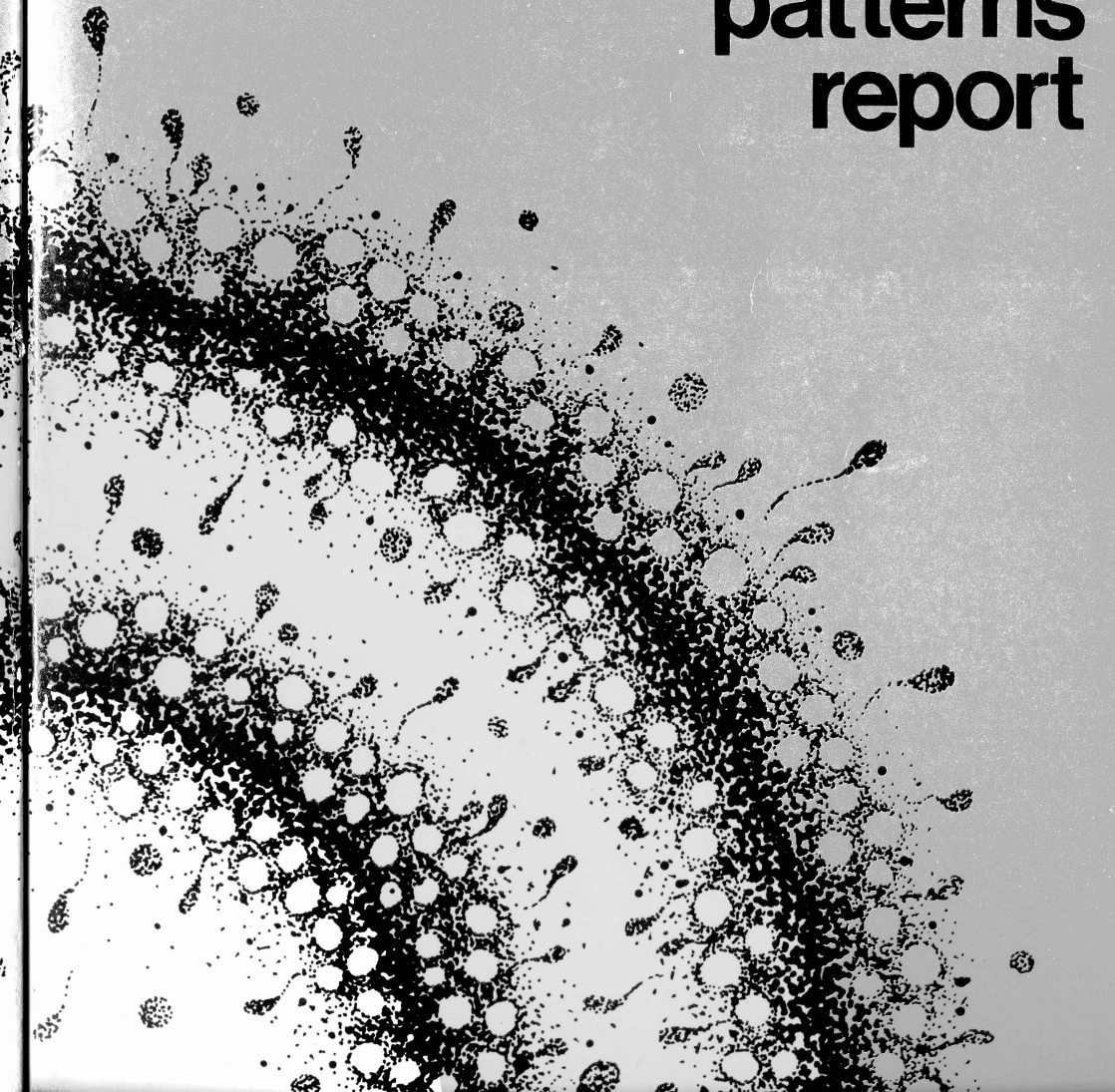


**nutrition
canada** 

**food
consumption
patterns
report**



food consumption patterns report

A Report from Nutrition Canada
by the
Bureau of Nutritional Sciences
Health Protection Branch
Department of National Health and Welfare

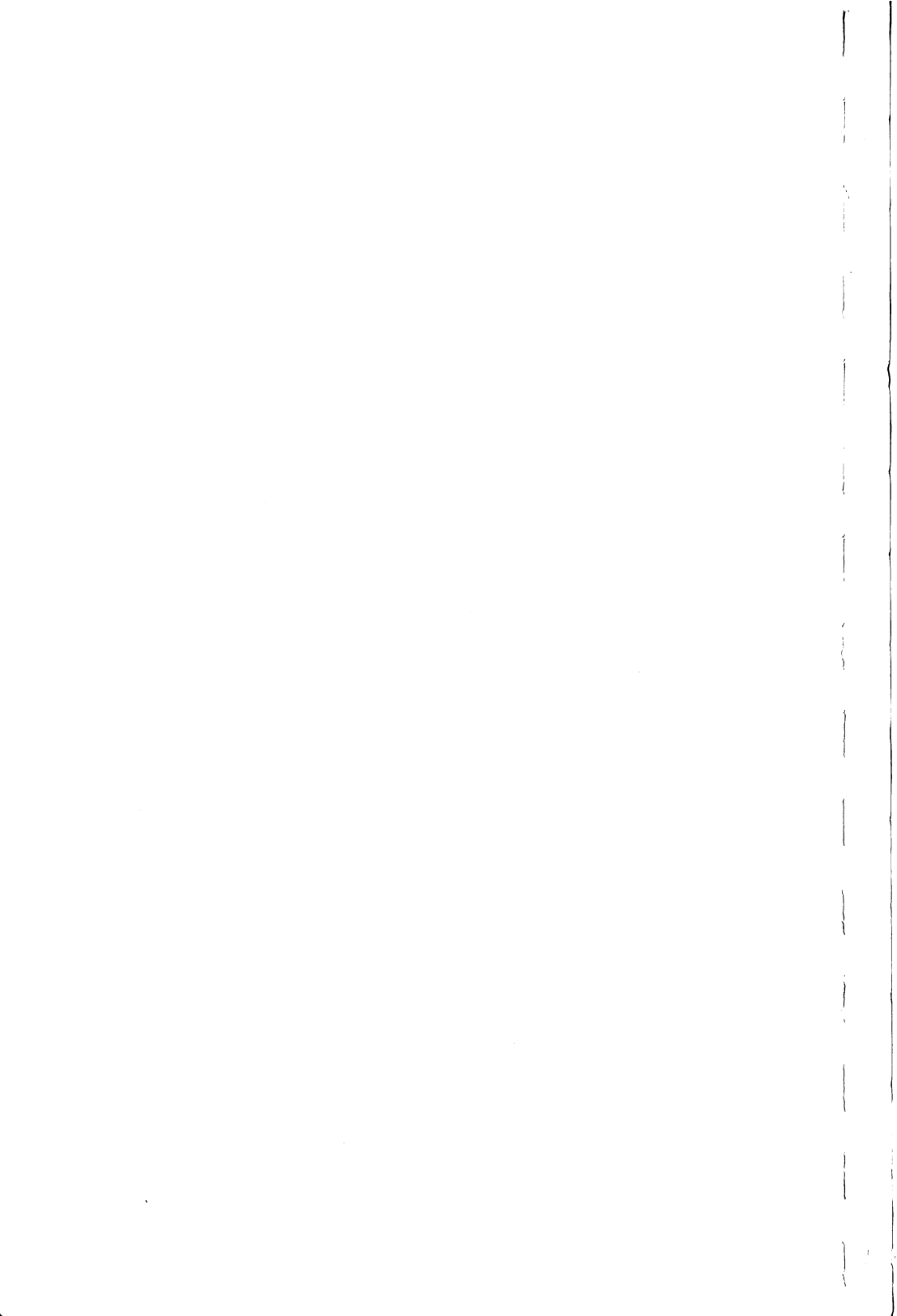


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Nutrition Canada Survey:

A study of food consumption patterns

Preface

The study of food consumption patterns described in this report is part of the analysis of the national survey of nutritional status carried out between 1970-1972 (1). The principal objectives of this study were to (a) examine the mean consumption of selected food groups and their contribution to nutrient intake of Canadians, (b) examine patterns of food consumption and nutrient intake at various times of the day, and (c) provide information on the changes in eating habits during pregnancy.

The data will prove useful as a basis for the development of nutrition programs, construction of food guides, evaluation of changes of food patterns in Canada over a period of time and as a basis for food legislation.

The focus of the report is national, although regional and seasonal differences have been considered in the evaluation. Separate chapters describe the food consumption patterns of the Indians and Eskimos. Because of the volume of computer output produced for this report only appropriate summary tables accompany the text in each chapter. In some cases, for regional comparisons, additional computer print-outs were used which had not been summarized. These are referred to in the report as additional or unpublished data.

Details of the survey design, the sample sizes and responses for the provincial, Indian and Eskimo populations have been published in earlier reports (2). The age groups used in this report were modified from those used previously to reflect the ages at which changes in dietary patterns may be expected to occur. Data for infants were analyzed separately and the ten to eleven year olds have been grouped with the five to nine year olds to form an elementary school age group.

Chapter 1

Nutrition Canada Dietary Survey Procedures

1.1 Assessment of Food Intake

The assessment of dietary intake is complex and many factors must be considered before deciding upon the appropriate methodology. The objectives of dietary surveys should determine the method to be used as no one method is best for all situations. Time, available resources, the degree of accuracy necessary to accomplish the aims of the survey and whether group or individual data are desired must be considered. It is important to distinguish between methods which can be used to assess the mean intake of groups from those which are necessary to assess the intake of an individual. The duration of the study and the nutrients to be evaluated also influence the choice of methodology. The selection of methods has been the subject of several review articles (3,4,5) in which the details are described.

1.2 Justification for the Use of the 24-Hour Recall Method in the Nutrition Canada Survey

After assessing the advantages and disadvantages of the various methods of collecting dietary intake data it was concluded that the 24-hour recall was the most feasible method to identify and determine the quantity of food items consumed by the Canadian public.

When money, time and personnel are limited, the 24-hour recall is the simplest and most direct method for collecting data on large groups of individuals. The data compares favourably with that of the 3-day or 7-day record and the prospects are good for obtaining the co-operation of the subjects. It has been stressed that this method should not be used if the intake of an individual must be interpreted (6,7,8). However, when the sample is large enough and properly selected, random errors are reduced and fairly reliable data on mean food consumption and nutrient intake for a group can be obtained.

1.3 Survey Procedure — Dietary Interview

As previously described (1) the dietary interviews were conducted in the survey centres of the various enumeration areas across Canada. There were two parts to these interviews — a recall of foods consumed on the previous day and the frequency with which certain foods were consumed over the previous month. The food frequency questionnaire included only 78 food items and was designed to obtain information for the Health Protection Branch on consumption of food additives. This information could not be used for the assessment of nutrient intake or food consumption patterns because of the limited number of foods listed.

The recall methods rely on an interview technique and the skill of the interviewer is an essential feature in ensuring the validity, reliability and objectivity of the information obtained. The importance of non-verbal, as well as verbal communication, was explained to the interviewers during the training period so that actions which might influence the person being interviewed would be eliminated. All members of the interview team were also thoroughly trained in the use of the questionnaire forms and food models before going into the field. Their interview methods were reviewed regularly during the survey to ensure uniformity.

When the participants were interviewed the dietary recall method was explained to them. The interviewee was then asked to recall all foods and beverages consumed during the day preceding the interview. When the list of foods was completed the amount of food consumed was ascertained using models which were designed to assess portion size and were not intended to represent a particular food. All models of one type were presented simultaneously so that no bias was introduced into the participant's answer. For processing these data, computer programs were designed to convert the model codes into grams and then, using the stored food composition table values, to calculate the nutrient content.

1.4 Calculation of Nutrient Intakes

In contrast to previous reports (1,2) the calculation of nutrient intakes does not include the contribution of mineral and vitamin

supplements taken by the participants. In addition the nutrient intakes from food include those of carbohydrate, fat, and free and total folate as well as values for fibre, and they exclude vitamin D.

Food composition tables from the United States Department of Agriculture (USDA) formed the basis for the table used in the computation of nutrient intakes from the dietary records (9). The data centre converted International Units (I.U.) of vitamin A into retinol equivalents (1 retinol equivalent = 3.33 I.U. of pre-formed vitamin A or 10 I.U. of β carotene) and replaced niacin values in milligrams with niacin equivalents (1 niacin equivalent = 60 mg tryptophan or 1 mg of niacin). Tables of amino acid composition (10) facilitated the development of estimates of the tryptophan content of foods containing more than five per cent protein. Nutrient content data were added to the table for foods enriched according to Canadian legislation (11) and for some convenience foods and wild game not included in the USDA publication.

Free and total folate content of foods was added to the nutrient values in the Nutrition Canada food composition table. Folic acid values were based as far as possible on analyses conducted in the Health Protection Branch Research Laboratories (12,13,14).

When data were lacking these were either supplemented with other published values (15,16,17) or additional analyses were carried out by the Health Protection Branch. For foods which were home prepared, folic acid values were computed using recipes in the supplement to Handbook #8. Because of the limited data available on folate composition, certain assumptions had to be made to ensure that the food composition table was as complete as possible. For example, few values were available for cooked fresh vegetables and therefore cooked values were taken to be 50% of the raw value (19). In the case of different varieties of the same food, such as ready-to-eat breakfast cereals, mean values based on known analytical values were selected. For different cuts of meat and poultry and different types of fish, analytical values were included where appropriate and when such values were not

available mean values were used. There are, therefore, drawbacks in the data on the folate composition of foods and these should be borne in mind when assessing the findings. Such defects, however, are inherent to some degree in all tables of food composition and should not obscure the value of the first national assessment of folic acid intake.

1.5 Food Group Classification

In considering the approach to the problem of characterizing food intake patterns it was obviously impossible to deal with individual foods. If, however, too many foods were grouped together the usefulness of the data would be impaired. It was decided that the 9 groups developed by the USDA would form the basis for the food grouping system (20). Additions and exclusions were made to suit the needs of the report.

The complete list of the nine major food groups used throughout the report as well as the list of the 22 food categories on which the computer output was based and the classification of individual varieties of foods within the 22 food categories are presented in Table 1.1. Specific discussion is included for any food or particular food category which obviously influenced food consumption or nutrient intakes. The term protein source refers to three food groups — dairy products; meat, poultry, fish, eggs; nuts and dried legumes.

A modification was required for certain population groups. For Indians and Eskimos, meat and poultry were combined into a single category and an additional category, wild game, was added. For infants, instead of nine food groups only five were used. These were milk, commercial formula, infant cereals, commercial baby foods and table foods.

1.6 The Use of Mean Values

In previous reports of Nutrition Canada data (1,2) median values rather than mean values were used to express the results. Even though both are "measures of centrality", median values were used previously because the median is less influenced by extreme values which occur in distributions of nutritional variables. The

mean, although somewhat less stable, is used in this report because means can be added and medians cannot. For example, the mean intake of calcium from all dairy products is the sum of the means for milk and milk products and cheese and cheese products, whereas the median intake may not be the sum of the medians.

1.7 The Contribution of Food Groups to Total Nutrient Intake

The contribution of food groups to total nutrient intake was calculated separately for each nutrient. The contribution of a food group was computed as the mean intake from the food group divided by the total mean intake from all food groups multiplied by one hundred. This percentage reflected both the amount consumed from the food group relative to other groups and the average concentration of the nutrient in foods of the group adjusted for their relative consumption.

Food groups were considered to be primary sources of nutrients when they contributed the highest percentage of the intake of that nutrient to the diet and were secondary sources when they ranked second. The contributions of two food groups to the intake of a particular nutrient were considered equal if they did not differ by more than 3%.

1.8 Standards for Interpretation of Nutrient Intake

The standard developed in 1969 by the Committee on Standards and Data Interpretation (1,2) which classified the nutrient intakes of individuals within an age group as inadequate, less-than-adequate and adequate was not used because this report does not attempt to classify individuals at risk. Rather, as the objective was to provide basic information on the nutritional adequacy of the diets of particular age groups, the Dietary Standard for Canada (revised 1975) was used to interpret the data. The recommended nutrient intakes set out in this standard are considered adequate to meet the needs of practically all healthy persons in each age group and mean intakes not meeting the standard are cited in this report.

It should be noted that the recommended nutrient intakes set out in the Dietary Standard for Canada are higher than those

for thiamine, riboflavin and niacin for all age groups and are higher for adults for vitamin A and calcium and lower for adolescents and nonpregnant and pregnant women for iron than those of the Nutrition Canada Interpretive Standard.

1.9 Patterns of Eating

Time of eating during the day was divided into six time periods to reflect what was considered to be the traditional pattern of eating. The nutrient content of all foods and beverages consumed during these time periods was calculated. For clarity in the text of the report the meal periods were designated as morning 0500-0859 hours, noon 1100-1359 hours and evening 1700-1959 hours.

1.10 Interpretation of the Data

1.10.1 Special Considerations

a) Breakfast cereals

As discussed in Section 1.3 the amount of food consumed was converted into grams. This presented certain difficulties in the interpretation of the data. For example, the average intake of breakfast cereals in grams was the average of the weights of the recorded volumes of both hot and cold cereals. As a serving of hot cereal weighs about 10 times more than the same volume of dry cereal, what may appear to have been a higher mean intake may have been only a greater proportion of cooked cereal. A comparison of protein contribution was used to give a more accurate comparison of actual intakes.

b) Soft Drinks

Interpretation of the food category "All Beverages and Soft Drinks" was also difficult as the mean intake in grams may have included instant tea and coffee, perked coffee and steeped tea without sugar, cream or milk, soft drinks and alcoholic beverages. Cream, milk and sugar added to beverages were recorded separately. Soft drink consumption was estimated by assuming that all the carbohydrate from the food category "Beverages and Soft

Drinks" was supplied solely by soft drinks. Using the average content of carbohydrate per ounce in soft drinks and the total weight of carbohydrate from beverages the consumption of soft drinks in ounces was estimated.

c) Alcohol

When the calories from carbohydrate were subtracted from the total caloric intake from "All Beverages and Soft Drinks" the calories supplied by pure alcohol could be estimated.

1.10.2 Statistical Interpretation

Statistical methods were used only for the estimation of the tabulated means, proportions and percentages. Therefore the comparisons made among ages, sexes, regions and seasons are not based on formal statistical tests of significance and indicate only possible trends. Because the data were based on food groupings rather than individual foods, ranges of intake of foods were not considered in this report. In addition as this was a 24-hour recall survey, interpretation of such ranges could only be misleading. A discussion of the ranges of nutrient intake was included in previous reports (2).

14 **Table 1.1. Food Group Classification**

Food Group	Food Category	Food Classification
Dairy Products	Milk and Milk Products	Fluid and dried milk, including buttermilk, skim milk, whole milk, evaporated milk; milk drinks such as hot chocolate and cocoa; whey and yoghurt; cream, half and half; milk desserts such as puddings, custard, ice cream, ice milk, sherbet
	Cheese and Cheese Products	Cheese and cheese products
Meat, Poultry, Fish and Eggs	Meat Poultry Fish Eggs	All varieties of meat, poultry, fish and eggs
Cereal Products	Bread and rolls Pasta Grains and flour mixtures Breakfast cereals	All varieties of bread and rolls Spaghetti, macaroni, noodles, etc. Various cereal grains e.g. rice; baked products Breakfast cereals
Fruit and Fruit Products	Fruit and Fruit Products	Fruits — fresh, canned, frozen, dried, fruit juices, nectars, drinks, fruit mixtures
Vegetables	Vegetables Potatoes	All types of vegetables All types of potatoes (except sweet)
Fats	Butter Margarine Oils and other fats	Butter; margarine; oils and other fats including shortening, lard, salad oil, cooking oil, salad dressings
Nuts and Dried Legumes	Nuts and dried legumes	Nuts including peanuts, coconuts; dried peas, beans, lentils, soybeans

Foods Primarily Sugar
and Beverages and
Soft Drinks

Miscellaneous

Foods Primarily Sugar
Beverages and Soft Drinks

Mixed dishes*
Soups
Condiments and
miscellaneous items

Sugars, cake icings, syrups, honey, molasses, jellies, jams,
candies, chocolate syrup, gelatine dessert powders
Tea and coffee (without cream and sugar),
alcoholic beverages, soft drinks
Mixtures of food groups
Soups
Condiments and items not classified elsewhere

**The category "mixed dishes" does not include all combination dishes. When the participant was able to identify the components and their proportions or when typical recipes were available the components were coded as individual foods to improve the accuracy of the nutrient data; otherwise they were coded according to Handbook #8 (9) and classified as mixed dishes.*

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Chapter 2

Infants (0-11 months)

Abstract

The number of infants studied was small and the results should be viewed with caution. The mean nutrient intake exceeded the recommendations for all nutrients except free folate. In most cases baby foods were introduced before the end of the second month. Most of the formula given to infants under three months of age was commercially prepared. The type of milk consumed by infants differed in the various regions.

