education "below secondary" should include incomplete secondary school (from 1<sup>st</sup> to 9<sup>th</sup> grade, or 10<sup>th</sup> grade in 11-year secondary school). "Secondary education" includes a complete course of education in the secondary school. "Secondary special education" means secondary technical schools. "Higher education" includes persons with 3 full years and more in a university, university graduates and those who have received post-diploma training or have a scientific degree.
- Answering question 13.5, the number of all members of the family living with the respondents should be indicated.

### *24-hour food diary*

The idea of the **24-hour food recall** is to establish the quantity of foods and dishes actually ingested, by conducting an interview in which the respondent recalls what she/he ingested during the 24-hour period preceding the day of the interview. Asking questions, the interviewer requests the subject to recall the kind of foods she ingested the day before. The interviewer takes an active part in the interview and, together with the respondent, describes the kinds and establishes the amounts of foods ingested. The descriptions and amounts are recorded by the interviewer in a special questionnaire form, completing columns **H3, H5, H6, H7, H9**.

The interview is conducted in the morning. The recall should cover the preceding 24-hour period, from the first meal in the morning the day before to the last meal in the evening or night before the day of the interview. The foods ingested in the morning of the current day is not included in the recall.

The interview should begin with the question on what the subject ate first thing after she woke up and got up from the bed, and finish with the question on the food ingested during the past night. Food intake at night by people working night shifts should be considered here.

The 24-hour food recall method may be used to directly interview people **aged from 10 to 75 years**. The method requires certain work of the memory and depends on the ability of the subject to recall and properly describe her/his dietary intake. Therefore, it is not recommended to administer it directly to children under 10 years of age or to elderly people with memory and speech impairments, to people having severe physical handicaps, patients having severe illness, persons with mental disorders, memory and speech impairments, to deaf mutes and to the blind.

At the very beginning of the interview, the interviewer should emphasise that he/she will only be interested in the food intake over the preceding 24-hour period. In so doing, he should politely explain to the subject that he is not interested in the habitual diet, recent eating habits or preferences, but, specifically, would like to record the food intake during the previous 24-hour period.

The first **standard questions** of principal importance relating to the 24-hour food intake should be phrased in the following way:

"When did you eat for the first time yesterday after you woke up?"

"What did you eat and drink with that first meal?"

After every response by the subject followed by detailed description of the kind and amount of the foods, and by recording the answers, the interviewer should ask, "What else did you eat or drink with that meal? Please recall."

**Clarifying questions** should be phrased in a neutral way, without imposing on the subject a certain kind of food or leading her to it. Additional clarifying questions should be specific for the characteristics of particular foods or particular meals (see Table 1).

It is very appropriate to link the question on the meals to certain types of the subject's activities during the 24-hour period (before going to work, after taking a walk, at work, after watching TV, before and after shopping, after sports, etc.). As a rule, they have a meal before or after some activities, and these meals are easy to remember and recall when the subject is reminded of certain activities of hers. Each such meal is then described in detail.

Certain meals and food combinations are traditional, which is something for the interviewer to remember as he/she asks clarifying questions. If the respondent reports having a sandwich in the morning, a natural question arises as to what the sandwich was with, and whether she washed it down with any beverage. If the respondent had broth or soup, then make sure you ask her about the consumption of meat that had probably been boiled in the preparation of the first course. Or ask her whether she had added sour cream to her borsch or shchi, or eggs to the sorrel soup, etc. (see Table 1 - Principal characteristics of foods and dishes to be described in the 24-hour recall).

Attention should be paid to snacks between meals, i.e. ingestion of small amounts of food on one's way to work, during work, etc. (such as a candy, biscuit, fruit, a glass of lemonade, milk, etc.).

To obtain full and adequate characteristics of dishes and foods that would be in accordance with their chemical and physical composition, one should use Table 1.

**Table 1** has three columns. **Column 1** contains names of major food or dish groups. **Column 2** provides approximate names of dishes/foods, methods of cooking and consumption, and some other key characteristics of food. All the characteristics of food prompted by this column 2 are recorded in the appropriate section of the 24-hour food intake diary (form of the questionnaire) based on the records made during the 24-hour recall interview.

**Column 3** of Table 1 contains prompts for describing, in a separate line of the questionnaire, those additional components, additions to the principal dish or food (condiments, spices, sauces, fatty dressings for soups and salads, garnish for the main course, sandwich components, etc.), as well as components of complex dishes that need to be characterized and recorded in a separate line of the questionnaire as separate dishes/foods.

Table 1 also provides examples to illustrate the rules of describing dishes and foods.