2.1 Introduction

It was recognized that there are differences in eating patterns throughout the first year of life. Therefore, notwithstanding the small number of infants (250) under one year of age, it was considered important to examine the data for the different age categories within the first year of life and describe any trends observed.

The nutrient intake data does not include contributions from breast milk and therefore a small percentage of nutrient intakes are underestimated. There were 16 infants who were breast fed, 2 under 1 month of age, 7 in the 1-2 month category (1 totally breast fed), 4 in the 3-5 month category (2 totally breast fed), 1 in the 6-8 month category and 2 in the 9-11 month category.

The 6 infants under 1 month of age were in the Prairies and Pacific regions sample. The percentage of infants in the other age categories was similar for all regions.

In this chapter a number of sample estimates are included as well as the usual population estimates used in Nutrition Canada Reports (1). These are slightly less reliable than population estimates in describing the behavior of Canadian infants because they do not provide unbiased estimates of the actual proportion in the population. All figures in the tables are population estimates with the exception of those in Table 2.2 which are sample estimates.

2.2 Composition and Consumption Patterns of Food Groups

As described in Chapter 1, five food groups were used for this age category. These were milk, which may or may not have been used to prepare formula, commercial formula, infant cereals, commercial baby foods and table foods. The table foods included the sugar or syrup used in formulas, fruit juice, rusks and cookies and any other type of food that may be eaten by other age groups.

The mean consumption in grams of these food groups is shown in Table 2.1. As would be expected, the amount of baby food and table food increased with the age of the infant and by 9-11 months of age the amount of commercial baby food was beginning to decrease.

Because of the small number of infants it was possible to examine the types of food being consumed by each infant under three months of age. It was noted that the 6 under 1 month of age were receiving infant cereal, 1 receiving juice and 1 puréed fruit. Of the 35 in the 1-2 month category, 31 were receiving infant cereal, and 27 receiving commercial baby foods of all varieties. The table foods included fruit juice and some other puréed foods. These figures are sample estimates and therefore consumption patterns must be viewed with caution.

It was also possible to examine the types of milk being consumed by the various infants within the sample. For those infants under 3 months of age, 68% of the sample was being fed with formula of which 71% was commercially prepared. In the older age groups the consumption of milk increased and the consumption of formula, both home prepared and commercial, decreased. There were regional differences in the type of milk used (Table 2.2). It should be noted that of the infants sampled, a much higher percentage consumed evaporated milk in the Atlantic region and whole fluid milk in Quebec than in other regions.

2.3 Nutrient Intake

The median nutrient intake and percentage distribution of nutrients for all infants under one year of age has been published (2) but these values included contributions from vitamin and mineral supplements. Table 2.3 presents the mean nutrient intake from food

for infants in the national population and in the regions. Except for free folate, which was borderline for the older infants, the mean intake of all nutrients was well above recommended levels (Appendix A). Table 2.4 presents the percent contribution of the various food groups to nutrient intake.

There were regional differences in the intake of some nutrients. The higher mean intakes of iron and the B vitamins in Ontario could be accounted for by the higher mean consumption of infant cereal which was more than twice that of the Prairie and Pacific regions. The higher vitamin A intake in Quebec was due to the quantity and the selection of baby foods. The higher mean intake of vitamin C in the Atlantic region could be accounted for by the use of a higher proportion of evaporated milk. The mean caloric intake and carbohydrate intake in the Pacific region appeared to be lower than in the other regions. This could be accounted for by a lower consumption of baby and table foods.

Table 2.5 presents the mean intake of nutrients from foods for each of the five age categories. Except for free folate for the 6-8 month category and vitamin A for those under 1 month, the mean intake of all nutrients met the recommendations for all age categories (Appendix A).

The high mean intake of iron, 2-4 times the recommended amount, was due to the consumption of enriched infant cereal. The intake of iron in Ontario was particularly high because of the popularity of infant cereal. There is no indication that this level of intake is any cause for concern.

2.4 Summary

Although the number of infants in the survey was small, certain trends in infant feeding were evident during the first year of life. The mean intake of all nutrients from food, particularly iron and protein, was higher than the recommendations. Baby foods, particularly cereal, were being introduced to infants less than one month of age and by the end of the second month of age most infants were receiving a wide variety of commercial baby foods.

Fluid cow's milk was consumed by a large percentage of young infants, particularly in Quebec and the Prairie region, con-

firming the value of adding vitamin D to all milk as a means of preventing the development of rickets.

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2. Canada. Department of National Health and Welfare. Ottawa. *Nutrition Canada Provincial, Indian and Eskimo Surveys*. Information Canada. 1975. 12 v.

22 Table 2.1 Mean daily intake of food groups (grams) by infants of different ages

Age (months)	Sample Size	Milk	Commercial Formula	Infant Cereal	Commercial Baby Foods	Table Foods
<1	6	122	158	16	6	10
1-2	35	198	320	27	94	34
3-5	65	519	35	35	202	69
6-8	74	608	52	35	220	162
9-11	70	641	9	32	173	407
All ages	250	540	73	32	175	217

Table 2.2 Percentage of infant sample consuming different types of milk

Region	Sample* Size	Evaporated	Whole Fluid	2% and Skim Fluid	Commercial Formula
age less than 6 months					
Atlantic	27	40.7	7.4	7.4	37.0
Quebec	19	5.3	52.6	10.5	31.6
Ontario	13	7.7	15.4	23.1	30.8
Prairies	23	8.7	21.7	39.1	21.7
Pacific	25	4.0	8.0	24.0	40.0
age more than 6 months					
Atlantic	39	42.3	42.3	12.8	2.6
Quebec	23	13.0	65.2	17.4	—
Ontario	25	4.0	32.0	52.0	4.0
Prairies	27	3.7	48.1	44.4	3.7
Pacific	29	27.6	17.2	48.3	3.4

*remainder breast fed, 1 in Quebec no milk.

Table 2.3 Mean daily nutrient intake of infants in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	926	942	959	923	968	798
Protein (g)	39	37	38	40	40	35
Fat (g)	31	37	33	26	35	29
Total carbohydrate (g)	124	117	130	134	127	96
Fibre (g)	1.58	1.12	1.90	1.88	1.56	0.87
Calcium (mg)	1131	1052	1052	1227	1139	1098
Iron (mg)	27	22	23	40	22	19
Vitamin A (R.E.)	698	712	965	589	599	664
Thiamine (mg)	1.03	0.89	0.98	1.35	0.82	0.84
Riboflavin (mg)	2.12	1.94	2.00	2.50	1.92	1.93
Niacin (N.E.)	16	15	16	19	15	14
Vitamin C (mg)	54	75	47	50	56	51
Free folate (μg)	51	44	49	53	58	43
Total folate (μg)	65	57	61	68	82	50
Sample Size	250	66	42	38	50	54

Table 2.4 Percent contribution of food groups to total nutrient intake

Nutrient	Milk	Formulas	Infant Cereal	Baby Foods	Table Food
Calories	36	11	13	15	25
Protein	53	7	11	14	15
Fat	49	17	3	8	23
Total Carbohydrate	23	8	18	20	31
Fibre	—	—	22	38	39
Calcium	62	8	22	3	6
Iron	—	3	84	4	9
Vitamin A	28	14	—	35	23
Thiamine	17	8	59	5	12
Riboflavin	47	7	33	6	7
Niacin	32	8	31	15	13
Vitamin C	21	16	—	13	49
Free Folate	46	16	4	5	30
Total Folate	36	12	4	9	39
Sample Size 250					

Table 2.5 Mean daily nutrient intake of infants of different ages

Nutrient	< 1 mo.	1-2 mo.	3-5 mo.	6-8 mo.	9-11 mo.
Calories	412	785	795	953	1066
Protein (g)	13	25	35	42	45
Fat (g)	18	33	26	34	33
Total Carbohydrate (g)	52	102	105	123	149
Fibre (g)	0.14	0.85	1.16	1.67	2.10
Calcium (mg)	561	909	1079	1257	1223
Iron (mg)	14	24	27	28	31
Vitamin A (R.E.)	302	718	658	776	712
Thiamine (mg)	0.57	1.00	1.01	1.04	0.09
Riboflavin (mg)	1.12	1.74	2.06	2.27	2.25
Niacin (N.E.)	7.16	12.5	15	18	18
Vitamin C (mg)	34	53	49	53	62
Free Folate (μg)	37	60	38	48	61
Total Folate (μg)	37	63	45	60	86
Sample Size	6	35	65	74	70

Chapter 3

Children (1-4 years)

Abstract

For this age group, dairy products and cereal products were the primary sources of calories and all nutrients except vitamin C and niacin. The mean intake of all nutrients, except free folate, exceeded the recommendations of the Dietary Standard for Canada.

The children appeared to eat three meals a day with 75% of the caloric intake during the designated meal periods.

3.1 Nutrient Intake

The national and regional mean intakes of the various nutrients are shown in Table 3.1 with the highest mean caloric intake in Quebec and the lowest in the Prairie region. In all regions 15% of the calories was derived from protein and 38% from fat.

The mean nutrient intakes of this age group exceeded the recommended intakes of all nutrients except free folate (Appendix A).

3.2 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The percent contribution of food groups to nutrient intake, the percentage of this age group consuming each food category and the percentage of food categories consumed during designated time periods are shown in Tables 3.2 to 3.4.

3.2.1 Dairy Products (milk, milk products and cheese)

This food group was a primary source of calories, protein, fat, calcium, riboflavin, niacin, folate and vitamin A, and a secondary source of thiamine and carbohydrate. The type of milk consumed influenced the percentage of vitamin C from milk. As evaporated milk in Canada contains added vitamin C the higher consumption of this product in the Atlantic region was reflected in the higher percentage of vitamin C from milk (17% in the Atlantic region, versus 7% in the Pacific region).

The mean daily consumption of dairy products was 685 grams (including 9 grams of cheese) which, based on calcium content*, can be equated to 2.9 cups of milk. Milk and milk products were consumed by 98% and cheese by 27% of these children during the day preceding the interview. Approximately two-thirds of the milk and milk products was consumed at meal times.

3.2.2 Meat, Poultry, Fish and Eggs (MPFE)

This food group was a primary source of niacin and a secondary source of protein, fat, iron and vitamin A. The mean intake was approximately 90 grams, composed of meat (45 grams), eggs (26 grams), poultry (15 grams) and fish (4 grams). Meat was eaten by 75% of these children with a smaller percentage of them consuming the other categories in this food group.

Approximately one-third of the meat, fish and poultry was consumed between 1100 and 1359 hours and the remainder between 1700 and 1959 hours. Approximately 45% of the eggs was consumed at the morning meal, although in the Prairie region only 20% was consumed at this time compared to 59% in Quebec.

3.2.3 Cereal Products (Bread, rolls, pasta, grains and flour mixtures and breakfast cereals)

This food group was the primary source of iron, thiamine and carbohydrate and a secondary source of calories, riboflavin and niacin. The mean intake was 149 grams (47 grams from bread and rolls, 54 grams from grains and flour mixtures, 35 grams from breakfast cereals, 12 grams from pasta). Bread and rolls were eaten by 92% of these children, grain and flour mixtures by 85% and breakfast cereals by 67%.

The patterns of consumption during the day were consistent throughout the various regions with 76% of the bread and rolls consumed during the three meal periods, 93% of the breakfast cereals consumed before 1100 hours and 82% of the grains and flour mixtures consumed between 1100 and 1959 hours.

* $\frac{\text{Calcium intake from dairy products (mg)}}{\text{Calcium content of 1 cup of milk (mg)}} = \text{number of cups of milk}$

3.2.4 Fruit and Fruit Products

These foods were the primary source of vitamin C and a secondary source of fibre, folate and carbohydrate. The mean intake of fruit and fruit products was 258 grams. This food group was consumed by 88% of these children and the consumption was evenly divided throughout the day.

3.2.5 Vegetables (including potatoes)

This food group was the primary source of fibre in the diet and the secondary source of vitamin C. The mean intake was 131 grams, composed of 75 grams of potatoes and 56 grams of other vegetables. The vegetables in the vegetable category were consumed by 78% of these children and potatoes by 72% on the day preceding the interview. The food group was consumed during the noon and evening meal periods with a greater percentage during the evening meal.

3.2.6 Fats (butter, margarine, oils and other fats)

The percent contribution to nutrient intake of fats is shown in Table 3.2. The mean daily intake was approximately 12 grams (67% butter and 25% margarine). Butter was consumed by 65% of these children and margarine by 27%. About three quarters of the food group was consumed during meal times.

3.2.7 Foods Primarily Sugar, Beverages and Soft Drinks

This food group supplied 13% of the carbohydrate and 7% of the calories. When foods primarily sugar were considered separately the mean consumption was 36 grams. This food category was consumed by 90% of the population and the consumption was fairly evenly distributed throughout the day. The mean daily intake of soft drinks was estimated to be 1½ ounces.

3.2.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Neither of these food groups was considered to be an important source of any nutrient. The mean daily consumption of nuts and

dried legumes was only 6 grams but was consumed by only 25% of the population. The miscellaneous group contributed only 3% of the caloric intake.

3.2.9 Regional and Seasonal Differences

The mean daily intake of food groups for different regions is shown in Table 3.5 and for different seasons of the year in Table 3.6.

The children in the Atlantic region had the lowest mean intake of fruit and the highest mean intake of nuts and dried legumes. Those in Quebec had the highest mean consumption of dairy products, MPFE group, vegetables and potatoes and foods primarily sugar. The children in the Pacific region had the highest mean intake of fruit and the lowest mean intake of potatoes. Additional data showed that the mean consumption of margarine in the Pacific and Atlantic regions was approximately twice that of the other regions.

The mean intake of dairy products and vegetables increased during the summer whereas the intake of nuts and dried legumes was highest during the winter. The intake of breakfast cereals increased during the autumn and winter.

It should be noted (Table 3.3) that a lower percentage of children consumed cheese in the Atlantic region than in other regions. In Quebec a lower percentage consumed breakfast cereals and a higher percentage consumed potatoes than in other regions. The Pacific region had the lowest percentage of children consuming potatoes.

Unpublished data indicated that the only appreciable regional differences in the percentages of food categories consumed by this age group at different times of the day was in Quebec. The consumption of vegetables was fairly evenly distributed over the noon and evening meal periods and the consumption of foods primarily sugar was higher after 2000 hours in Quebec than in other regions.

3.3 Pattern of Intake Throughout the Day

Table 3.7 presents the percentage of this age group consuming some food or beverage during the various designated time periods,

the mean caloric intake during these times and the regional differences. Some food was consumed by 72% of the children before 0900 hours, by 99% during the noon period and by 95% during the evening meal period. There were some regional differences both in percentages and caloric intake. For example, in Quebec 82% of the children ate something between 0900 and 1059 hours and the mean caloric intake was higher than it was in other regions during this time period.

Table 3.8 presents the percentage of the population consuming each food category during the different time intervals of the day preceding the interview. Calculations showed that of those eating during the morning meal period 88% consumed milk and milk products, 65% bread and rolls, 63% breakfast cereals, 47% fruit and fruit products and 25% eggs. There were some regional differences. A greater percentage of those eating in Quebec at this time consumed cheese (17%), eggs (32%) and bread (82%) and a smaller percentage consumed breakfast cereals (36%). In contrast, a greater percentage of those eating at this time in Ontario consumed breakfast cereals (80%) and a smaller percentage in the Prairie region consumed cheese (0%), eggs (14%) and bread (42%).

The data for the 0900 — 1059 interval indicated that some of these children were eating a breakfast type meal with 26% of those eating, consuming breakfast cereals, 44% consuming fruit and 32% bread. Others were presumably consuming a snack, as indicated by the percentage eating grains and flour mixtures.

As 99% of the children ate something during the 1100-1359 interval the percentages of those eating each food category are the same as the percentages in Table 3.8. This data indicates that up to 92% consumed a protein source and 76% had some milk and milk products. No pattern was evident for the other food categories. There were some regional differences. The percentage of children consuming fruit was lower in the Atlantic region (25%) than in the other regions. The percentage of children in Quebec eating vegetables and potatoes was higher than in other regions. In the Pacific region only 9% consumed potatoes.

The data for the 1400-1659 interval indicated that the food categories consumed during this time were principally milk, grains and flour mixtures, fruit and foods primarily sugar.

During the 1700-1959 interval up to 98% of the children had a protein source and 75% consumed some milk and milk products. No pattern was evident for the other food categories but the percentage consuming bread was smaller and the percentage consuming vegetables and potatoes greater than during the noon period.

The percentage of children consuming the various food categories after 2000 hours was small but of those eating, 65% consumed milk and milk products and between 25% and 30% consumed foods primarily sugar, fruit and flour mixtures. There were no regional variations.

Approximately 72% of the caloric intake was during designated meal periods with 15% during the breakfast period, 28% during the noon period and 29% during the evening meal period (Table 3.9). The pattern of the percentage of nutrients consumed showed some deviation from the caloric distribution pattern. The contribution of cereals to nutrient intake at the morning meal period was reflected in the higher percentage of iron, thiamine and riboflavin; of milk between 0900 and 1059 hours in the percentage of calcium and riboflavin; and of fruit, cookies and candies in the increased percentage of carbohydrate and vitamin C during the afternoon period.

3.4 Summary

The data indicated that the average daily intake of this group of children was the equivalent of 3 cups of milk, 3 ounces of meat, 1 serving of breakfast cereal, 1½ slices of bread, 2 teaspoons of butter or margarine, 2½ servings of fruit, ½ serving of vegetables, 1 serving of potatoes and 2 ounces of baked goods. It also indicated that the mean dietary intake of all nutrients, except folate, met the recommendations for this age category.

Dairy products were an important component of the diet supplying 28% of the calories and a high proportion of other nutrients and were consumed by 98% of the population. Cereal

products were also important components of the diet, particularly bread and rolls which were consumed by 92% of this age group and breakfast cereals which were a primary source of iron and were consumed by 67% of the population. Over 75% of these children consumed grains and flour mixtures, fruit and fruit products and vegetables, and over 90% had two sources of protein other than milk during the day.

The data indicated regional differences in caloric and nutrient intakes. These were highest in Quebec due to the higher consumption of several food groups.

It seemed evident that the meal patterns were such that approximately 28% of the calories were consumed during the morning and 28% during each of the noon and evening meal periods.

Table 3.1 Mean daily nutrient intake of children (1-4 years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	1666	1678	1986	1535	1499	1556
Protein (g)	62	59	74	57	55	59
37.8% Fat (g)	70	72	87	63	63	63
Total carbohydrate (g)	203	205	235	190	182	196
Fibre (g)	2.39	2.27	2.85	2.18	2.11	2.55
Calcium (mg)	1082	1072	1309	1007	950	970
Iron (mg)	10	9	10	11	10	10
Vitamin A (R.E.)	879	911	1042	842	733	770
Thiamine (mg)	0.93	0.93	0.99	0.91	0.89	0.89
Riboflavin (mg)	2.11	2.05	2.46	1.99	1.95	1.94
Niacin (N.E.)	22	21	26	21	20	21
Vitamin C (mg)	84	84	90	84	72	97
Free folate (μg)	77	66	90	78	62	73
Free folate (μg)	122	109	140	121	102	119
Sample Size	1031	243	215	178	169	226

Table 3.2 Percent contribution of food groups to nutrient intake of children (1-4 years)

Nutrient	Dairy Products	Meat, Poultry, Fish, Eggs	Cereal Products	Fruit & Fruit Products	Vegetables & Potatoes	Fat and Oils	Other*
Calories	28	14	24	9	8	5	12
Protein	42	29	15	1	5	—	7
Fat	33	25	14	1	6	13	8
Carbohydrate	19	—	34	18	10	—	17
Fibre	—	—	21	27	37	—	14
Calcium	80	2	9	2	2	—	4
Iron	2	21	47	9	9	—	10
Vitamin A	34	22	2	3	16	12	9
Thiamine	23	14	36	8	11	—	6
Riboflavin	58	11	22	2	3	—	3
Niacin	29	32	21	3	8	—	7
Vitamin C	10	—	—	66	22	—	2
Free Folate	37	8	13	24	13	—	4

* includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 3.3 Percentage of children (1-4 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	98	99	95	99	98	99
Cheese & Cheese Products	27	17	31	25	29	28
Poultry	21	18	30	19	13	16
Meat	75	74	82	70	78	74
Fish & Shellfish	7	9	7	5	8	8
Eggs	42	42	47	41	39	35
Butter	65	53	62	74	63	50
Margarine	27	34	28	23	21	42
Oils & Other fats	17	10	25	14	10	26
Nuts & Dried Legumes	25	21	19	30	25	27
Bread & Rolls	92	84	88	98	87	91
Pasta	14	7	13	18	9	11
Grains & Flour Mixtures	85	85	92	80	85	85
Breakfast Cereals	67	64	55	77	67	65
Fruit & Fruit Products	88	76	84	92	91	90
Vegetables	79	65	76	84	76	82

Potatoes	72	78	91	65	66	51
Foods Primarily Sugar	90	90	96	86	91	90
All Beverages	28	33	37	26	22	19
Mixed Dishes	14	17	8	17	17	14
Soups	40	32	40	43	41	32
Miscellaneous	26	26	31	20	32	28
Sample Size	1031	243	215	178	169	226

Table 3.4 Percentage of selected food categories consumed by children (1-4 years) during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk and Milk Products	19	21	22	7	23	9
Meats	1	1	34	6	58	—
Eggs	45	17	20	4	13	1
Bread and Rolls	22	13	37	6	17	5
Breakfast Cereals	70	24	2	—	2	2
Grains and Flour Mixtures	2	10	31	18	34	6
Fruit and Fruit Products	18	17	21	19	19	6
Vegetables	—	1	36	6	53	4
Potatoes	—	1	34	6	56	4
Foods Primarily Sugar	17	10	22	17	25	9
Sample Size 1031						

Table 3.5 Mean daily intake of food groups (grams) by children (1-4 years) in different regions

Food groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	685	608	883	626	590	591
Meat, Fish, Poultry, Eggs	89	83	109	82	75	92
Cereal Products including breakfast cereals	149	150	150	144	150	163
Breakfast Cereals	35	27	29	37	38	47
Fruit and Fruit Products	258	202	270	262	232	312
Vegetables <i>not</i> including potatoes	56	44	73	49	49	61
Potatoes	75	77	121	61	49	37
Fats and Oils	11	13	12	11	11	13
Nuts and Legumes	6	15	5	4	7	7
Foods Primarily Sugar	36	37	53	26	30	41
Mixed Dishes and Soups	96	102	76	109	105	76
Sample Size	1031	243	215	178	169	226

Table 3.6 Mean daily intake of food groups (grams) by children (1-4 years) for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	685	559	874	677	543
Meat, Fish, Poultry, Eggs	89	85	100	82	86
Cereal Products including breakfast cereals	149	153	140	143	177
Breakfast Cereals	35	29	23	47	54
Fruit and Fruit Products	258	246	283	249	245
Vegetables <i>not</i> including potatoes	56	51	70	52	43
Potatoes	75	76	105	47	62
Fats and Oils	11	11	12	11	13
Nuts and Legumes	6	9	4	4	14
Foods Primarily Sugar	36	40	38	31	36
Mixed Dishes and Soups	96	87	90	112	97
Sample Size	1031	288	307	217	219

Table 3.7 Percentage of children (1-4 years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of Day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	72	343	67	361	77	360	70	351	71	286	76	346
0900-1059	72	291	73	280	82	409	62	222	78	257	72	209
1100-1359	99	464	96	465	99	558	100	426	97	410	98	441
1400-1659	79	220	83	287	91	230	71	201	71	220	81	183
1700-1959	95	502	93	473	99	547	93	492	98	449	96	509
2000-0459	51	194	51	198	45	151	50	251	70	148	44	168
Sample Size	1031		243		215		178		169		226	

Table 3.8 Percentage of children (1-4 years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	63	35	76	27	75	33
Cheese & Cheese Products	6	—	16	—	6	—
Poultry	—	—	9	—	14	—
Meats	—	—	41	6	53	—
Fish & Shellfish	—	—	—	—	5	—
Eggs	18	8	9	—	9	—
Butter	31	17	37	5	26	—
Margarine	14	5	15	—	8	—
Oils & Other Fats	—	—	8	—	9	—
Nuts & Dried Legumes	7	6	7	—	—	—
Bread & Rolls	47	23	54	8	28	9
Pasta	—	—	7	—	9	—
Grains & Flour Mixtures	5	22	44	34	42	13
Breakfast Cereals	45	19	—	—	—	5
Fruit & Fruit Products	34	32	46	40	37	14
Vegetables	—	—	40	7	61	—
Potatoes	—	—	31	9	54	—
Foods Primarily Sugar	52	30	32	31	30	15
All Beverages & Soft Drinks	—	5	8	10	10	6
Mixed Dishes	—	—	8	—	7	—
Soups	—	—	30	—	13	—
Miscellaneous	—	—	12	—	13	—
Percent Eating	72	72	99	79	95	51
Sample Size 1031						

Dashes denote anything less than 5%

Table 3.9 Percentage of mean intake of nutrients consumed by children (1-4 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	14.9	12.6	27.6	10.4	28.8	6.0
Protein	14.9	12.0	28.1	6.8	33.1	5.2
Fat	13.1	12.1	29.0	9.2	31.1	5.6
Carbohydrate	16.3	13.1	26.2	12.6	25.4	6.6
Calcium	19.2	17.9	24.4	7.6	23.1	7.8
Iron	28.7	12.8	21.2	6.9	25.8	4.7
Vitamin A	14.6	11.7	29.7	6.8	32.9	4.2
Thiamine	25.0	13.8	23.2	6.6	26.5	5.2
Riboflavin	24.5	16.7	22.1	6.1	23.9	6.8
Niacin	17.7	11.2	27.1	5.9	33.2	5.0
Vitamin C	22.6	14.2	21.7	11.9	25.0	4.6
Free Folate	22.8	14.7	23.5	7.5	26.3	5.1
Percent eating	72	72	99	79	95	51
Sample size 1031						

Chapter 4

Children (5-11 years)

Abstract

The mean dietary intake reported for this age group exceeded the recommended intakes of all nutrients except free folate. The important nutrient contribution of dairy products was evident as this food group contributed a percentage of dietary protein equivalent to the meat group and was a major contributor of calcium, vitamin A, riboflavin and free folate. Cereal products were the primary source of iron and thiamine; fruits and vegetables of vitamin C and fibre. Caloric intakes were greatest at meal times with 15% during the morning meal period, 30% at noon and 33% during the evening meal period.

4.1 Nutrient Intake

The national and regional mean intakes of the various nutrients are shown in Table 4.1 with the highest mean caloric intake in the Atlantic region and the lowest in Ontario. In all regions 13% of the calories was from protein and 38% from fat.

The mean nutrient intakes of this age group exceeded the recommended intakes of all nutrients except free folate (Appendix A). The vitamin C intake in all regions was more than three times the recommended amount.

4.2 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The percent contribution of food groups to nutrient intake, the percentage of this age group consuming each food category and the percentage of food categories consumed during designated time periods are shown in Tables 4.2 to 4.4.

4.2.1 Dairy Products (milk, milk products and cheese)

This food group was a primary source of protein, fat, calcium, vitamin A, riboflavin and free folate and a secondary source of

calories, carbohydrate, thiamine and niacin. The mean consumption of dairy products was 630 grams (including 9 grams of cheese) which, based on calcium content, can be equated to 2½ cups of milk. Milk and milk products were consumed by 96% and cheese by 28% of these children during the day preceding the interview. Approximately 79% of the milk was consumed during designated meal periods and the consumption was fairly evenly distributed over the three meal times.

4.2.2 Meat, Poultry, Fish and Eggs (MPFE)

This food group contributed the same percentage of protein to the diet as did dairy products and was also a primary source of fat, vitamin A and niacin. It was a secondary source of iron. The mean intake of this food group was 116 grams, composed of meat (71 grams), eggs (21 grams), poultry (16 grams) and fish (8 grams). The meat was eaten by 82% of these children with a smaller percentage of them consuming the other categories in this food group.

It was evident that eggs were consumed for the most part before 1100 hours although there were regional differences in this pattern with 78% of the eggs being consumed at this time in the Atlantic region, 70% in Ontario and approximately 50% in the other regions. Most of the meat, fish and poultry was consumed during the noon and evening meal periods. Unpublished data showed that in the Pacific region a higher percentage (70%) was consumed during the evening meal period than was the case in the other regions. In the Atlantic region consumption was more evenly divided between the two meal times.

4.2.3 Cereal Products (bread, rolls, pasta, grains and flour mixtures and breakfast cereals)

This food group was a primary source of calories, carbohydrate, iron and thiamine and a secondary source of protein, fat, calcium, riboflavin, niacin and free folate. The mean consumption was 251 grams, including breakfast cereals (36 grams), bread and rolls (95 grams) grains and flour mixtures (94 grams) and pasta (26 grams). Bread and rolls were eaten by 94% of these children, grains and flour mixtures by 83% and breakfast cereals by 47%.

For all regions the patterns of consumption during the day for this food group as a whole were similar to the national pattern.

4.2.4 Fruit and Fruit Products

This food group was a primary source of vitamin C. It was also a secondary source of carbohydrate, fibre and free folate. The mean intake of fruit and fruit products was 312 grams. This food group was consumed by 84% of these children and the consumption was fairly evenly distributed throughout the day.

4.2.5 Vegetables (including potatoes)

This food group was a primary source of fibre in the diet and a secondary source of vitamin A, vitamin C and free folate. The mean intake was 193 grams composed of 110 grams of potatoes and 83 grams of other vegetables. Potatoes were consumed by 72% of these children while 80% consumed other vegetables on the day preceding the interview. The eating pattern during the day followed that of the meat group.

4.2.6 Fats (butter, margarine, oils and other fats)

This food group was a secondary source of fat and vitamin A in the diet of this age group. The mean daily intake was 21 grams (62% butter and 29% margarine). Butter was consumed by 64% of these children and margarine by 32%. Approximately 82% of the food group was consumed during meal times.

4.2.7 Foods Primarily Sugar, Beverages and Soft Drinks

This food group supplied 16% of the carbohydrate and 8% of the calories. When foods primarily sugar were considered separately the mean consumption was 51 grams. This food category was consumed by 95% of the population and approximately one quarter was eaten during each of the meal periods. The mean daily intake of soft drinks was estimated to be 3 ounces.

4.2.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Neither of these food groups was an important source of any nutrient. The mean daily consumption of nuts and dried legumes was 13 grams and was eaten by only 32% of the population. The miscellaneous group contributed only 4% of the caloric intake.

4.2.9 Regional and Seasonal Differences

The mean daily intake of food groups for different regions is shown in Table 4.5 and for different seasons of the year in Table 4.6.

In the Atlantic region this age group had the highest consumption of nuts and dried legumes and foods primarily sugar. Those in Quebec had the lowest mean consumption of MPFE due to the very low mean consumption of eggs (10 grams) and fish (1 gram), whereas those in the Prairie region had the highest mean consumption due to the higher consumption of eggs (32 grams) and fish (17 grams). Quebec had the lowest mean consumption of breakfast cereals and the highest mean consumption of the vegetable group. The Pacific region had the lowest mean consumption of the vegetable group principally because of the difference in the consumption of potatoes which was less than half that of Quebec. The children in the Pacific region had the highest mean consumption of fruit and fruit products. It should be noted (Table 4.3) that a smaller percentage of children in Quebec consumed eggs, fish and breakfast cereals than in the other regions. The mean intake of the vegetable category and of soft drinks was highest during the summer whereas the intake of breakfast cereals and of nuts and dried legumes was highest during the winter.

4.3 Pattern of Intake Throughout the Day

Table 4.7 presents the percentage of this age group consuming some food or beverage during various designated time periods, the mean caloric intake at these times, and the regional differences. Table 4.8 presents the percentage of the population consuming

each food category during the different time intervals of the day preceding the interview.

During the 0500-0859 interval some food or beverage was consumed by 78% of the children. Calculations showed that of those eating, 82% consumed some milk and milk products, 68% bread and rolls, 46% breakfast cereals, 38% fruit and fruit products and 19% eggs. Additional data revealed some regional differences in the percentage of children consuming eggs and breakfast cereals during this time period but these differences were consistent with the data presented in sections 4.2.2 and 4.2.9. Approximately 15% of the caloric intake was during the morning meal period (Table 4.9). The percentages of calcium, iron, thiamine and riboflavin consumed during this period were higher than the percent caloric intake. Additional data indicated that this age group in Ontario consumed the highest percentage of iron during the morning period (27%) and those in Quebec the lowest (13%).

As 98% of these children ate something (30% of the calories) during the 1100-1359 interval the percentages of those eating each food category were very similar to the percentages in Table 4.8. This data indicated that up to 96% consumed a protein source, 67% had bread and rolls and 64% some milk and milk products. No pattern was evident for the other food categories. As with the 1-4 year olds the percentage eating vegetables and potatoes during this time was higher in Quebec than in the other regions. In the Pacific region only 9% consumed potatoes during this time (unpublished data).

During the 1700-1959 interval some food or beverage (33% of the calories) was eaten by 95% of these children. The percentage of those eating each food category was similar to the noon meal period except for a decrease in the percentage eating bread and rolls and fruit and an increase in the percentages consuming vegetables and potatoes.

The only regional difference was a higher percentage consuming fruit and vegetables in the Pacific region in contrast to the other regions.

4.4 Summary

The data indicated that the mean daily consumption of this group of children was the equivalent of 2½ cups of milk, 3-4 ounces of meat, 1 serving of breakfast cereals, 3 slices of bread, 4 teaspoons of butter or margarine, 3 servings of fruit, 1 serving of potatoes, 1 serving of vegetables, 3 ounces of baked goods, 7 teaspoons of sugar and 3 ounces of soft drinks and that the mean nutrient intakes exceeded the recommended intakes of all nutrients except free folate.

The importance of dairy products in the diet of this age group was evident from the fact that they supplied 32% of the protein, 72% of the calcium and 48% of the riboflavin as well as other important nutrients. There were regional variations in the consumption of breakfast cereals with less consumed in Quebec, and of fruit, with the greatest mean intake in the Pacific region. This higher intake of fruit was not reflected in a higher mean intake of vitamin C; for example, the lower intake of vitamin C from fruit in the Atlantic region was compensated for by a higher intake from evaporated milk and potatoes.

The data indicated that the 5-11 year olds seemed to follow a three-meal-a-day pattern with the nutrient/calorie ratio for calcium, iron, thiamine and riboflavin highest during the morning period, indicating the importance of including milk and enriched or whole grain bread or cereal.

50 Table 4.1 Mean daily nutrient intake of children (5-11 years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	2300	2514	2437	2175	2226	2240
Protein (g)	77	81	77	75	79	77
Fat (g)	96	105	102	91	93	94
Total carbohydrate (g)	290	320	312	271	276	280
Fibre (g)	3.58	3.77	3.92	3.28	3.43	3.71
Calcium (mg)	1115	1145	1071	1184	1046	1083
Iron (mg)	12	13	12	11	12	12
Vitamin A (R.E.)	1114	1303	1202	1031	1024	1097
Thiamine (mg)	1.18	1.27	1.20	1.16	1.13	1.19
Riboflavin (mg)	2.33	2.39	2.26	2.39	2.24	2.39
Niacin (N.E.)	28	30	29	27	29	29
Vitamin C (mg)	99	104	109	92	92	106
Free folate (μg)	90	89	94	88	82	95
Total folate (μg)	160	168	166	154	155	164
Sample Size	1995	457	414	326	392	406

Table 4.2 Percent contribution of food groups to nutrient intake of children (5-11 years)

Nutrient	Dairy Products	Meat, Poultry, Fish, Eggs	Cereal Products	Fruit and Fruit Products	Vegetables & Potatoes	Fats and Oils	Other*
Calories	19	14	29	8	8	6	15
Protein	32	32	20	1	5	—	9
Fat	23	25	17	—	7	17	10
Carbohydrate	13	—	40	16	10	—	20
Fibre	—	—	21	26	36	—	16
Calcium	72	2	12	3	3	—	7
Iron	1	24	39	9	12	—	14
Vitamin A	26	24	3	4	15	17	10
Thiamine	17	15	40	8	13	—	7
Riboflavin	48	14	26	2	4	—	5
Niacin	21	35	23	2	9	—	10
Vitamin C	7	—	1	61	28	—	3
Free folate	29	9	18	20	17	—	6

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 4.3 Percentage of children (5-11 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	96	99	93	97	96	96
Cheese & Cheese Products	28	19	30	31	24	25
Poultry	20	20	23	20	15	17
Meat	82	77	87	78	84	85
Fish & Shellfish	9	15	3	9	11	12
Eggs	29	32	17	33	36	32
Butter	64	48	73	63	69	42
Margarine	32	49	25	31	30	46
Oils & Other Fats	21	19	23	19	18	25
Nuts & Dried Legumes	32	42	28	29	37	37
Bread & Rolls	94	94	95	94	94	90
Pasta	15	8	14	19	16	9
Grains & Flour Mixtures	83	83	84	83	78	91
Breakfast Cereals	47	54	37	49	52	53
Fruit & Fruit Products	84	81	78	88	85	88
Vegetables	80	77	80	76	86	87

Potatoes	72	83	79	65	72	60
Foods Primarily Sugar	95	94	98	92	98	96
All Beverages	41	43	56	30	38	35
Mixed Dishes	16	17	16	19	8	12
Soups	32	23	41	29	32	28
Miscellaneous	35	32	36	29	40	43
Sample Size	1995	457	414	326	392	406

Table 4.4 Percentage of selected food categories consumed by children (5-11 years) during different time periods

Food Category	Time of Day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk and Milk Products	23	5	26	7	30	9
Meats	2	1	33	6	57	3
Eggs	52	9	23	2	14	—
Bread and Rolls	22	6	37	8	21	6
Breakfast Cereals	76	16	1	—	2	5
Grains and Flour Mixtures	3	3	32	17	36	9
Fruit and Fruit Products	16	10	27	17	22	9
Vegetables	1	1	32	6	57	3
Potatoes	—	1	25	8	64	2
Foods Primarily Sugar	21	8	24	14	26	9
Sample Size 1995						

Table 4.5 Mean daily intake of food groups (grams) by children (5-11 years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	630	612	602	696	571	599
Meat, Fish, Poultry, Eggs	116	126	103	108	144	127
Cereal Products including breakfast cereals	251	271	247	245	259	249
Breakfast Cereals	36	50	24	37	39	44
Fruit and Fruit Products	312	295	302	305	317	381
Vegetables <i>not</i> including potatoes	83	70	104	71	80	84
Potatoes	110	129	143	99	92	65
Fats and Oils	21	26	23	19	20	19
Nuts and Legumes	13	24	9	8	19	21
Foods Primarily Sugar	51	78	62	39	43	46
Mixed Dishes and Soups	118	100	148	118	94	80
Sample Size	1995	457	414	326	392	406