The 24-hour food recall questionnaire (form H08) is an open nonformalised type of the form, i.e. it does not contain fixed standard questions or a list of foods/dishes. The questionnaire only



includes the names of mandatory sections that need to be filled in for any type of the study using the 24-hour food recall. It is mandatory to indicate in **section H3** the time of the meal to be able to study the schedule and frequency of food intake. Data on the place of taking the meal are indicated in **section H5**.

The principal section in the questionnaire is, of course, the description and characteristics of food and methods of preparing and consuming it ("Name and composition of the food, dish or beverage"). In this column, one should give a concise description of all the characteristics of the food as prompted by the algorithm of Table 1. Each food and dish must have a name and a brief description of the cooking and consumption method. Besides, describing the properties of the food one should indicate its quantity in household measures: number of spoonfuls, glasses, cups, plates, pieces, slices, etc. One line of the questionnaire should not contain description of several dishes, while a description of one dish or food may take several lines in the form, if necessary.

THE INTERVIEWER SHOULD REMEMBER ONE SIMPLE RULE: the description of a dish or food may not consist of one word, but, rather, should include at least a phrase of three-four words describing some characteristics of the dish/food in question, and allow correct identification of this food or dish, so that the amounts of nutrient and energy intake could be calculated later on.

One should also record in the questionnaire information on the place of cooking the food (at home or not at home) – **section H6**.

Another important section in the questionnaire is the one containing data on the amounts of food ingested. Volumes of liquid food or weights of solid food should be indicated in figures, without fractions, as a rule, and without indicating ml, g or other units of measurement.

One of the most responsible stages in the 24-hour food recall is completing **section H7** "Amount". To assess the amount of foods ingested, they use albums with full-scale drawings or photographs of various food and dish portion sizes. The albums with photographs or drawings are shown to the respondent during the interview as she describes the characteristics of the dish or thereafter. The album with pictures may be shown to the subject again at the end of the interview, to help her recall the food ingested.

**The amounts of liquid and friable foods should be evaluated in customary household measures familiar to the subject – cups, glasses, plates and spoonfuls (tea and table). These articles have a standard volume corresponding to a certain amount in millilitres or grammes, not only of liquid (tea, coffee, compotes, beverages, etc.) or friable (sugar, instant coffee, flour) products, but of some other dishes and foods, as well (such as porridges or garnish).**

**Standard household measures of volume and the amounts of foods contained therein are shown in Table 2.**

If the subject had a meal at a canteen, café or some other public catering establishment, the person undertaking the study may use the menu to determine the average portion size.

In the event of difficulties with evaluating the amount of the food ingested, a comparison of the amount ingested at home with the portion normally served at a canteen could help. Thus, it is well known that a full-size portion of the first course at a canteen is 500 ml, while a half-portion is 250 ml.

**Table 1**

**Principal characteristics of foods and dishes to be described in the 24-hour recall**

<b>Food groups</b>	<b>Common name, general characteristics, method and particulars of cooking and consuming the dish</b>	<b>What additions or additional components were used that should be reported in a separate line along with the principal dish</b>
<b>BREAD AND CEREALS</b>		
Bread, lean buns	Brown, white, flour grade; number of pieces (the weight to be determined by the album)	If it is in the form of a sandwich, then what did you eat it with (butter, cheese, sausage, etc.), or what did you drink with it
Pancakes, fritters	Type and grade of flour, with what additions: home-made or bought in a precooked food store. The type of filling used in the fritters: meat, curd cheese, jam, preserves, etc.	Butter, margarine, sour cream, preserves, honey
Pies, patties	Type (fried or baked), type of dough, filling, home-made or commercially made	What did you eat them with or what did you drink with them
Flakes and other breakfast cereals	Type, quantity	What did you eat them with or what did you drink with them
Porridges, boiled pasta	Type, crumbly or sticky, boiled in water or as garnish; porridges with milk: with/without adding butter and/or sugar in the process of cooking; pasta, boiled, roasted in butter	Butter, margarine, other fat, sauce, cheese and other components added at the table when eating
Toasts	From what bread (its quantity), the fat used for roasting, moistened with milk, egg	What did you eat them with or what did you drink with them
Traditional (national) types of bread (flat cakes)	Name, principal ingredients, method of preparation; the quantity is to be identified by the respondent herself, if data are missing in the album	
<p>EXAMPLE: The interviewer found that the respondent had eaten 1 portion of rice milk porridge without butter, 1 fried patty with cabbage and 3 pieces of flat cake made of top-grade wheat flour. The interviewer is now finding out detailed characteristics of the dishes, and, using the album to evaluate the weight of each of the foods reported, should make the following record in the questionnaire:</p> <p>Rice milk porridge, sticky, sweet, without butter – 200            Patty, fried with cabbage and onions, 1 piece – 80            Flat cake made of top-grade wheat flour, 3 pieces – 240</p>		
<b>DAIRY PRODUCTS</b>		
Milk, cream	Cow, mare, goat; home-produced or bought, boiled, fat content	What did you drink it with