56 Table 4.6 Mean daily intake of food groups (grams) by children (5-11 years) for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	630	713	572	587	632
Meat, Fish, Poultry, Eggs	116	117	119	114	114
Cereal Products including breakfast cereals	251	257	245	246	257
Breakfast Cereals	36	31	25	45	54
Fruit and Fruit Products	312	295	338	325	266
Vegetables <i>not</i> including potatoes	83	76	109	69	75
Potatoes	110	118	106	107	107
Fats and Oils	21	20	22	21	22
Nuts and Legumes	13	11	12	12	26
Foods Primarily Sugar	51	51	55	47	50
Mixed Dishes and Soups	118	118	109	135	84
Sample Size	1995	550	559	455	431

Table 4.7 Percentage of children (5-11 years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	78	434	65	497	71	438	89	428	81	414	66	419
0900-1059	43	267	62	309	55	274	28	173	32	313	59	301
1100-1359	98	710	96	749	98	754	99	697	98	668	96	631
1400-1659	76	314	77	389	84	327	69	253	75	320	76	387
1700-1959	94	788	92	826	95	814	95	753	91	812	97	743
2000-0459	59	286	63	325	64	287	55	283	58	274	58	273
Sample Size	1995		457		414		326		392		406	

Table 4.8 Percentage of children (5-11 years) consuming each food category during different time periods

Food category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	64	17	64	23	68	28
Cheese & Cheese Products	—	—	12	—	8	—
Poultry	—	—	6	—	13	—
Meats	5	—	46	7	58	—
Fish & Shellfish	—	—	—	—	—	—
Eggs	15	—	7	—	6	—
Butter	35	8	36	7	29	7
Margarine	16	5	19	—	13	—
Oils & Other Fats	—	—	10	—	11	—
Nuts & Dried Legumes	7	—	13	8	8	5
Bread & Rolls	53	15	67	16	44	13
Pasta	—	—	7	—	10	—
Grains & Flour Mixtures	6	9	46	30	42	22
Breakfast Cereals	36	7	—	—	—	—
Fruit & Fruit Products	30	19	46	33	35	18
Vegetables	—	—	40	8	58	—
Potatoes	—	—	25	11	53	6
Foods Primarily Sugar	55	22	44	34	35	24
All Beverages & Soft Drinks	10	—	12	10	14	13
Mixed Dishes	—	—	8	—	5	—
Soups	—	—	18	—	16	—
Miscellaneous	—	—	16	—	18	—
Percent Eating	78	43	98	76	94	59
Sample Size 1995						

Dashes denote anything less than 5%

Table 4.9 Percentage of mean intake of nutrients consumed by children (5-11 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	14.8	5.0	30.4	10.4	32.5	7.4
Protein	14.3	3.9	30.3	7.8	38.5	5.7
Fat	13.6	4.3	31.7	9.3	34.8	6.7
Carbohydrate	15.6	5.8	29.3	12.2	28.9	8.4
Calcium	19.7	5.4	29.2	8.3	29.8	8.0
Iron	20.0	6.0	27.2	8.2	33.6	5.1
Vitamin A	14.6	4.1	30.9	9.3	36.9	4.5
Thiamine	22.8	6.1	27.1	7.5	30.9	5.7
Riboflavin	25.1	5.9	25.4	7.1	29.8	6.8
Niacin	16.5	4.2	28.5	7.5	38.2	5.1
Vitamin C	17.6	7.7	26.1	11.3	31.1	6.3
Free Folate	18.8	5.6	28.5	8.5	32.9	6.0
Percent eating	78	43	98	76	94	59
Sample Size 1995						

Chapter 5

Adolescents (12-19 years)

Abstract

The mean nutrient intakes reported for this age group exceeded the recommendations for all nutrients with the exception of folate and for the females, of iron. For both sexes, dairy products were the primary source of calcium, vitamin A, riboflavin and folate; the meat group of protein, fat, vitamin A and niacin; cereal products of calories, carbohydrate, thiamine and iron; and fruit and vegetables, of vitamin C and fibre. For both sexes, approximately 73% of the caloric intake was during designated meal periods.

5.1 Nutrient Intake

The national and regional mean intakes of the various nutrients are shown in Tables 5.1 and 5.2. The caloric intake of the males was approximately 1000 kilocalories more than that of the females, with regional variations. For the females it was highest in the Atlantic region and lowest in the Prairie region, whereas for the males it was highest in Ontario. As would be expected with a higher caloric intake the males' mean intakes of all nutrients were higher. Even though the intake of fat and protein was higher for the males, for both sexes the percentage of calories from fat (40%) and from protein (14%) was very similar.

Mean nutrient intakes for both sexes were above the recommendations with the exception of folate and, for the females, of iron (Appendix A). The mean thiamine intake of the females was borderline.

5.2 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The percent contribution of food groups to nutrient intake, the percentage of this age group consuming each food category and the percentage of food categories consumed during designated time periods are shown in Tables 5.3 to 5.8.

5.2.1 Dairy Products (milk, milk products and cheese)

This food group was the primary source of calcium, vitamin A, riboflavin and free folate and a secondary source of calories, protein and fat.

The mean consumption of the males was 711 grams, including 16 grams of cheese and of the females 474 grams, including 12 grams of cheese. When based on calcium content, these can be equated to 2.8 cups of milk for the males and 1.9 cups of milk for the females. Milk and milk products were consumed by 95% of the males and 91% of the females. Cheese was consumed by 24% of the males and 23% of the females. Approximately three quarters of the milk products was consumed during designated meal periods.

5.2.2 Meat, Poultry, Fish and Eggs (MPFE)

The males' mean intake of this food group was 197 grams, composed of meat (141 grams), eggs (26 grams), poultry (19 grams) and fish (11 grams). The mean intake of the females was 66 grams less, composed of meat (86 grams), eggs (17 grams), poultry (17 grams) and fish (11 grams). Meat was eaten by 87% of the males and 85% of the females with a smaller percentage consuming the other categories in this food group.

As indicated in Tables 5.3 and 5.4 the MPFE group was a primary source of protein, fat, vitamin A and niacin for both sexes, and of iron for the females. It was a secondary source of calories and thiamine for both sexes, of iron for the males and of riboflavin for the females.

The percent contribution of meat products to the nutrient intake varied for certain nutrients. This variability was not due to quantity but rather to selection within the food group since in all regions the contribution to protein intake was similar. For example, the percent contribution to vitamin A intake was 44% for the males of the Pacific region and 2% for those of the Atlantic region and to free folate 15% and 3% respectively. This could be accounted for by a difference in the consumption of liver. Similarly for females the percent contribution to the intake of those vitamins was higher in the Prairies than in the other regions.

It was evident that eggs were consumed for the most part during the morning whereas 30% of the meat was consumed by the males during the noon meal period and 54% during the evening meal period. The consumption by the females was similar.

5.2.3 Cereal Products (bread, rolls, pasta, grains and flour mixtures and breakfast cereals)

For both sexes this food group was a primary source of calories, carbohydrate, thiamine and iron and a secondary source of fat, fibre, calcium, riboflavin and niacin and, for the males, of folate. The males' mean consumption of this food group was 326 grams — 48% bread, rolls and pasta, 40% grains and flour mixtures and 12% breakfast cereals. The females' mean consumption of this group was 110 grams less than that of the males with 5% more grains and flour mixtures and 7% less breakfast cereals. Bread and rolls were eaten by 96% of the males and 94% of the females, grains and flour mixtures by 80% of the males and 77% of the females and breakfast cereals by 38% of the males and 18% of the females.

As indicated in Tables 5.7 and 5.8 most of the breakfast cereals were consumed before 1100 hours. Approximately 75% of the bread and rolls was consumed during the designated meal times with more during the noon meal period than the other two. Most of the grains and flour mixtures, which included cakes, cookies, doughnuts and pies, were consumed after 1100 hours.

5.2.4 Fruit and Fruit Products

These foods were the primary source of vitamin C for both sexes and for the females a secondary source of fibre and folate. The percent contribution of these nutrients was closely related to the variety of fruit selected. This was evident in the comparison of the percent contribution from fruit to vitamin C and free folate intakes of the females in Ontario (70% of the vitamin C and 32% of the free folate) and females in the Pacific region (56% and 17% respectively). The quantities of fruit consumed were similar in the two regions. The mean consumption of both males

and females was 237 grams. This food group was consumed by 70% of the males and 76% of the females. The consumption was distributed throughout the day with approximately two thirds during designated meal periods.

5.2.5 Vegetables (including potatoes)

This food group was the primary source of fibre and a secondary source of vitamin C and free folate for both sexes and of iron and vitamin A for females. The mean consumption of the vegetable category was similar for males and females. On the other hand the males' mean consumption of potatoes was higher than that of the females (Tables 5.9, 5.10). The vegetables in the vegetable category were consumed by 78% of the males and 82% of the females and potatoes by 79% of the males and 68% of the females.

For both sexes, the pattern of consumption of this food group was similar to that of meat.

5.2.6 Fats (butter, margarine, oils and other fats)

For both sexes this food group was a secondary source of fat and vitamin A. The mean intake of the males was 34 grams, 60% of which was butter, 30% margarine and 10% oils. Although the mean intake of the females was only 23 grams the proportions were similar. Butter was consumed by 61% of the males and 54% of the females and margarine by 32% of both sexes.

These fats appeared to be consumed principally at meal times with more consumed during the noon meal period than during other designated meal periods.

5.2.7 Foods Primarily Sugar, Beverages and Soft Drinks

For all the adolescents, this food group supplied 10% of the calories and 18-19% of the carbohydrate. When foods primarily sugar were considered separately the mean consumption for males was 65 grams and for females 50 grams with approximately 20% consumed by both sexes during each meal period. The mean daily intake of soft drinks was estimated to be 8 ounces for the males and 5 ounces for the females.

5.2.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Neither of these food groups was considered to be an important source of any nutrient for either sex. The mean daily consumption of nuts and dried legumes was 20 grams for the males and 15 grams for the females but was consumed by only 32% of the males and 21% of the females on the day preceding the interview. The miscellaneous group contributed only 5% of the calories.

5.2.9 Regional and Seasonal Differences

The mean daily intakes of food groups for different regions are shown in Tables 5.9 and 5.10 and for different seasons of the year in Tables 5.11 and 5.12.

In the Atlantic region both sexes of this age group had the highest mean daily consumption of potatoes. The males had a higher consumption of nuts and dried legumes than those in any other region but not the highest percentage eating them. In Quebec both sexes of this age group had the lowest mean daily consumption of dairy products but not the lowest percentage consuming this food group. They also had the lowest mean intake of nuts and dried legumes with the lowest percentage consuming them. Both sexes in Quebec had the highest mean consumption of soft drinks, mixed dishes and soups and the highest percentage of those consuming them.

In Ontario both sexes had a lower mean consumption of foods primarily sugar and the females a higher consumption of dairy products than those in the other regions but there were no differences in the percentages eating these food categories. In the Pacific region the males had a higher mean consumption of fruits and the females a higher mean consumption of fats than those in other regions. In neither case were the percentages eating these food categories the highest.

Additional data showed that there were regional differences in the proportions of butter and margarine consumed, with a high of 50% of the fat from margarine in the Atlantic region.

It should be noted in Tables 5.5 and 5.6 that in the Atlantic region a lower percentage of adolescents consumed cheese, a

lower percentage of these males consumed fruit and fruit products and a higher percentage of these females consumed potatoes than those in other regions.

In Quebec a lower percentage of adolescents consumed breakfast cereals.

For both sexes the mean intake of soft drinks was highest during the summer and lowest during the autumn. The males had a higher intake of dairy products and breakfast cereals during the autumn months and the females a lower consumption of fruit during the winter.

Unpublished data indicated that the only appreciable regional differences in the percentage of food categories consumed by this age group during different times of the day were in meat, poultry, fish and the vegetable group. In Quebec and Atlantic regions the intakes were evenly divided between the noon and evening periods whereas in the other regions more than twice as much was consumed during the evening meal period than the noon meal period.

5.3 Pattern of Intake Throughout the Day

Tables 5.13 and 5.14 indicate the percentages of this age group consuming some food or beverage during various designated time periods, their mean caloric intake during these times and the regional differences. Tables 5.15 and 5.16 indicate the percentage of this age group consuming each food category during the different time intervals of the day preceding the interview. Tables 5.17 and 5.18 indicate the percentage of nutrients consumed by males and females of this age group during different time periods.

During the 0500-0859 time period some food or beverage (12% of the calories) was consumed by 71% of the males with a lower percentage in Quebec eating at this time and a higher percentage in Ontario. Some food or beverage (10% of the calories) was consumed by 66% of the females with a lower percentage in the Pacific region eating during this time and a higher percentage in Ontario. However, although a greater percentage was eating at this time in Ontario their mean caloric intake was

lower than that in the other regions as were the percentages of the females consuming the various food categories (unpublished data). During this morning time period the percentage intake of calcium, iron, thiamine, riboflavin, vitamin C and free folate was higher than the percent intake of calories. This could be accounted for, in part, by the relatively high consumption of milk and cereal products as compared to their consumption at other times of the day. Calculations showed that of those eating during this 0500-0859 hours period approximately 18% ate eggs, 68% ate bread and rolls, 38% of the males and 18% of the females ate breakfast cereals, 82% of the males and 68% of the females consumed milk and milk products and 34% of the males and 31% of the females ate fruit.

During the 1100-1359 time interval some food or beverage (29% of calories) was consumed by 95% of both the males and females with little regional variation. There was nothing to indicate in Tables 5.15 and 5.16 that a pattern of eating the various food categories existed except that, of those eating, 93% of the males and 83% of the females had a protein source other than milk.

During the 1400-1659 time interval some food or beverage (11-12% of calories) was consumed by 69% of the males and by 71% of the females. There was no pattern to the food intake as nearly all food categories were included to some extent.

During the 1700-1959 time interval some food or beverage (32-35% of calories) was consumed by 91% of the males and by 95% of the females.

The food pattern during this time interval varied from that of the noon meal period for both sexes. A higher percentage of this age group consumed vegetables and potatoes and a lower percentage consumed bread and rolls during the evening meal period than during the noon meal period. Unpublished data indicated that this was particularly true of Ontario and also of the Pacific region where the percentage consuming potatoes was three times, and bread half, that of the noon meal period. Although the percentage of this age group consuming meat was similar for both meal periods the percentage of meat consumed during the evening

meal period was greater than that during the noon meal (Tables 5.5, 5.6).

During the 2000-0459 time interval some food or beverage (10-13% of calories) was consumed by 79% of the males and by 73% of the females. Unpublished data indicated that over 20% of the females in the Atlantic and Quebec regions consumed potatoes at this time.

5.4 Summary

The data indicated that the average daily intake of adolescent males was estimated to be $2\frac{3}{4}$ cups of milk, 6 ounces of meat, $\frac{1}{2}$ egg, 5 slices of bread, 1 serving of breakfast cereal, 4 ounces of baked goods, $2\frac{1}{2}$ servings of fruit, 1 serving of vegetables, 2 servings of potatoes, 7 teaspoons of butter or margarine, 10 teaspoons of sugar and 8 ounces of soft drinks. The females had lower caloric intakes and ate correspondingly less food in most of the categories. On the average they had $\frac{3}{4}$ cups less milk, 2 ounces less meat, $1\frac{1}{2}$ slices less of bread, very little breakfast cereal, about $\frac{1}{2}$ ounce less baked goods, 1 serving less potatoes, 2 teaspoons less fat, 3 teaspoons less sugar and 3 ounces less soft drinks than the males.

The data also indicated that the mean dietary intake of all nutrients, except folate and iron (females only), met the recommendations for this age category. It was noted that foods primarily sugar, beverages and soft drinks supplied 10% of the calories.

Regional variations were evident in food consumption patterns with a higher mean consumption of soft drinks and soups and a lower mean consumption of dairy products in Quebec. The adolescents in the Atlantic region had a higher mean consumption of potatoes and the males in the Pacific region a higher mean consumption of fruit than in other regions. There also appeared to be a tendency in Quebec and in the Atlantic region for the mean consumption of meat products and vegetables to be equally divided between the noon and evening meal periods, in contrast to the other regions where more of these food groups were consumed during the evening meal period.

Nationally the eating pattern differed from that of the 5-11 year-old age group. The percentage of the 12-19 year olds eating during both morning periods was less and it was greater after 2000 hours, indicating a decrease in the number eating breakfast and a considerable increase in those eating during the evening. Regionally the same pattern was evident although in some regions the differences were less marked.

Table 5.1 Mean daily nutrient intake of males (12-19 years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	3251	3188	3119	3434	3096	3281
Protein (g)	111	109	97	121	114	112
40.7% Fat (g)	147	141	140	156	143	146
Total carbohydrate (g)	378	378	376	394	342	387
Fibre (g)	4.45	4.90	4.16	4.73	3.87	4.85
Calcium (mg)	1337	1258	1070	1497	1472	1375
Iron (mg)	17	17	15	20	15	19
Vitamin A (R.E.)	1455	1153	1233	1664	1267	2005
Thiamine (mg)	1.65	1.77	1.45	1.77	1.60	1.82
Riboflavin (mg)	2.96	2.78	2.41	3.33	2.95	3.47
Niacin (N.E.)	43	42	36	48	43	45
Vitamin C (mg)	101	125	93	105	85	109
Free folate (μ g)	109	105	87	127	105	122
Total folate (μ g)	210	213	175	238	200	225
Sample Size	1070	216	211	203	225	215

70 **Table 5.2 Mean daily nutrient intake of females (12-19 years) in different regions**

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	2243	2500	2400	2170	1983	2179
Protein (g)	76	82	76	75	70	78
Fat (g)	100	110	107	95	88	101
Total carbohydrate (g)	269	303	291	262	234	246
Fibre (g)	3.38	3.69	3.62	3.12	3.23	3.50
Calcium (mg)	967	982	840	1116	895	936
Iron (mg)	11	12	12	11	11	11
Vitamin A (R.E.)	1036	1141	1038	896	1154	1218
Thiamine (mg)	1.07	1.19	1.10	1.05	1.01	1.03
Riboflavin (mg)	1.90	2.07	1.72	1.96	2.00	1.91
Niacin (N.E.)	27	30	28	26	26	31
Vitamin C (mg)	92	99	88	105	76	77
Free folate (μg)	84	82	74	99	77	81
Total folate (μg)	153	163	147	165	138	146
Sample Size	1162	278	251	202	224	207

Table 5.3 Percent contribution of food groups to nutrient intake of males (12-19 years)

Nutrient	Dairy Products	Meat, Poultry, Fish, Eggs	Cereal Products	Fruit and Fruit Products	Vegetables & Potatoes	Fats and Oils	Other*
Calories	16	18	29	4	9	7	16
Protein	26	38	19	1	6	—	9
Fat	18	30	17	—	7	18	9
Carbohydrate	12	—	42	9	12	—	24
Fibre	—	—	22	15	42	—	19
Calcium	70	3	14	2	4	—	6
Iron	2	31	36	4	12	—	15
Vitamin A	23	26	3	2	13	21	10
Thiamine	14	22	37	4	15	—	7
Riboflavin	44	17	26	1	5	—	6
Niacin	16	41	21	1	9	—	11
Vitamin C	8	—	—	47	39	—	5
Free folate	27	12	21	13	19	—	7

**includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.*

Table 5.4 Percent contribution of food groups to nutrient intake of females (12-19 years)

Nutrient	Dairy Products	Meat, Poultry, Fish, Eggs	Cereal Products	Fruit and Fruit Products	Vegetables & Potatoes	Fats and Oils	Other*
Calories	16	17	29	6	9	7	17
Protein	25	37	19	1	6	—	10
Fat	17	28	18	—	7	18	10
Carbohydrate	11	—	40	13	12	—	24
Fibre	—	—	19	20	42	—	18
Calcium	66	3	14	3	4	—	9
Iron	2	30	30	6	14	—	18
Vitamin A	21	22	4	3	17	19	12
Thiamine	14	21	32	8	16	—	9
Riboflavin	45	18	21	2	5	—	8
Niacin	16	42	20	2	10	—	10
Vitamin C	6	—	—	56	33	—	4
Free folate	24	10	17	21	20	—	7

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 5.5 Percentage of males (12-19 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	95	92	95	97	94	94
Cheese & Cheese Products	24	13	24	23	28	30
Poultry	15	29	11	13	19	13
Meat	87	86	87	89	81	92
Fish & Shellfish	8	16	5	8	7	13
Eggs	26	31	18	30	23	32
Butter	61	41	73	63	55	49
Margarine	32	51	27	30	32	39
Oils & Other Fats	24	29	22	24	21	29
Nuts & Dried Legumes	32	31	16	42	38	37
Bread & Rolls	96	95	99	96	95	95
Pasta	8	2	12	8	6	11
Grains & Flour Mixtures	80	73	84	84	65	83
Breakfast Cereals	38	36	24	43	44	49
Fruit & Fruit Products	70	53	64	81	65	77
Vegetables	78	80	72	81	78	87

Table 5.5 (cont'd) Percentage of males (12-19 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	79	87	85	76	75	70
Foods Primarily Sugar	93	93	94	93	91	93
All Beverages	70	71	83	64	63	61
Mixed Dishes	16	13	22	15	10	9
Soups	22	11	36	18	16	20
Miscellaneous	46	36	53	39	49	62
Sample Size	1070	216	211	203	225	215

Table 5.6 Percentage of females (12-19 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	91	93	91	90	90	96
Cheese & Cheese Products	23	12	17	28	26	34
Poultry	15	26	17	6	17	23
Meat	85	82	84	88	83	85
Fish & Shellfish	14	18	3	27	5	16
Eggs	25	34	23	21	29	28
Butter	54	41	72	50	45	45
Margarine	32	54	32	24	30	39
Oils & Other Fats	29	25	27	34	23	29
Nuts & Dried Legumes	21	30	13	20	30	27
Bread & Rolls	94	94	96	97	92	83
Pasta	9	5	8	9	10	15
Grains & Flour Mixtures	77	76	72	81	78	77
Breakfast Cereals	18	25	7	19	30	24
Fruit & Fruit Products	76	66	68	86	76	80
Vegetables	82	71	81	84	85	86

Table 5.6 (cont'd) Percentage of females (12-19 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	68	88	76	60	62	57
Foods Primarily Sugar	90	92	94	85	93	84
All Beverages	66	69	83	55	58	60
Mixed Dishes	15	10	18	16	15	11
Soups	28	16	40	27	21	21
Miscellaneous	49	38	50	49	55	45
Sample Size	1162	278	251	202	224	207

Table 5.7 Percentage of selected food categories consumed by males (12-19 years) during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk and Milk Products	22	5	25	7	30	13
Meats	1	1	30	9	54	5
Eggs	45	13	26	1	12	4
Bread and Rolls	18	7	38	7	17	12
Breakfast Cereals	72	19	2	—	2	5
Grain and Flour Mixtures	2	1	26	20	34	18
Fruit and Fruit Products	17	6	26	15	21	15
Vegetables	1	1	24	11	58	6
Potatoes	—	1	24	10	59	6
Foods Primarily Sugar	19	8	22	14	21	15
Sample Size 1070						

Table 5.8 Percentage of selected food categories consumed by females (12-19 years) during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk and Milk Products	15	5	24	10	38	9
Meats	1	1	31	7	57	3
Eggs	42	14	29	3	11	2
Bread and Rolls	18	6	34	8	25	8
Breakfast Cereals	71	20	3	2	1	3
Grain and Flour Mixtures	2	2	33	16	33	14
Fruit and Fruit Products	19	5	25	15	20	17
Vegetables	1	1	26	9	60	4
Potatoes	—	1	29	7	59	4
Foods Primarily Sugar	17	12	20	14	23	14
Sample Size 1162						

Table 5.9 Mean daily intake of food groups (grams) by males (12-19 years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	711	605	559	813	799	730
Meat, Fish, Poultry, Eggs	197	205	168	208	213	209
Cereal Products including breakfast cereals	326	290	298	368	298	338
Breakfast Cereals	40	24	26	50	48	41
Fruit and Fruit Products	237	246	193	263	208	315
Vegetables <i>not</i> including potatoes	94	102	76	104	91	106
Potatoes	185	258	197	172	160	165
Fats and Oils	34	35	33	36	33	34
Nuts and Legumes	20	32	10	26	17	21
Foods Primarily Sugar	65	73	75	53	64	77
Mixed Dishes and Soups	140	98	232	118	83	80
Sample Size	1070	216	211	203	225	215

8 Table 5.10 Mean daily intake of food groups (grams) by females (12-19 years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	473	491	371	563	466	470
Meat, Fish, Poultry, Eggs	131	153	137	118	127	143
Cereal Products including breakfast cereals	216	243	195	239	182	236
Breakfast Cereals	11	15	4	10	18	16
Fruit and Fruit Products	237	198	197	287	214	272
Vegetables <i>not</i> including potatoes	97	85	103	95	97	98
Potatoes	115	190	156	74	98	71
Fats and Oils	23	28	28	17	16	36
Nuts and Legumes	15	23	6	21	16	14
Foods Primarily Sugar	50	60	71	29	52	47
Mixed Dishes and Soups	127	77	202	112	89	67
Sample Size	1162	278	251	202	224	207

Table 5.11 Mean daily intake of food groups (grams) by males (12-19 years) for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	711	709	599	849	618
Meat, Fish, Poultry, Eggs	197	199	190	202	198
Cereal Products including breakfast cereals	326	299	316	366	321
Breakfast Cereals	40	24	27	70	33
Fruit and Fruit Products	237	232	234	250	219
Vegetables <i>not</i> including potatoes	94	96	83	102	91
Potatoes	185	189	169	184	224
Fats and Oils	34	34	37	32	32
Nuts and Legumes	20	19	17	26	16
Foods Primarily Sugar	65	65	65	61	77
Mixed Dishes and Soups	140	152	152	112	147
Sample Size	1070	318	299	217	236

Table 5.12 Mean daily intake of food groups (grams) by females (12-19 years) for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	473	477	426	526	445
Meat, Fish, Poultry, Eggs	131	132	148	114	125
Cereal Products including breakfast cereals	216	179	214	263	247
Breakfast Cereals	11	8	7	16	19
Fruit and Fruit Products	237	246	254	228	182
Vegetables <i>not</i> including potatoes	97	106	111	80	62
Potatoes	115	122	125	86	134
Fats and Oils	23	19	33	18	25
Nuts and Legumes	15	16	14	15	20
Foods Primarily Sugar	50	52	65	33	48
Mixed Dishes and Soups	127	140	128	122	88
Sample Size	1162	339	327	243	253

Table 5.13 Percentage of males (12-19 years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	71	541	65	544	57	503	83	548	76	559	60	598
0900-1059	34	404	48	347	45	435	20	398	29	425	48	398
1100-1359	95	984	94	1044	97	971	94	1021	95	958	91	862
1400-1659	69	496	68	636	78	396	63	569	63	469	74	457
1700-1959	91	1134	86	976	90	1098	93	1162	92	1147	92	1253
2000-0459	79	537	81	497	83	471	78	635	71	396	78	587
Sample Size	1070		216		211		203		225		215	

Table 5.14 Percentage of females (12-19 years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	66	345	52	416	61	377	83	310	60	340	46	370
0900-1059	35	296	50	340	40	351	23	206	34	223	45	330
1100-1359	95	678	94	753	98	756	95	644	92	591	91	601
1400-1659	71	372	69	436	78	337	67	363	61	323	84	507
1700-1959	94	822	91	843	94	814	97	828	94	858	93	694
2000-0459	73	314	78	405	79	335	72	285	61	259	79	303
Sample Size	1162		278		251		202		224		207	

Table 5.15 Percentage of males (12-19 years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	58	17	56	23	60	36
Cheese & Cheese Products	—	—	13	—	6	—
Poultry	—	—	—	—	9	—
Meats	7	—	51	9	61	8
Fish & Shellfish	—	—	—	—	—	—
Eggs	12	—	7	—	—	—
Butter	31	10	39	7	24	11
Margarine	14	—	19	—	13	8
Oils & Other Fats	—	—	14	—	9	—
Nuts & Dried Legumes	7	—	10	5	8	10
Bread & Rolls	48	16	71	14	41	26
Pasta	—	—	—	—	6	—
Grains & Flour Mixtures	—	—	42	23	42	28
Breakfast Cereals	27	7	—	—	—	5
Fruit & Fruit Products	24	8	31	18	28	18
Vegetables	—	—	30	9	55	9
Potatoes	—	—	26	14	55	13
Foods Primarily Sugar	54	22	49	32	39	40
All Beverages & Soft Drinks	28	10	30	26	28	32
Mixed Dishes	—	—	5	—	9	—
Soups	—	—	12	—	12	—
Miscellaneous	—	—	22	5	23	5
Percent Eating	71	34	95	69	91	79
Sample Size 1070						

Dashes denote anything less than 5%

Table 5.16 Percentage of females (12-19 years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	45	15	49	25	67	28
Cheese & Cheese Products	—	—	12	—	7	—
Poultry	—	—	6	—	10	—
Meats	—	—	44	7	61	7
Fish & Shellfish	—	—	7	—	5	—
Eggs	12	—	6	—	5	—
Butter	25	8	33	8	23	7
Margarine	14	5	19	—	13	—
Oils & Other Fats	—	—	16	—	12	—
Nuts & Dried Legumes	—	—	6	5	6	—
Bread & Rolls	44	14	63	16	46	15
Pasta	—	—	—	—	7	—
Grains & Flour Mixtures	—	—	40	21	37	20
Breakfast Cereals	12	—	—	—	—	—
Fruit & Fruit Products	27	9	35	20	28	21
Vegetables	—	—	35	8	68	8
Potatoes	—	—	27	11	46	9
Foods Primarily Sugar	46	23	40	31	37	31
All Beverages & Soft Drinks	25	11	27	21	23	29
Mixed Dishes	—	—	5	—	9	—
Soups	—	—	11	—	17	—
Miscellaneous	—	—	25	—	23	—
Percent Eating	66	35	95	71	94	73
Sample Size 1162						

Dashes denote anything less than 5%

Table 5.17 Percentage of mean intake of nutrients consumed by males (12-19 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	11.8	4.2	28.8	10.5	31.9	13.0
Protein	11.3	3.2	28.8	8.5	38.3	10.1
Fat	10.6	3.9	30.7	9.5	33.9	11.7
Carbohydrate	13.1	4.9	27.3	12.0	27.9	14.9
Calcium	18.1	4.3	28.0	7.8	29.0	12.9
Iron	17.1	4.2	26.3	8.5	34.3	9.8
Vitamin A	13.1	4.0	26.9	5.5	42.8	7.8
Thiamine	17.0	5.3	26.9	7.3	32.9	10.7
Riboflavin	21.0	5.6	23.9	6.8	31.1	11.6
Niacin	13.0	3.6	26.6	8.4	37.5	10.9
Vitamin C	16.7	3.9	24.2	9.2	35.8	10.2
Free Folate	16.9	3.9	25.6	8.2	34.4	11.1
Percent eating	71	34	95	69	91	79
Sample Size 1070						

Table 5.18 Percentage of mean intake of nutrients consumed by females (12-19 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	10.2	4.6	28.7	11.8	34.7	10.3
Protein	9.1	3.5	29.4	8.5	42.4	7.2
Fat	9.4	4.5	29.9	11.7	35.9	8.8
Carbohydrate	11.2	5.0	27.6	13.1	30.9	12.4
Calcium	12.7	4.7	27.1	10.1	35.4	9.9
Iron	12.0	4.3	28.0	9.5	39.0	7.4
Vitamin A	12.9	3.7	26.1	8.6	42.5	6.3
Thiamine	13.8	4.9	28.5	8.2	37.5	7.2
Riboflavin	15.1	5.4	25.4	8.5	37.3	8.3
Niacin	10.0	3.7	28.6	7.8	43.1	6.9
Vitamin C	18.8	4.2	24.6	8.7	34.2	9.5
Free Folate	15.9	3.7	26.1	8.3	37.9	8.3
Percent eating	66	35	95	71	94	73
Sample Size 1162						

Chapter 6

Adults (20-39 years)

Abstract

The mean dietary intake reported for both sexes in this age group exceeded the recommendations for all nutrients with the exception of folate and for females, of iron. For both sexes dairy products were a primary source of calcium and riboflavin; the meat group of calories, protein, fat, iron, vitamin A, thiamine and niacin; cereal products of calories and carbohydrate; and fruit and vegetables of folate, vitamin C and fibre. Approximately 70% of the caloric intake was at designated meal times.

6.1 Nutrient Intake

The national and regional mean intakes of the various nutrients are shown in Tables 6.1 and 6.2. The caloric intake of the males was about 1300 kilocalories more than that of the females with some regional variations. As would be expected with a higher caloric intake, the mean intakes of all nutrients were higher for the males. Even though the intake of fat and protein was higher for males, the percentage of calories from fat (40%) and from protein (14%) was very similar for both sexes.

Mean nutrient intakes for both sexes were above the recommended intakes with the exception of folate and for the females, of iron (Appendix A). The mean calcium and thiamine intakes of the females were borderline. The regional differences in the intakes of calcium and vitamin A are discussed in section 6.2.9 of this chapter.

6.2 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The percent contribution of food groups to nutrient intake, the percentage of this age group consuming each food category and the percentage of food categories consumed during designated time periods are shown in Tables 6.3 to 6.8.

6.2.1 Dairy Products (milk, milk products and cheese)

For both sexes this food group was the primary source of calcium and riboflavin and a secondary source of protein. In addition, for the males it was a secondary source of fat, vitamin A and folate. The mean consumption of the males was 420 grams, including 22 grams of cheese, and of the females 289 grams, including 19 grams of cheese. When based on calcium content these can be equated to 2.1 cups of milk for the males and 1.4 cups of milk for the females. Milk and milk products were consumed by 91% of the males and 92% of the females. Cheese was consumed by 35% of the males and 34% of the females.

Approximately two thirds of the milk and milk products was consumed during designated meal periods.

6.2.2 Meat, Poultry, Fish and Eggs (MPFE)

For both sexes the MPFE group was a primary source of calories, protein, fat, iron, vitamin A, thiamine and niacin and for the males of riboflavin. For the males it was a secondary source of folate and for the females of riboflavin. Even though the mean intake of the females was less than 60% that of the males the relative contribution of almost all nutrients was only slightly less.

The males' mean intake of this food group was 285 grams, composed of meat (194 grams), eggs (44 grams), poultry (27 grams) and fish (20 grams). For the females the mean intake was 125 grams less than that of the males and was composed of meat (104 grams), eggs (26 grams), poultry (20 grams) and fish (10 grams). This composition was different in the Atlantic and Pacific regions where the mean intake of fish was greater with a corresponding reduction in meat intake. Meat was eaten by 91% of the males and 81% of the females with a smaller percentage consuming the other categories of this food group. There was a regional difference in the percentage of females consuming meat and fish in the Atlantic and Pacific regions with a lower percentage consuming meat and higher percentage consuming fish.

It was evident that eggs were consumed for the most part in the morning although the females ate a lower percentage of their eggs during the morning meal period and a higher percentage

during the evening meal period than the males. Both sexes consumed almost 30% of their meat during the noon meal period, and the males 62% and the females 67% of their meat after 1700 hours.

6.2.3 Cereal Products (bread, rolls, pasta, grains and flour mixtures and breakfast cereals)

For both sexes the cereal products were a primary source of calories and carbohydrate and a secondary source of protein, fibre, calcium, iron and niacin. For females it was a primary source of thiamine and for males a secondary source of thiamine, riboflavin and folate. The males' mean consumption of this food group was 282 grams and that of the females 198 grams. For the two sexes, the composition of the cereal group was similar — 55% bread, rolls and pasta, 39% grains and flour mixtures and 6% breakfast cereals. Regionally there were some variations in these proportions. The males in the Prairie region consumed a slightly higher proportion of bread and correspondingly less grains and flour mixtures, whereas the females in the Pacific region consumed less bread and more flour mixtures. Bread and rolls were eaten by 93% of the males and 94% of the females, grains and flour mixtures by 72% of the males and 75% of the females and breakfast cereals by 21% of both sexes.

Almost all breakfast cereals were eaten before 1100 hours. Approximately three-quarters of the bread and rolls was consumed during the designated meal times with more during the noon meal period than during the other periods. Over 90% of the grains and flour mixtures, which included cakes, cookies, doughnuts and pies, was eaten after 1100 hours with a greater proportion consumed after 1700 hours.

6.2.4 Fruit and Fruit Products

This food group was a primary source of vitamin C and a secondary source of folate. The males' mean consumption of fruit was 244 grams and that of the females 204 grams. This food group was consumed by 71% of the males and 72% of the females. The

consumption was distributed throughout the day with approximately 60% during designated meal times.

6.2.5 Vegetables (including potatoes)

For both sexes this food group was a primary source of fibre and folate and a secondary source of vitamin A. In addition, for males, it was a primary source of vitamin C and for females a secondary source of thiamine and vitamin C. The females' mean intake of vegetables was only slightly lower than that of the males, but their mean intake of potatoes was much lower (Tables 6.9, 6.10). The vegetables in the vegetable category were consumed by 86% of the males and 91% of the females and potatoes by 72% of the males and 66% of the females. For both sexes the pattern of consumption of vegetables was similar to that of meat.

6.2.6 Fats (butter, margarine, oils and other fats)

For both sexes this food group was a secondary source of dietary fat and for males of vitamin A. The males' mean intake of the food group was 33 grams, 63% of which was butter, 16% margarine and 20% oils. Even though the females' mean intake was only 22 grams the proportions were similar. For both sexes, butter was consumed by approximately 72% and margarine by 19% of this age group. These fats appeared to be consumed principally at meal times with more consumed at mid-day than during other designated meal periods.

6.2.7 Foods Primarily Sugar, Beverages and Soft Drinks

For the males, this food group supplied 15% of the calories and 25% of the carbohydrate and for the females, 11% of the calories and 21% of the carbohydrate. When foods primarily sugar were considered separately the males' mean consumption was 64 grams and that of the females 44 grams with approximately 20% consumed at each of the meal periods and after 2000 hours.

The mean daily intake of soft drinks was estimated to be 14 ounces for the males and 6 ounces for the females. The consumption pattern of soft drinks during the day could not be determined because the data included all beverages. The mean caloric intake

from pure alcohol was estimated as described in Section 1.10.1 (c) of this report. This was 138 kilocalories for the males and 24 kilocalories for the females.

6.2.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Neither of these food groups was considered to be an important source of any nutrient. The mean consumption of nuts and dried legumes was only 15 grams for the males and 8 grams for the females, but was consumed by only 24% of the males and 16% of the females. The miscellaneous group contributed only 4% of the caloric intake of both sexes.

6.2.9 Regional and Seasonal Differences

The mean daily intake of food groups for different regions is shown in Tables 6.9 and 6.10 and for different seasons of the year in Tables 6.11 and 6.12.

In the Atlantic region both sexes had a lower mean consumption of fruit than in the other regions and also a lower percentage of those consuming this food group. In Quebec both sexes had the lowest consumption of dairy products, with a lower mean intake of calcium, and the highest consumption of foods primarily sugar and soft drinks. Regional differences in mean consumption of the vegetable category were only evident for the females with the highest in Quebec and the lowest in Ontario. On the other hand regional differences were greater for the consumption of potatoes. The males' mean intake in Quebec was almost three times greater than that of males in the Pacific region and the percentage of males in Quebec eating potatoes was almost twice the percentage in the Pacific region. The mean intake of potatoes by the females in both Quebec and the Atlantic region was double that of the Pacific region and the percentage eating them was also greater. The consumption by females of both mixed dishes and soups was much higher in Quebec than in other regions and it was evident that a higher percentage of both sexes ate soup in Quebec than in other regions. It should also be noted that only 7% of the Quebec males consumed breakfast cereals (Table 6.5).