Kefir, ryazhenka (heat-treated sour milk), sour milk, kumiss, yoghurts	Of what milk were these made, fat content, additions (fruit, vitamin C, etc.)	Sugar
Ice-cream	Type (with fruit, chocolate, high-fat, etc.)	Nuts, jam, honey, chocolate
Cheeses, curd, curd pastes and deserts	Type of cheese: hard (cheddar, Dutch, Poshekhon), Suluguni or other national cheeses, brinsen cheese, curd, cream cheese, etc.  Type of curd: high-fat, medium-fat, low-fat, non-fat, home-made or purchased	What did you eat curd with: sour-cream, sugar, jam, honey, etc.
<p>EXAMPLE:</p> <p>Cow's milk in a pack, 2.5% fat, 1 glass – 200  Home-made cheese, semi-hard, fat content unknown – 60  Kumiss, of mare milk, 1 cup – 150  Kefir with vitamin C, 2.5% fat, 2 glasses – 400  High-fat ice-cream, 1 waffle cup – 100</p>		
MEAT, POULTRY		
Meat	Type (beef, pork, mutton, wild-animal meat); fried, stewed, boiled; proportion of fat in the meat; type of cooking fat used.  Evaluate the weight of the meat consumed without the bone!	With broth or some other first course.  Gravy, sauce, garnish
Minced meat dishes	Type, what meat; with or without addition of bread (cutlets, beefsteaks), <i>zrazy (meat cutlets stuffed with rice)</i> , rolled meat (specify the filling); method of cooking: fried, stewed, boiled, microwaved, steamed	Sauce, gravy, garnish
Sausage, smoked meats	Type of sausage: boiled, boiled and smoked, raw-smoked (trade name), with or without visible fat, type of fat used for frying	Sauce, gravy, garnish
Brisket, chump end of loin	Amount of fat: 1/2, 1/3, 1/4, without visible fat	
Poultry	Type of poultry, name of the part of the carcass, with or without skin, boiled, roasted (in what fat), stewed.  Evaluate the weight of the meat consumed without bones!	Sauce, gravy, garnish
Fish	Type, fresh: fried (what fat was used in cooking), boiled or stewed.	Sauce, gravy, marinade, garnish

<p><b>EXAMPLE:</b>  Boiled mutton, 1/3 fat – 40  Cutlet (beef/pork, 1:1), fried, 2 pcs – 60  Boiled duck, meat from 1 wing – 30  Canned fish (pollack) in own juice – 25</p>		
<p><b>FIRST COURSE</b></p>		
<p>Soups, borsch (<i>beetroot and cabbage soup</i>), shchi (<i>cabbage soup</i>), broths</p>	<p>Type, ingredients, with groats or vegetables or mixed, home-cooked or from a pack, milk, milk and vegetables</p>	<p>Meat eaten with the first course  To be recorded as boiled meat !!! (specify the type)   Sour cream, mayonnaise, egg from the sorrel soup</p>
<p><b>EXAMPLE:</b>  Potato soup with macaroni, chicken broth, ½ plate – 250  Boiled chicken – 50  Borsch (beetroot, cabbage, potatoes), mutton broth  1 plate (equivalent to a full-size canteen portion) – 500  Boiled mutton from the borsch – 20</p>		
<p>Egg dishes</p>	<p>Method of preparing the eggs: boiled (hard, soft); omelette, fried eggs, type of frying fat</p>	<p>Cheese, sausage, vegetables, ham, mayonnaise</p>
<p><b>EXAMPLE:</b>  Soft boiled chicken egg, 1 piece – 47  Eggs fried on butter, 2 eggs – 94  Fried boiled sausage, without fat, 1 slice (the respondent reported that the fried eggs were with sausage)</p>		
<p><b>CONFECTIONERY</b></p>		
<p>Biscuits, pastry, cake</p>	<p>Type, biscuits, pastry (type of cream, filling), cake; home or commercially made (domestic or imported)</p>	
<p>Candies</p>	<p>Type, name, filling, coating, from natural chocolate or soya</p>	
<p>Sugar</p>	<p>Evaluated by the number of tea-spoonfuls (1 tea-spoonful = 7 g) or lumps of instant sugar (1 lump = 5 g)</p>	
<p><b>EXAMPLE:</b>  Sugar, 1 tea-spoonful – 7  Butter biscuits "Polyot", 4 pieces – 20  Chocolate-coated candies, 2 pieces – 24</p>		
<p><b>FATS AND OILS</b></p>		
<p>Vegetable oil</p>	<p>Type (cotton, sunflower, soya), trade name, cooking fat, special dietetic low-fat grades</p>	
<p>Margarine, butter</p>	<p>Grade or type, trade name</p>	
<p>Salad dressing</p>	<p>Ingredients: presence of vegetable oil, mayonnaise, salt, vinegar, spices</p>	
<p>Gravies, sauces</p>	<p>Home or commercially made, milk (fat content) or water, type of fat</p>	