Both sexes in Ontario had a higher mean consumption of fruit and fruit products and a higher percentage consuming this food group than other regions. For the males there was a regional variation in the mean intake of the MPFE group with the highest in Ontario and the lowest in the Pacific region. This was principally due to a difference in mean meat consumption (152 grams in the Pacific region and 210 grams in Ontario).

Additional data showed that while regionally there were no differences in total mean consumption of fats by either sex the proportions of butter and margarine varied. In the Atlantic and Pacific regions approximately 30% of the fat consumed was margarine, higher than in other regions. The percentage from oils remained the same except for that of the males in the Atlantic region which was lower (11%). The percentage of both sexes consuming margarine was also higher in the Atlantic and Pacific regions than in the other regions. For the males the proportion of butter and margarine also appeared to change with the season with that of butter lowest during the winter, dropping to 46% of the fats group.

The consumption of breakfast cereals seemed to vary with the season as the mean intakes of both sexes were highest during the autumn and lowest during the spring. The data indicated that there was a tendency during the winter months to a lower mean consumption of vegetables and potatoes by the males and of vegetables by the females. There were no differences in the females' mean intake of fruit and fruit products but that of the males was higher during the spring season. For foods primarily sugar the mean intake was highest during the winter for females and highest during the spring for males and for both sexes the consumption of soft drinks was higher during the summer months.

Unpublished data indicated that there were regional differences in the percent contribution of certain food categories to nutrient intakes. The percentage of vitamin C from milk and milk products was higher for the males in the Atlantic region (13%) reflecting the use of evaporated milk in this region. When food categories in the MPFE group were considered the percent contribution of the meat category to nutrient intake as well as the

mean intake of vitamin A varied regionally. For both sexes this variability was due to both quantity and selection. For example, when the quantities of the meat category consumed by the males were the same, as in both the Prairie region and in Quebec (approximately 200 grams), the percent contribution to vitamin A intake was 39% in the Prairies and 18% in Quebec. These differences were probably due to a higher proportion of liver in the meat category in the Prairie region on the day preceding the interview. A similar picture was seen for the females. The percent contribution of vitamin A was approximately 45% in the Atlantic region and Ontario and only 16% in Quebec even though Quebec had a higher consumption of the meat category. When cereal products were considered separately the mean quantity of bread and rolls consumed by the males in Quebec and the Pacific region was the same but the average amount of fibre from these foods differed — 0.36 grams from bread in Quebec and 0.73 grams in the Pacific region. This may indicate that a higher proportion of whole grain bread was eaten in the Pacific region than in Quebec. This was also true for the females of this age group. In Quebec the males' mean consumption of vegetables, not including potatoes, was lower than that in the Pacific region but the percentage of vitamin A from these was higher. In contrast, the Quebec females' mean consumption of these vegetables was higher than that of the Pacific region females but the percent contribution of vitamin C was lower.

Unpublished data indicated that the only appreciable regional differences in the percentage of food categories consumed by this age group during different times of the day were in meat, poultry, fish and the vegetable group. The males in the Pacific region tended to eat more meat after 1700 hours and less during the noon meal period than those in the other regions. The mean percentage intake of the vegetable group by the males in Ontario, Prairie and Pacific regions was lower during the noon meal period and higher after 1700 hours than in Quebec and Atlantic regions. A similar pattern of vegetable intake for females in the Prairies and Pacific regions was observed.

6.3 Pattern of Intake Throughout the Day

Tables 6.13 and 6.14 indicate the percentages of this age group consuming some food or beverage during various designated time periods, their mean caloric intake during these times and the regional differences. Tables 6.15 and 6.16 indicate the percentage of this age group consuming each food category during the different time intervals of the day preceding the interview. Tables 6.17 and 6.18 indicate the percentage of nutrients consumed during the different time intervals.

During the 0500-0859 interval some food or beverage (10% of the calories) was consumed by 70% of the males and 66% of the females. During this period the percent intake of vitamin C and folate by females was higher than the percent calories, probably due to the selection of fruit during this time period. Calculations showed that of those eating during this time interval approximately 78% consumed milk and milk products, 20% consumed breakfast cereals, 36% of the males and 39% of the females consumed fruit, 61% of the males and 76% of the females ate eggs and 17% of the males had meat. Unpublished data indicated that there were regional differences in these percentages. The most striking differences were a low of 9% of the males in Quebec eating breakfast cereals and a high of 19% of the males in the Prairie region consuming fruit. A higher percentage of females in Quebec (14% compared to less than 5% in the other regions) consumed cheese during this time period and a lower percentage of females (55%) in the Pacific region consumed bread and rolls.

During the 0900-1059 time interval the pattern of eating was similar to the earlier morning period.

During the 1100-1359 time interval some food or beverage (25-26% of calories) was consumed by 91% of the males and by 94% of the females. There was nothing in Tables 6.15 and 6.16 to indicate that a pattern of eating the various food categories existed except that of those eating, 100% of the males and 88% of the females had a protein source other than milk. Unpublished data indicated that during this time there were regional differences in the consumption of potatoes. Of those eating during this period

approximately 10% in the Pacific region consumed potatoes compared to 45% in Quebec.

During the 1400-1659 time interval some food or beverage (8-9% of calories) was consumed by 72% of the males and by 73% of the females and nearly all food categories were consumed to some extent.

During the 1700-1959 time interval some food or beverage (35-37% of calories) was consumed by 92% of the males and by 92% of the females. The food pattern during this time interval varied from that of the noon meal period for both sexes. A higher percentage of this age group consumed vegetables and potatoes and a lower percentage consumed bread and rolls during the evening meal period than during the noon meal period. Unpublished data indicated that this was particularly true of Ontario, Prairie and Pacific regions where the percentage of males consuming potatoes during this time interval was three times that of the noon meal period and the percentage consuming bread was one third to one half that of the noon meal period. The same was true for the females except that in the Pacific region the percentage consuming potatoes during the evening meal period was almost six times that of the noon meal period. Although the percentage of males consuming the meat category was slightly higher during the evening meal period than during the noon meal period the percentage of meat consumed during the evening meal period was almost double (Table 6.7). The same trend was exhibited for the females and was true for all regions. The percent intakes of nutrients associated with the consumption of meat were higher during the evening meal period than the percent caloric intake and reflected the higher consumption of meat during this period.

During the 2000-0459 time interval some food or beverage was consumed (11-16% of calories) by 82% of the males and 77% of the females. There did not appear to be any pattern to the food intake of this age group but the MPFE group and vegetables were consumed by about 20% of the males and 10% of the females. Unpublished data indicated that this percentage was greater for the females in the Atlantic region.

6.4 Summary

The data indicated that the average daily consumption of the 20-39 year old males was the equivalent of 2 cups of milk, 9 ounces of meat, 1 egg, 5 slices of bread, $\frac{1}{2}$ serving breakfast cereal, 7 teaspoons of fat, 4 ounces of baked goods, $2\frac{1}{2}$ servings of fruit, $1\frac{1}{2}$ servings of vegetables, 2 servings of potatoes, 10 teaspoons of sugar and 14 ounces of soft drinks. The females had lower caloric intakes than the males and ate correspondingly less food in some of the categories. On the average they had the equivalent of $\frac{1}{2}$ cup less milk, 2 slices less bread, 4 ounces less meat, 1 serving less potatoes, 2 teaspoons less fat, 4 teaspoons less sugar, $\frac{1}{2}$ serving less fruit and 8 ounces less soft drinks.

There were regional differences in the consumption of all food groups with the exception of fats and oils and cereal products. The most striking difference was in the consumption of potatoes which was 2-3 times higher in Quebec and the Atlantic region than in the Pacific region.

The data also indicated that for both sexes the mean dietary intake of all nutrients met the recommendations with the exception of free folate and in addition, for females, of iron. The mean calcium and thiamine intakes of the females were borderline. As dairy products were a primary source of calcium and riboflavin an increase in the consumption of this food group by the females would have increased their mean calcium intake. For both sexes the meat group was the primary source of calories, protein, fat, iron, vitamin A, thiamine and niacin. Fruits and vegetables were the primary source of folate, vitamin C and fibre.

Data on the pattern of food consumption indicated that one third of the meat and vegetables was eaten at mid-day and 60% after 1700 hours. On the other hand more of the bread and fat was eaten at mid-day, probably as sandwiches, and more of the grains and flour mixtures after 1700 hours.

The time of eating in the morning for both sexes differed from that of the 12-19 year-old age group with a higher percentage of the 20-39 year olds eating between 0900 and 1059 hours. This was probably due to the presence in school of the younger age group during this time.

Table 6.1 Mean daily nutrient intake of males (20-39 years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	3374	3268	3461	3443	3349	3071
Protein (g)	119	115	114	126	124	109
Fat (g)	154	147	158	158	155	135
Total carbohydrate (g)	351	351	373	349	337	324
Fibre (g)	4.61	4.37	4.25	4.94	4.84	4.43
Calcium (mg)	1081	1222	920	1113	1189	1143
Iron (mg)	18	16	18	19	19	18
Vitamin A (R.E.)	1551	1656	1343	1467	2145	1363
Thiamine (mg)	1.57	1.48	1.60	1.56	1.67	1.42
Riboflavin (mg)	2.59	2.67	2.38	2.57	2.95	2.60
Niacin (N.E.)	48	44	46	51	51	44
Vitamin C (mg)	118	112	127	119	114	106
Free folate (μg)	118	108	120	120	120	115
Total folate (μg)	221	200	219	228	226	211
Sample Size	999	231	206	161	189	212

Table 6.2 Mean daily nutrient intake of females (20-39 years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	2001	1911	2203	1950	1946	1762
Protein (g)	72	70	74	72	75	67
Fat (g)	89	84	97	88	88	77
Total carbohydrate (g)	227	219	261	218	207	198
Fibre (g)	3.20	3.21	3.79	2.81	3.19	3.03
Calcium (mg)	709	713	629	745	788	676
Iron (mg)	12	12	13	11	12	11
Vitamin A (R.E.)	1292	1535	1184	1450	1134	1036
Thiamine (mg)	1.02	0.96	1.08	0.99	1.05	0.92
Riboflavin (mg)	1.70	1.70	1.64	1.77	1.75	1.56
Niacin (N.E.)	28	27	29	28	30	26
Vitamin C (mg)	89	79	100	86	90	78
Free folate (μg)	83	78	83	86	81	78
Total folate (μg)	146	142	153	144	145	142
Sample Size	1347	345	290	217	236	259

Table 6.3 Percent contribution of food groups to nutrient intake of males (20-39 years)

Nutrient	Dairy Products	Meat, Poultry, Fish, Eggs	Cereal Products	Fruit and Fruit Products	Vegetables & Potatoes	Fats and Oils	Other*
Calories	11	26	23	4	9	7	20
Protein	16	52	16	1	6	—	8
Fat	13	43	12	—	7	16	8
Carbohydrate	8	—	39	10	14	—	29
Fibre	—	—	20	16	50	—	13
Calcium	59	6	15	3	7	—	11
Iron	2	43	23	4	13	—	14
Vitamin A	17	37	2	2	17	17	6
Thiamine	9	33	29	6	17	—	5
Riboflavin	31	30	17	2	7	—	11
Niacin	9	51	15	1	9	—	14
Vitamin C	5	1	1	45	46	—	2
Free folate	16	17	17	18	26	—	6

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 6.4 Percent contribution of food groups to nutrient intake of females (20-39 years)

Nutrient	Dairy Products	Meat, Poultry, Fish, Eggs	Cereal Products	Fruit and Fruit Products	Vegetables & Potatoes	Fats and Oils	Other*
Calories	12	23	26	6	9	7	16
Protein	19	48	18	1	6	—	7
Fat	15	38	14	—	6	19	7
Carbohydrate	8	—	40	13	13	—	26
Fibre	—	—	21	17	49	—	13
Calcium	61	5	15	3	7	—	9
Iron	2	37	25	6	14	—	16
Vitamin A	13	42	2	2	20	13	7
Thiamine	9	29	30	8	17	—	6
Riboflavin	32	28	20	2	7	—	9
Niacin	11	51	17	2	9	—	10
Vitamin C	4	1	—	52	40	—	2
Free folate	16	16	16	22	25	—	4

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 6.5 Percentage of males (20-39 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	91	95	90	93	88	93
Cheese & Cheese Products	35	27	28	38	36	47
Poultry	18	25	17	18	20	14
Meat	91	81	91	96	92	83
Fish & Shellfish	17	18	13	21	16	21
Eggs	42	40	40	47	41	38
Butter	72	68	79	71	72	60
Margarine	19	34	16	12	13	39
Oils & Other Fats	34	30	35	37	26	36
Nuts & Dried Legumes	24	19	21	28	21	30
Bread & Rolls	93	93	95	90	97	88
Pasta	5	6	5	1	11	9
Grains & Flour Mixtures	72	72	81	64	68	73
Breakfast Cereals	21	20	7	24	29	35
Fruit & Fruit Products	71	58	70	78	66	68
Vegetables	86	86	84	85	89	91

Table 6.5 (cont'd) Percentage of males (20-39 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	72	79	83	66	78	47
Foods Primarily Sugar	92	97	92	93	87	92
All Beverages	96	97	98	96	92	96
Mixed Dishes	12	12	11	16	9	8
Soups	25	21	32	20	23	26
Miscellaneous	49	43	45	56	52	42
Sample Size	999	231	206	161	189	212

Table 6.6 Percentage of females (20-39 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	92	93	94	93	85	87
Cheese & Cheese Products	34	31	33	36	28	40
Poultry	18	25	18	18	14	20
Meat	81	75	80	82	89	78
Fish & Shellfish	11	20	7	8	13	20
Eggs	38	36	38	36	43	43
Butter	73	54	82	77	72	50
Margarine	20	40	16	14	18	39
Oils & Other Fats	33	33	33	32	31	35
Nuts & Dried Legumes	16	23	16	14	15	17
Bread & Rolls	94	94	94	94	95	91
Pasta	12	2	12	13	14	9
Grains & Flour Mixtures	75	76	70	80	68	77
Breakfast Cereals	21	19	17	24	23	23
Fruit & Fruit Products	72	65	69	76	69	74
Vegetables	91	88	87	93	93	93

Table 6.6 (cont'd) Percentage of females (20-39 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	66	79	76	61	62	54
Foods Primarily Sugar	90	89	95	87	87	89
All Beverages	95	99	98	90	97	97
Mixed Dishes	10	11	14	6	15	9
Soups	32	25	39	30	27	30
Miscellaneous	40	29	45	31	53	49
Sample Size	1347	345	290	217	236	259

Table 6.7 Percentage of selected food categories consumed by males (20-39 years) during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	17	11	20	8	29	16
Meats	3	3	28	5	53	9
Eggs	49	14	24	3	5	6
Bread & Rolls	16	10	35	6	22	12
Breakfast Cereals	71	24	1	—	3	2
Grains & Flour Mixtures	2	6	23	12	37	21
Fruit & Fruit Products	20	8	21	12	20	19
Vegetables	—	2	25	5	59	9
Potatoes	1	1	22	6	65	6
Foods Primarily Sugar	18	15	18	9	20	21
Sample Size 999						

Table 6.8 Percentage of selected food categories consumed by females (20-39 years) during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	15	10	26	8	26	16
Meats	1	1	26	5	64	3
Eggs	36	14	27	2	15	6
Bread & Rolls	22	12	33	5	20	8
Breakfast Cereals	80	10	4	1	2	3
Grains & Flour Mixtures	2	4	27	12	45	11
Fruit & Fruit Products	21	12	22	14	17	14
Vegetables	2	1	31	8	54	5
Potatoes	—	—	29	7	59	5
Foods Primarily Sugar	18	12	17	15	23	16
Sample Size 1347						

Table 6.9 Mean daily intake of food groups (grams) by males (20-39 years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	420	497	327	415	533	450
Meat, Fish, Poultry, Eggs	285	250	277	318	292	230
Cereal Products including breakfast cereals	282	289	288	264	293	298
Breakfast Cereals	18	13	9	19	23	34
Fruit and Fruit Products	244	178	220	296	212	261
Vegetables <i>not</i> including potatoes	155	180	144	152	164	160
Potatoes	189	204	235	174	200	87
Fats and Oils	33	36	35	29	33	34
Nuts and Legumes	15	16	13	17	11	21
Foods Primarily Sugar	64	61	77	63	51	56
Mixed Dishes and Soups	132	106	147	149	98	113
Sample Size	999	231	206	161	189	212

Table 6.10 Mean daily intake of food groups (grams) by females (20-39 years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	289	269	238	322	332	259
Meat, Fish, Poultry, Eggs	160	154	164	156	174	143
Cereal Products including breakfast cereals	198	183	191	214	189	188
Breakfast Cereals	13	11	9	17	11	17
Fruit and Fruit Products	204	137	198	236	180	189
Vegetables <i>not</i> including potatoes	134	113	175	106	143	126
Potatoes	99	131	131	83	86	63
Fats and Oils	22	24	24	20	21	20
Nuts and Legumes	8	13	9	7	9	5
Foods Primarily Sugar	44	42	68	32	35	39
Mixed Dishes and Soups	106	87	164	77	97	79
Sample Size	1347	345	290	217	236	259

Table 6.11 Mean daily intake of food groups (grams) by males (20-39 years) for the different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	420	425	397	463	388
Meat, Fish, Poultry, Eggs	285	314	251	320	231
Cereal Products including breakfast cereals	282	277	272	315	265
Breakfast Cereals	18	8	18	34	18
Fruit and Fruit Products	244	275	224	226	244
Vegetables <i>not</i> including potatoes	155	137	182	166	123
Potatoes	189	193	183	219	140
Fats and Oils	33	31	31	37	35
Nuts and Legumes	15	16	11	14	23
Foods Primarily Sugar	64	77	59	54	59
Mixed Dishes and Soups	132	154	129	116	105
Sample Size	999	285	291	175	248

Table 6.12 Mean daily intake of food groups (grams) by females (20-39 years) for the different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	289	273	224	366	299
Meat, Fish, Poultry, Eggs	160	159	158	169	144
Cereal Products including breakfast cereals	198	204	183	210	190
Breakfast Cereals	13	9	11	22	10
Fruit and Fruit Products	204	209	203	194	217
Vegeables <i>not</i> including potatoes	134	131	159	123	110
Potatoes	99	97	96	104	100
Fats and Oils	22	21	24	21	20
Nuts and Legumes	8	8	9	8	8
Foods Primarily Sugar	44	44	47	31	68
Mixed Dishes and Soups	106	95	127	102	99
Sample Size	1347	365	372	270	340

Table 6.13 Percentage of males (20-39 years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	70	465	59	490	67	442	73	486	73	449	69	467
0900-1059	65	358	63	478	66	302	62	400	61	410	77	250
1100-1359	91	928	90	921	94	971	88	925	94	922	86	808
1400-1659	72	384	68	450	70	393	70	333	80	410	74	409
1700-1959	92	1268	92	1096	95	1257	92	1294	89	1277	87	1285
2000-0459	82	656	89	576	78	760	87	669	77	555	82	532
Sample Size	999		231		206		161		189		212	

Table 6.14 Percentage of females (20-39 years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	66	316	62	305	66	333	67	307	67	326	62	282
0900-1059	61	223	64	246	50	251	67	203	62	211	65	226
1100-1359	94	554	90	494	95	644	95	530	95	510	86	486
1400-1659	73	243	65	335	78	306	72	183	73	230	67	237
1700-1959	92	802	90	680	94	832	91	842	94	759	93	666
2000-0459	77	288	73	369	82	272	70	290	81	286	84	269
Sample Size	1347		345		290		217		236		259	

Table 6.15 Percentage of males (20-39 years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	55	36	44	27	56	41
Cheese & Cheese Products	—	—	14	—	9	10
Poultry	—	—	5	—	10	—
Meats	12	12	50	9	61	13
Fish & Shellfish	—	—	6	—	7	5
Eggs	23	6	10	—	—	—
Butter	33	16	40	8	29	15
Margarine	7	—	11	—	7	—
Oils & Other Fats	—	—	17	—	16	7
Nuts & Dried Legumes	—	—	8	—	7	7
Bread & Rolls	43	23	63	11	42	23
Pasta	—	—	—	—	—	—
Grains & Flour Mixtures	—	10	32	15	38	28
Breakfast Cereals	15	—	—	—	—	—
Fruit & Fruit Products	25	11	29	13	25	23
Vegetables	—	—	41	10	63	14
Potatoes	—	—	24	9	54	10
Foods Primarily Sugar	59	41	42	31	37	44
All Beverages & Soft Drinks	56	48	65	50	65	63
Mixed Dishes	—	—	—	—	5	—
Soups	—	—	12	—	14	—
Miscellaneous	—	7	21	6	25	8
Percent Eating	70	65	91	72	92	82
Sample Size	999					

Dashes denote anything less than 5%.

Table 6.16 Percentage of females (20-39 years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	52	42	59	31	57	43
Cheese & Cheese Products	—	—	13	—	12	6
Poultry	—	—	6	—	10	—
Meats	—	—	42	7	65	6
Fish & Shellfish	—	—	—	—	5	—
Eggs	16	5	11	—	7	—
Butter	38	19	40	7	31	10
Margarine	8	—	10	—	9	—
Oils & Other Fats	—	—	15	—	19	—
Nuts & Dried Legumes	—	—	—	—	—	—
Bread & Rolls	50	23	57	9	38	14
Pasta	—	—	—	—	7	—
Grains & Flour Mixtures	—	7	32	17	42	20
Breakfast Cereals	13	—	—	—	—	—
Fruit & Fruit Products	26	16	31	18	28	16
Vegetables	—	—	48	10	71	8
Potatoes	—	—	22	7	47	7
Foods Primarily Sugar	49	41	38	36	41	38
All Beverages & Soft Drinks	55	47	59	47	62	53
Mixed Dishes	—	—	—	—	5	—
Soups	—	—	16	—	16	—
Miscellaneous	6	6	16	5	23	5
Percent Eating	66	61	94	73	92	77
Sample Size	1347					

Dashes denote anything less than 5%.

Table 6.17 Percentage of mean intake of nutrients consumed by males (20-39 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	9.6	6.9	25.0	8.2	34.5	16.0
Protein	8.8	5.9	25.3	6.5	40.8	13.0
Fat	9.0	6.3	26.9	6.8	37.7	13.4
Carbohydrate	11.4	8.5	24.0	9.6	29.5	17.2
Calcium	12.8	9.1	25.3	8.0	29.2	15.7
Iron	11.6	6.3	25.2	6.1	39.7	11.2
Vitamin A	12.2	6.2	24.2	5.1	43.6	8.8
Thiamine	13.3	6.6	26.0	6.3	37.6	10.2
Riboflavin	14.2	7.4	23.5	6.4	35.3	13.2
Niacin	9.1	5.6	24.3	6.5	41.1	13.5
Vitamin C	15.1	6.0	21.2	7.4	37.9	12.5
Free Folate	13.5	6.4	23.2	6.3	38.2	12.5
Percent eating	70	65	91	72	92	82
Sample Size 999						

Table 6.18 Percentage of mean intake of nutrients consumed by females (20-39 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	10.4	6.8	26.1	8.9	37.1	11.1
Protein	8.4	5.3	26.5	6.0	45.7	8.4
Fat	8.9	6.2	27.5	7.9	40.7	9.2
Carbohydrate	12.6	8.0	25.0	10.8	30.9	12.9
Calcium	12.5	9.2	27.6	8.0	29.7	13.0
Iron	11.7	6.0	26.1	7.2	41.7	7.6
Vitamin A	8.5	4.9	25.4	14.1	38.9	8.4
Thiamine	13.9	6.1	27.0	6.4	39.3	7.3
Riboflavin	13.5	7.3	24.9	8.3	35.6	10.4
Niacin	9.2	5.3	25.1	6.0	46.1	8.4
Vitamin C	18.9	8.1	24.5	7.9	30.8	9.9
Free Folate	15.8	6.9	25.6	8.8	34.7	8.6
Percent eating	66	61	94	73	92	77
Sample Size 1347						

Chapter 7

Adults (40-64 years)

Abstract

The mean dietary intake reported for both sexes in this age group exceeded the recommendations for all nutrients with the exception of thiamine and folate. In addition the females' mean dietary intake of calcium was below that recommended, probably because of a low consumption of dairy products, the primary source of calcium. The meat group was a primary source of protein, fat, iron, vitamin A and niacin; cereal products of calories, carbohydrate and thiamine; and fruit and vegetables of vitamin C, folate and fibre. Approximately 75% of the caloric intake was at designated meal times.

7.1 Nutrient Intake

The national and regional mean intakes of the various nutrients are shown in Tables 7.1 and 7.2. The caloric intake for the males was about 945 kilocalories more than that of the females with some regional variations. As would be expected with a higher caloric intake, the mean intakes of all nutrients were higher for the males, with the exception of vitamin C. Even though the intake of fat and protein was higher for the males the percentage of calories from fat (40%) and from protein (14%) was very similar for both sexes.

Mean nutrient intakes for both sexes were above the recommended intakes, with the exception of thiamine and folate and for females, of calcium (Appendix A). The mean iron intake of females was borderline. The regional differences in the intake of vitamin A, vitamin C and folate are discussed in section 7.2.9 of this chapter.

7.2 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The percent contribution of food groups to nutrient intake, the percentage of this age group consuming each food category and

the percentage of food categories consumed during designated time periods are shown in Tables 7.3 to 7.8.

7.2.1 Dairy Products (milk, milk products and cheese)

For both sexes this food group was the primary source of calcium and riboflavin and a secondary source of protein. The mean consumption of the males was 332 grams, including 14 grams of cheese, and that of the females 225 grams, including 14 grams of cheese. When based on calcium content these can be equated to 1.6 cups of milk for the males and 1.1 cups of milk for the females. Milk and milk products were consumed by 93% of the males and 91% of the females. Cheese was consumed by 35% of the males and 34% of the females.

Approximately two thirds of the milk and milk products was consumed during designated meal periods.

7.2.2 Meat, Poultry, Fish and Eggs (MPFE)

For both sexes the MPFE group was the primary source of protein, fat, iron, vitamin A and niacin and a secondary source of calories, thiamine and riboflavin. Even though the females' mean intake of this food group was 68% that of the males, the relative percent contribution to the nutrient intake was very similar.

The males' mean intake of this food group was 211 grams, composed of meat (135 grams), poultry (24 grams), fish (13 grams) and eggs (39 grams). This composition varied from region to region with the greatest difference being in the mean meat consumption (117 grams in the Atlantic region, and 168 grams in the Prairie region). This regional variation was not reflected in the mean intake of the food group as a whole because of the higher mean intake of poultry (42 grams) and fish (26 grams) in the Atlantic region. The females' mean intake of this food group was 68 grams less than that of the males and was composed of meat (81 grams), eggs (26 grams), poultry (18 grams) and fish (18 grams). Meat was eaten by 88% of the males and 81% of the females with a smaller percentage consuming the other categories of this food group.

It was evident that eggs were consumed for the most part in the morning although the females ate a lower percentage during the noon meal period than the males. Approximately one third of the meat, fish and poultry was consumed during the noon meal period with 55% of the meat category eaten by the males and 61% by the females after 1700 hours.

7.2.3 Cereal Products (bread, rolls, pasta, grains and flour mixtures and breakfast cereals)

For both sexes cereal products were a primary source of carbohydrate, calories and thiamine and a secondary source of protein, calcium, iron, riboflavin and niacin, and in addition for the males, of fibre and free folate. The males' mean consumption of this food group was 269 grams and that of the females 174 grams. For the two sexes, the composition of the cereal group varied only slightly — 50% bread, rolls and pasta, 38% grains and flour mixtures and 12% breakfast cereals. Regionally there were only slight variations in these proportions. Bread and rolls were eaten by 97% of the males and 94% of the females; grains and flour mixtures by 74% of the males and 76% of the females and breakfast cereals by 31% of the males and 23% of the females.

The breakfast cereals were consumed for the most part before 1100 hours. Approximately three-quarters of the bread and rolls was consumed during the designated meal periods with more during the noon meal period than during the other periods. Over 90% of the grains and flour mixtures (including cakes, cookies, doughnuts and pies) were consumed after 1100 hours with similar amounts consumed during the two designated meal periods.

7.2.4 Fruit and Fruit Products

For both sexes, this food group was the primary source of vitamin C. In addition, for the females it was the primary source of folate and a secondary source of carbohydrate and fibre. The females' mean consumption of fruit was 239 grams and that of the males 194 grams. This food group was consumed by 68% of the males and 75% of the females. The males' consumption of fruit was

fairly evenly distributed throughout the day with 72% consumed during the designated meal periods. Sixty-seven percent was consumed during designated meal periods by the females who had a lower percent intake during the noon meal period than did the males.

7.2.5 Vegetables (including potatoes)

For both sexes this food group was the primary source of fibre in the diet and a secondary source of vitamin A and vitamin C. It was the primary source of folate for the males, but a secondary source for the females. The females' mean intake of vegetables was similar to that of the males but their consumption of potatoes was much lower (Tables 7.9, 7.10). The vegetables in the vegetable category were consumed by 83% of the males and 88% of the females and potatoes by 73% of the males and 64% of the females. Essentially all the vegetables including potatoes were consumed after 1100 hours.

7.2.6 Fats (butter, margarine, oils and other fats)

For both sexes this food group was a secondary source of dietary fat, and for males of vitamin A. The males' mean intake of the food group was 29 grams, 60% of which was butter, 28% margarine and 12% oils. The females' mean intake was 20 grams with less butter (51%) and more oils (21%) than the males. Butter was consumed by 61% of the males and 59% of the females and margarine by 31% of the males and 39% of the females. These fats appeared to be consumed principally at meal times with more consumed at mid-day than during other designated periods.

7.2.7 Foods Primarily Sugar, Beverages and Soft Drinks

For the males, this food group supplied 15% of the calories and 22% of the carbohydrate and for the females, 11% of the calories and 18% of the carbohydrate. When foods primarily sugar were considered separately, the males' mean consumption was 56 grams and that of the females 39 grams. Approximately 20% of this food category was consumed by the females during each of the

meal periods and after 2000 hours. The males consumed a greater percentage than the females during the morning meal period and a smaller percentage after 2000 hours.

The mean daily intake of soft drinks was estimated to be 7 ounces for the males and 3 ounces for the females. The mean caloric intake from pure alcohol was estimated as described in section 1.10.1 (c) of this report. This was 120 kilocalories for males and 31 kilocalories for females.

7.2.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Neither of these food groups was considered to be an important source of any nutrient. The mean consumption of nuts and dried legumes was only 15 grams for the males and 10 grams for the females, but was consumed by 22% of the males and 17% of the females. The miscellaneous group contributed only 3% of the caloric intake of both sexes.

7.2.9 Regional and Seasonal Differences

The mean daily intake of food groups for different regions is shown in Tables 7.9 and 7.10 and for different seasons of the year in Tables 7.11 and 7.12.

In the Atlantic region both sexes had a lower mean consumption of fruit than other regions. The males had a higher mean intake of fats and a much higher mean intake of nuts and dried legumes than those in some of the other regions. Both sexes in Quebec had the highest mean consumption of mixed dishes and soups, with a higher percentage consuming soup. They also had a higher mean intake of foods primarily sugar and soft drinks and the females a higher mean intake of fruit and fruit products, than the other regions. This higher fruit consumption contributed to their higher mean intake of folate, vitamin A and vitamin C which was also influenced by selection. The females in Ontario and in the Pacific region had a higher mean consumption of dairy products than the other regions. Regional differences in the mean consumption of vegetables were only evident for the females with the highest intake in the Pacific region and the lowest intake in

the Atlantic region. Regional differences were greater for the consumption of potatoes, particularly by the males, whose mean consumption in the Atlantic region was twice that of Ontario and the Pacific region. The percentage of both sexes consuming potatoes was also lower in Ontario and the Pacific region than other regions.

Additional data showed that for both sexes the proportions of butter and margarine varied regionally — the Atlantic and Pacific regions eating a higher proportion of margarine.

The percentage of oils consumed by both sexes was higher in Ontario and the Pacific region. The proportions of margarine and oils consumed by the females changed with the season with a higher proportion of margarine and a lower proportion of oils and other fats during the winter months.

The consumption of breakfast cereals by the females varied slightly with the season, being highest during the spring season due to an increased consumption of hot cereal (1.10.1 (a)). Their mean intake of fruit was higher during the winter season and their intake of vegetables was lower. The mean intake of potatoes by the males was lower during the autumn.

Unpublished data indicated that there were regional differences in the percent contribution of certain food categories to nutrient intakes. When the intakes of foods from the MPFE group were considered separately, the percent contribution of the meat category to nutrient intake as well as the mean intake of vitamin A, varied in the regions. For the males when the quantities of meat were similar, as in both the Pacific region and Quebec, (approximately 130 grams), the percent contribution to vitamin A intake was quite different (39% in the Pacific region and 3% in Quebec). These differences were probably due to a higher proportion of liver in the meat category in the Pacific region. When the intake of cereal products was considered it was evident that although the same average quantity of bread and rolls was eaten by the males in Quebec and in the Pacific region the mean quantity of fibre from these foods differed — 0.45 grams from bread in Quebec and 0.81 grams in the Pacific region. It would appear that a higher proportion of whole grain bread was consumed in the

Pacific region than in Quebec. This was also true for the females of this age group. When the intake of vegetables other than potatoes was considered a regional difference in the percent contribution of vegetables to vitamin intake was evident. For example, the females' mean consumption of vegetables was lower in the Atlantic region than in the Pacific region but the percentage of vitamin A from these was higher. In contrast, the males' mean consumption of vegetables was higher in the Atlantic region than in Ontario but the percentage of vitamin C from this source was lower.

Unpublished data indicated that the only appreciable regional differences in the percentage of food categories consumed by this age group at different times of the day were in meat, poultry, fish, vegetables, fruit group and grains and flour mixtures. The percentages of meat, poultry, and fish eaten during each of the noon and evening meal periods were very similar in the Atlantic region and Quebec whereas in the other regions a greater percentage was eaten after 1700 hours. The percent consumption of vegetables during the designated noon and evening meal periods followed the national pattern in all regions with two exceptions. For the males in the Pacific region only 14% of vegetables was consumed during the designated noon meal period and for the females in the Atlantic and Quebec regions the percentage of vegetables consumed was evenly distributed between the two meal periods. The females in Quebec consumed 40% of their fruit and fruit products during the evening meal period compared to 20% in the other regions. The variation in the percentage of grains and flour mixtures consumed at different times of the day was not consistent for the two sexes. The males in the Pacific region consumed a much higher percentage (23%) after 2000 hours than in any other region (under 13%) whereas the females in the Prairie region consumed 15% of these foods before 1100 hours in comparison with only 3% in the other regions.

7.3 Pattern of Intake Throughout the Day

Tables 7.13 and 7.14 indicate the percentages of this age group consuming some food or beverage during various designated time

periods, their mean caloric intake during these times and the regional differences. Tables 7.15 and 7.16 indicate the percentages of this age group consuming each food category during the different time intervals of the day preceding the interview. Tables 7.17 and 7.18 indicate the percentage of nutrients consumed during the different time intervals.

During the 0500-0859 interval some food or beverage (13% of the calories) was consumed by 78% of the males and 76% of the females. For both sexes the percent vitamin C consumed during this time interval was higher than the percent calories. Calculations showed that of those eating during this time interval 81% of the males and 72% of the females consumed milk and milk products, 31% of the males and 21% of the females breakfast cereals, 32% of the males and 40% of the females fruit, 67% of the males and 72% of the females bread and rolls and 28% of the males and 21% of the females eggs. Unpublished data indicated that there were regional differences in these percentages for the males only. A higher percentage of males in Quebec consumed cheese (14% compared to less than 7% in the other regions) and a lower percentage in Ontario consumed bread and rolls (54% compared to more than 70% in other regions).

During the 1100-1359 time interval some food or beverage (28% of the calories) was consumed by 93% of the males and 96% of the females. The data in Tables 7.15 and 7.16 did not indicate that a pattern of eating the various food categories existed except that, of those eating, up to 100% of the males and 97% of the females had a protein source other than milk. Unpublished data indicated that during this time there were regional differences. For both sexes in the Atlantic region there was a lower percentage consuming a protein source (91% of males and 82% of females). There were also regional differences for both sexes in the percentage consuming potatoes and vegetables. This was higher in Quebec for both food categories and lower in the Pacific region for potatoes. The percentage consuming soup was also higher in Quebec.

During the 1700-1959 time interval some food or beverage (32-36% of calories) was consumed by 93% of the males and by

94% of the females. The food pattern during this time interval varied from that of the noon meal period for both sexes. A higher percentage of this age group consumed vegetables and potatoes and a lower percentage consumed bread and rolls during the evening meal period than during the noon meal period. Unpublished data indicated that this was particularly true of the males in the Pacific region where the percentage consuming vegetables was 2.5 times and potatoes 4 times that of the noon meal period. The same was true for the females except that in the Pacific region the percentage consuming vegetables was 1.5 times and potatoes 9 times that of the noon meal period. Although the percentage of this age group consuming the meat category was the same during the evening meal period as the noon meal period, the mean intake of meat during the evening meal period was greater than that of the noon meal period (Table 7.7).

During the 2000-0459 time interval 80% of the males in this age group had some food or beverage (13% of the calories) and 79% of the females consumed 11% of the calories. There did not appear to be any pattern of food intake for this age group although about 14% of the males and 6% of the females consumed meat and vegetables.

7.4 Summary

The data indicated that the average daily consumption of food by 40-64 year-old males was the equivalent of $1\frac{1}{2}$ cups of milk, 6 ounces of meat, $\frac{3}{4}$ of an egg, 1 serving of breakfast cereal, 4 slices of bread, 6 teaspoons of fat, 3 ounces of baked goods, 2 servings of fruit, $1\frac{1}{2}$ servings of vegetables, $1\frac{1}{2}$ servings of potatoes, 9 teaspoons of sugar and 7 ounces of soft drinks. These intakes were less for every food group except vegetables and breakfast cereals than was the case for younger male adults. The decrease in mean meat consumption was especially marked. The 40-64 year-old females had lower caloric intakes than the males and ate correspondingly less food in most categories such as $\frac{1}{2}$ cup less milk, 2 ounces less meat, and $\frac{1}{4}$ of an egg less, $\frac{1}{2}$ serving less breakfast cereal, 1 slice less of bread, 2 teaspoons less fat, $\frac{1}{2}$ serving less potatoes, 4 teaspoons less sugar and 4

ounces less soft drinks. The females ate approximately 1/2 serving more fruit than the males. When compared to the younger females the differences were not as marked as those of the males.

The data also indicated that for both sexes the mean dietary intake exceeded the recommendations for all nutrients except thiamine and free folate. In addition the females' mean dietary intake of calcium was less than the recommendation.

Dairy products were the primary source of calcium and riboflavin and the data indicated that the females in this age group were not consuming enough to meet the recommended intake for calcium. The meat group was the primary source of protein, fat, iron, vitamin A and niacin. Cereal products were the primary source of calories, carbohydrate and thiamine. An increase in the consumption of enriched or whole grain bread or the enrichment with thiamine of all white flour used in cereal products would appear to be advisable. Fruit and vegetables were the primary source of vitamin C, folate and fibre.

Regional variations were evident in the food consumption patterns of this age group. This was indicated by a higher mean consumption of potatoes and fat and a lower mean consumption of fruit in the Atlantic region and a higher mean consumption of fruit, sugar, soft drinks, mixed dishes and soups in Quebec. Ontario and Pacific regions had a lower mean consumption of potatoes and a higher mean consumption of dairy products.