<p><b>EXAMPLE:</b>          Butter (for two sandwiches) – 10          Mayonnaise "Provensal" (for salad), 1 table-spoonful – 15          Tomato sauce "Ostry", 1.5 table-spoonful – 23</p>		
<p><b>FRUIT, FRUIT JUICES</b></p>		
Fruit, fruit juices	Fresh, canned or dried, evaluate the weight using the album	Canned fruit from home-made compotes
<p><b>EXAMPLE:</b>          Fresh apples "Jonathan", 2 large ones – 360          Grape, black, 1 bunch – 150</p>		
<b>VEGETABLES</b>	Type, fresh, frozen, canned, roasted, stewed	
Salads	Vegetable or fruit, specify the ingredients and the proportion of the main ingredients	What were they seasoned with: mayonnaise, sour cream, vegetable oil, dressing mixtures, sauces, ketchup
Potatoes	Boiled with or without peel, fried from raw or boiled potatoes, fat used for frying, mashed with what additions	Sauce, gravy, butter or other fat added while eating
<p><b>EXAMPLE:</b>          Salad with fresh cucumbers, tomatoes and red sweet pepper (1/2/1) – 200          Sour cream for salad, 30 % fat, 2 table-spoonfuls – 40</p>		
<p><b>BEVERAGES</b></p>		
Coffee, tea	Brewed, instant, coffee-like drink (with barley); herbal, black, green	Sugar, jam, tea, honey, milk, cocoa, cream, other.
Mineral water, sodas	Name of the water or beverage, artificial beverages with sweeteners or sugar	
<p><b>EXAMPLE:</b>          Black tea, 2 glasses – 400          Sugar, 4 tea-spoonfuls – 28</p>		
<p><b>ALCOHOLIC BEVERAGES (wine, beer, vodka, brandy, including home-made beverages)</b></p>		
<p><b>EXAMPLE:</b>          Beer "Zhigulyovskoye", 1 bottle – 500          Vodka "Stolichnaya", 1 glass – 50</p>		
<b>DIETETIC AND SPECIAL FOODS</b>	Name, type, purpose, what they are fortified with. Polyvitamin preparations	
<p><b>EXAMPLE:</b>          Dry milk product "Zdorovye"          3 table-spoonfuls (in 2 glasses of boiled water) – 60</p>		

**Table 2****DATA ON THE WEIGHT OF FOODS IN COMMON HOUSEHOLD MEASURES**

The vessels listed below are assumed to have the following volumes in millilitres:

Faceted glass	200
Table-spoon	18
Tea-spoon	5

Type of food	Weight, grammes		
	Glass	Table-spoon	Tea-spoon
Flour	130	25	8
Oat flakes "Hercules"	70	12	3
Groats	170	25	8
Sand sugar	160	25	7
Honey, natural		30	9
Cocoa powder		25	9
Milk, kefir, sour milk, cream, kumiss, etc.	200	18	5
Condensed milk with sugar, coffee or cocoa with condensed milk		30	12
Sour cream	200	20	8
Curd		17	5
Vegetable oil		17	5
Mayonnaise		15	4
Melted butter		17	5
Cherries	130		
Raspberries, currants	150		
Fruit and berry juices	200	18	5
Jams, preserves		40	15
Baby foods, dry	200	20	6
Sunflower seeds (net weight)	45		
Pumpkin seeds (net weight)	60		
Dried apricots	180		
Raisins		25	7
Ketchup		30	8
Cranberries	145	23	7

A handful of sunflower seeds (net weight) – 6

The volume of a full-size portion of the first course in public catering establishments – 500 ml,  
½ portion – 250 ml.