The time of eating for the males of this age group was similar to that of the 20-39 year age group although a slightly higher percentage of this age group ate before 0900 hours. There were greater differences between the females of this age group and the 20-39 year-old females. More of the 40-64 year age group ate before 0900 hours and fewer between 1400 and 1659 hours. The mean intakes of calories during the various time periods were similar to those of the 20-39 year-old group.

Table 7.1 Mean daily nutrient intake of males (40-64 years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	2671	2905	2767	2506	2753	2590
Protein (g)	94	99	95	91	98	95
39.8 Fat (g)	118	134	118	109	129	116
Total carbohydrate (g)	286	306	314	264	281	269
Fibre (g)	4.16	4.63	4.26	3.89	4.33	4.06
Calcium (mg)	883	919	862	896	861	905
Iron (mg)	16	16	16	15	17	16
Vitamin A (R.E.)	1332	1314	1311	1236	1188	1890
Thiamine (mg)	1.32	1.39	1.39	1.20	1.45	1.20
Riboflavin (mg)	2.09	2.18	2.06	1.98	2.23	2.17
Niacin (N.E.)	37	39	38	35	40	38
Vitamin C (mg)	101	95	108	110	80	98
Free folate (μg)	95	90	94	100	89	98
Total folate (μg)	183	188	179	184	181	186
Sample Size	1222	262	274	181	271	234

Table 7.2 Mean daily nutrient intake of females (40-64 years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	1726	1718	1814	1732	1554	1743
Protein (g)	63	60	62	67	57	68
Fat (g)	75	77	77	77	68	76
Total carbohydrate (g)	197	198	221	189	174	198
Fibre (g)	3.37	3.24	3.55	3.21	3.21	3.79
Calcium (mg)	613	584	542	671	556	709
Iron (mg)	11	11	12	12	11	12
Vitamin A (R.E.)	1031	866	1383	830	945	1062
Thiamine (mg)	0.90	0.85	0.92	0.91	0.81	0.97
Riboflavin (mg)	1.49	1.37	1.44	1.58	1.32	1.68
Niacin (N.E.)	25	23	25	26	23	28
Vitamin C (mg)	106	76	136	103	80	100
Free folate (μg)	88	63	105	89	68	89
Total folate (μg)	148	122	163	150	126	154
Sample Size	1500	335	347	218	320	280

Table 7.3 Percent contribution of food groups to nutrient intake of males (40-64 years)

Nutrient	Dairy Products	Meat, Poultry Fish, Eggs	Cereal Products	Fruit & Fruit Products	Vegetables & Potatoes	Fats & Oils	Other*
Calories	11	23	26	4	7	8	20
Protein	16	48	18	1	5	—	10
Fat	14	39	15	—	4	19	7
Carbohydrate	7	—	43	10	12	—	27
Fibre	—	—	25	17	43	—	14
Calcium	56	6	17	3	6	—	11
Iron	1	35	28	6	12	—	17
Vitamin A	16	27	2	4	21	20	9
Thiamine	8	27	34	6	15	—	10
Riboflavin	30	25	22	3	6	—	13
Niacin	9	47	18	2	8	—	15
Vitamin C	5	—	1	47	44	—	3
Free folate	16	14	20	17	26	—	6

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 7.4 Percent contribution of food groups to nutrient intake of females (40-64 years)

Nutrient	Dairy Products	Meat, Poultry Fish, Eggs	Cereal Products	Fruit & Fruit Products	Vegetables & Potatoes	Fats & Oils	Other*
Calories	11	23	27	7	8	8	15
Protein	17	49	18	2	6	—	7
Fat	14	39	15	1	4	20	6
Carbohydrate	7	1	41	16	12	—	22
Fibre	—	—	20	25	43	—	12
Calcium	54	6	17	5	7	—	9
Iron	1	32	28	8	13	—	17
Vitamin A	13	28	2	13	21	15	6
Thiamine	8	22	33	11	17	—	7
Riboflavin	29	25	23	4	8	—	10
Niacin	10	49	18	3	8	—	11
Vitamin C	3	—	—	61	32	—	2
Free folate	12	12	15	31	26	—	3

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 7.5 Percentage of males (40-64 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	93	96	93	94	90	91
Cheese & Cheese Products	35	22	32	45	25	38
Poultry	18	23	18	15	20	22
Meat	88	84	86	91	92	84
Fish & Shellfish	13	20	18	7	11	17
Eggs	44	46	43	39	45	54
Butter	61	55	66	58	70	48
Margarine	31	48	27	25	27	52
Oils & Other Fats	25	20	32	22	18	33
Nuts & Dried Legumes	22	24	21	27	16	22
Bread & Rolls	97	98	98	95	98	98
Pasta	8	3	11	5	8	15
Grains & Flour Mixtures	74	77	84	71	67	69
Breakfast Cereals	31	31	26	35	37	24
Fruit & Fruit Products	68	56	62	73	72	68
Vegetables	83	82	80	85	81	89

Table 7.5 (cont'd) Percentage of males (40-64 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	73	85	80	64	79	64
Foods Primarily Sugar	91	84	94	87	96	95
All Beverages	97	97	98	94	97	100
Mixed Dishes	9	10	14	8	4	8
Soups	33	19	52	27	26	24
Miscellaneous	41	39	43	40	40	38
Sample Size	1222	262	274	181	271	23

Table 7.6 Percentage of females (40-64 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	91	93	93	92	83	95
Cheese & Cheese Products	34	22	21	45	32	40
Poultry	19	25	25	11	21	23
Meat	81	78	89	74	88	80
Fish & Shellfish	15	16	9	18	17	18
Eggs	41	39	31	49	46	34
Butter	59	52	66	60	58	47
Margarine	39	46	36	42	26	50
Oils & Other Fats	32	28	28	34	30	41
Nuts & Dried Legumes	17	15	13	19	15	28
Bread & Rolls	94	97	95	92	96	90
Pasta	7	2	15	5	4	3
Grains & Flour Mixtures	76	78	78	77	67	78
Breakfast Cereals	23	23	14	27	25	26
Fruit & Fruit Products	75	70	72	76	77	72
Vegetables	88	85	83	90	90	95

Table 7.6 (cont'd) Percentage of females (40-64 years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	64	76	70	55	67	61
Foods Primarily Sugar	87	79	90	87	85	85
All Beverages	97	98	96	97	100	99
Mixed Dishes	7	6	10	4	11	5
Soups	31	23	46	26	23	23
Miscellaneous	42	35	45	41	43	44
Sample Size	1500	335	347	218	320	280

Table 7.7 Percentage of selected food categories consumed by males (40-64 years) during different time periods

	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	21	8	21	7	24	18
Meats	2	3	34	5	47	8
Eggs	42	18	19	1	18	2
Bread & Rolls	20	10	34	4	22	10
Breakfast Cereals	82	11	—	—	5	2
Grains & Flour Mixtures	2	8	34	12	33	11
Fruit & Fruit Products	27	7	24	8	22	13
Vegetables	2	1	31	7	55	4
Potatoes	1	1	32	5	57	6
Foods Primarily Sugar	25	12	19	9	22	13
Sample Size 1222						

Table 7.8 Percentage of selected food categories consumed by females (40-64 years) during different time periods

	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	16	7	29	9	20	19
Meats	2	1	34	3	58	3
Eggs	34	10	32	4	19	1
Bread & Rolls	24	10	31	4	22	8
Breakfast Cereals	69	16	7	—	—	7
Grains & Flour Mixtures	2	3	34	9	40	12
Fruit & Fruit Products	23	8	17	10	27	15
Vegetables	2	1	32	4	59	3
Potatoes	—	—	33	4	61	2
Foods Primarily Sugar	20	10	23	10	20	18
Sample Size 1500						

Table 7.9 Mean daily intake of food groups (grams) by males (40-64 years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	332	314	302	350	357	333
Meat, Fish, Poultry, Eggs	211	220	205	185	250	231
Cereal Products including breakfast cereals	269	318	284	249	260	261
Breakfast Cereals	40	38	48	40	33	32
Fruit and Fruit Products	194	130	216	205	164	203
Vegetables <i>not</i> including potatoes	134	136	148	120	131	143
Potatoes	131	205	159	99	131	99
Fats and Oils	29	43	30	24	29	33
Nuts and Legumes	15	38	8	20	7	8
Foods Primarily Sugar	56	48	73	46	57	47
Mixed Dishes and Soups	150	76	255	126	92	96
Sample Size	1222	262	274	181	271	234

Table 7.10 Mean daily intake of food groups (grams) by females (40-64 years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	225	188	182	266	192	274
Meat, Fish, Poultry, Eggs	145	138	139	160	129	136
Cereal Products including breakfast cereals	174	189	179	167	165	184
Breakfast Cereals	17	15	14	21	18	16
Fruit and Fruit Products	239	150	302	247	179	211
Vegetables <i>not</i> including potatoes	136	105	147	127	137	164
Potatoes	79	110	94	67	73	63
Fats and Oils	20	23	23	18	15	19
Nuts and Legumes	10	11	3	18	4	9
Foods Primarily Sugar	39	39	59	27	32	36
Mixed Dishes and Soups	89	63	143	71	68	64
Sample Size	1500	335	347	218	320	280

Table 7.11 Mean daily intake of food groups (grams) by males (40-64 years) for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	332	345	354	311	291
Meat, Fish, Poultry, Eggs	211	225	203	195	226
Cereal Products including breakfast cereals	269	259	279	253	309
Breakfast Cereals	40	30	46	41	51
Fruit and Fruit Products	194	173	213	196	203
Vegetables <i>not</i> including potatoes	134	124	145	133	139
Potatoes	131	139	139	108	149
Fats and Oils	29	29	34	23	35
Nuts and Legumes	15	11	18	13	21
Foods Primarily Sugar	56	64	60	46	45
Mixed Dishes and Soups	150	177	156	114	140
Sample Size	1222	371	333	249	269

Table 7.12 Mean daily intake of food groups (grams) by females (40-64 years) for the different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	225	227	202	238	240
Meat, Fish, Poultry, Eggs	145	161	134	135	144
Cereal Products including breakfast cereals	174	169	178	170	184
Breakfast Cereals	17	26	14	12	14
Fruit and Fruit Products	239	252	187	194	440
Vegetables <i>not</i> including potatoes	136	143	158	117	111
Potatoes	79	86	80	72	71
Fats and Oils	20	22	22	15	19
Nuts and Legumes	10	6	5	20	7
Foods Primarily Sugar	39	50	40	25	37
Mixed Dishes and Soups	89	100	94	77	80
Sample Size	1500	436	441	290	333

Table 7.13 Percentage of males (40-64 years) in different regions eating during different time periods and their mean caloric intake (kcal)

	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
Time of day (International Time)	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	78	431	73	519	78	479	78	372	82	435	82	411
0900-1059	64	314	60	424	59	268	73	333	61	309	64	282
1100-1359	93	800	95	835	95	943	90	644	93	844	91	762
1400-1659	67	298	49	415	63	267	67	312	76	307	75	260
1700-1959	93	924	92	911	96	936	93	921	86	957	95	832
2000-0459	80	414	86	477	85	314	75	437	80	458	79	482
Sample Size	1222		262		274		181		271		234	

Table 7.14 Percentage of females (40-64 years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	76	283	67	289	77	304	80	268	70	272	74	295
0900-1059	55	175	59	206	53	178	49	149	64	185	65	199
1100-1359	96	504	95	492	98	591	98	477	92	417	92	474
1400-1659	61	210	66	303	65	202	51	167	65	223	71	238
1700-1959	94	659	92	588	95	654	97	684	88	612	92	593
2000-0459	79	236	84	217	71	207	82	245	80	225	79	301
Sample Size	1500		335		347		218		320		280	

Table 7.15 Percentage of males (40-64 years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	63	37	56	29	62	45
Cheese & Cheese Products	6	—	13	—	10	8
Poultry	—	—	6	—	11	—
Meats	11	7	55	9	56	11
Fish & Shellfish	—	—	—	—	7	—
Eggs	22	8	9	—	9	—
Butter	31	14	36	7	32	9
Margarine	15	8	19	—	13	5
Oils & Other Fats	—	—	12	—	1 2	—
Nuts & Dried Legumes	5	—	—	—	6	5
Bread & Rolls	52	25	66	9	52	21
Pasta	—	—	—	—	6	—
Grains & Flour Mixtures	5	12	40	15	41	24
Breakfast Cereals	24	—	—	—	—	—
Fruit & Fruit Products	25	10	29	11	27	16
Vegetables	—	—	43	9	58	11
Potatoes	—	—	29	5	48	7
Foods Primarily Sugar	65	44	44	34	42	36
All Beverages & Soft Drinks	69	54	68	51	71	55
Mixed Dishes	—	—	—	—	6	—
Soups	—	—	17	—	17	—
Miscellaneous	8	7	18	6	16	—
Percent Eating	78	64	93	67	93	80
Sample Size	1222					

Dashes denote anything less than 5%.

Table 7.16 Percentage of females (40-64 years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	55	34	61	26	53	38
Cheese & Cheese Products	5	—	13	—	14	6
Poultry	—	—	8	—	10	—
Meats	6	—	47	5	59	5
Fish & Shellfish	—	—	7	—	8	—
Eggs	16	5	13	—	10	—
Butter	30	12	27	6	23	8
Margarine	19	7	20	—	17	5
Oils & Other Fats	—	—	14	—	20	—
Nuts & Dried Legumes	—	—	—	—	6	—
Bread & Rolls	55	20	57	8	44	16
Pasta	—	—	—	—	5	—
Grains & Flour Mixtures	—	5	37	15	42	22
Breakfast Cereals	16	—	—	—	—	—
Fruit & Fruit Products	36	13	28	18	31	20
Vegetables	—	—	53	6	70	5
Potatoes	—	—	25	—	44	—
Foods Primarily Sugar	51	28	41	23	33	33
All Beverages & Soft Drinks	69	45	71	39	68	47
Mixed Dishes	—	—	—	—	—	—
Soups	—	—	16	—	15	—
Miscellaneous	8	6	18	5	23	7
Percent Eating	76	55	96	61	94	79
Sample Size	1500					

Dashes denote anything less than 5%.

Table 7.17 Percentage of mean intake of nutrients consumed by males (40-64 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	12.7	7.6	27.8	7.5	32.2	12.5
Protein	11.0	7.4	29.0	5.5	36.9	10.4
Fat	11.5	7.5	30.4	5.9	34.3	10.6
Carbohydrate	15.5	8.2	26.6	8.5	28.5	12.8
Calcium	17.4	8.1	26.2	6.6	26.9	14.9
Iron	16.2	7.0	27.2	5.7	34.9	9.1
Vitamin A	13.0	6.7	26.1	5.4	41.7	7.3
Thiamine	18.6	6.9	28.0	5.0	32.2	9.4
Riboflavin	18.4	7.6	24.2	6.3	31.1	12.4
Niacin	11.4	7.2	27.8	6.2	36.9	10.6
Vitamin C	20.5	5.0	28.2	7.4	30.6	8.3
Free Folate	17.8	6.3	26.3	5.6	34.6	9.5
Percent eating	78	64	93	67	93	80
Sample Size	1222					

Table 7.18 Percentage of mean intake of nutrients consumed by females (40-64 years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	12.5	5.6	28.1	7.4	36.1	10.8
Protein	10.0	4.1	30.9	5.4	42.4	7.4
Fat	10.5	4.9	30.6	6.3	39.9	8.1
Carbohydrate	15.4	6.8	25.7	8.6	30.5	13.2
Calcium	16.4	7.2	29.0	7.2	26.2	14.1
Iron	16.9	6.6	26.5	5.5	37.1	7.6
Vitamin A	10.5	4.1	29.3	4.4	46.4	5.5
Thiamine	17.9	5.6	26.6	5.9	34.9	9.3
Riboflavin	17.1	5.8	27.1	6.0	32.4	11.8
Niacin	11.3	4.7	29.3	5.5	41.3	7.9
Vitamin C	20.5	7.0	18.7	6.8	37.4	9.7
Free Folate	15.9	5.3	22.6	5.4	43.3	7.8
Percent eating	76	55	96	61	94	79
Sample Size 1500						

Chapter 8

Adults (65 + years)

Abstract

The mean dietary intakes reported for this age group exceeded the recommendations for all nutrients with the exception of calcium, thiamine and folate. Dairy products were the primary source of calcium and riboflavin; meat group of protein, fat, vitamin A and niacin; cereal products of calories, carbohydrate, iron and thiamine; fruit and vegetables of vitamin C, fibre and folate. This age group seemed to eat the traditional three meals a day with 80% of the caloric intake during the three designated meal periods.

8.1 Nutrient Intake

The national and regional mean intakes of the various nutrients are shown in Tables 8.1 and 8.2. The mean caloric intake of the males was 526 kilocalories more than that of the females with some regional variations. With the exception of vitamin C, the mean intakes of all nutrients were higher for the males as would be expected with a higher caloric intake. Even though the intakes of fat and protein were higher for the males, the percentage of calories from fat (39%) and from protein (14%) was very similar for both sexes. All mean nutrient intakes were above the recommended levels (Appendix A) with the exception of calcium, thiamine and folate.

8.2 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The percent contribution of food groups to nutrient intake, the percentage of this age group consuming each food category and the percentage of food categories consumed during designated time periods are shown in Tables 8.3 to 8.8.

8.2.1 Dairy Products (milk, milk products and cheese)

For both sexes this food group was the primary source of calcium and riboflavin and a secondary source of protein, and for the

females a secondary source of fat. The mean consumption of the males was 273 grams, including 19 grams of cheese and of the females 255 grams, including 17 grams of cheese. When based on calcium content these can be equated to 1.3 cups of milk for the males and 1.2 cups for the females. Milk and milk products were consumed by 93% of the males and 89% of the females. Cheese was consumed by 34% of the males and 37% of the females. Approximately two thirds of the milk and milk products was consumed during designated meal periods.

8.2.2 Meat, Poultry, Fish and Eggs (MPFE)

For both sexes the MPFE group was the primary source of protein, fat, vitamin A and niacin and a secondary source of calories and thiamine. This food group was also a primary source of iron for males and a secondary source for females.

The males' mean intake of this food group was 162 grams, composed of meat (95 grams), eggs (37 grams), poultry (18 grams) and fish (12 grams). For the females the mean intake was 60 grams less than that of the males and was composed of meat (60 grams), eggs (24 grams), poultry (12 grams) and fish (6 grams). This composition was different in the Atlantic region where the mean fish consumption was 36 grams for the males and 17 grams for the females. There was a difference in egg consumption of the females in Ontario and the Prairie region where the mean consumption of 32 grams was double that of the other regions. Meat was eaten by 83% of the males and 80% of the females with a smaller percentage consuming the other categories of this food group. There were regional differences in the percentage of this age group consuming fish in the Atlantic and Pacific regions but this difference was not reflected in the percentage consuming the MPFE group.

It was evident that eggs were consumed for the most part in the morning although the females ate a lower percentage of their eggs during the morning meal period and a higher percentage during the evening meal period than the males. Approximately 40% of the meat, fish and poultry was consumed during the noon meal period with approximately 50% after 1700 hours.

8.2.3 Cereal Products (bread, rolls, pasta, grains and flour mixtures and breakfast cereals)

For both sexes cereal products were the primary source of calories, carbohydrate, iron and thiamine and a secondary source of protein, fibre, calcium, riboflavin, niacin and folate. For the females they were also a secondary source of fat. The males' mean consumption of this food group was 252 grams and that of the females 183 grams. The composition of the cereal group differed for the two sexes with the males consuming a higher proportion of breakfast cereals (25% vs 14%) and the females a higher proportion of bread, rolls and pasta (51% vs 42%). The percentage of grains and flour mixtures was similar (males 33% vs females 35%). Regionally, the greatest difference in these proportions was the greater percentage of bread and rolls consumed by the females in Ontario (60%) compared to the other regions (less than 48%). Although there appeared to be regional differences in the average intake of breakfast cereals (Tables 8.9, 8.10) this was not necessarily a difference in the number or size of servings. When the grams of protein supplied by breakfast cereals were compared there were insignificant regional differences, indicating that the apparent higher intake in the Prairie Region was due to a higher proportion of hot cereal. Bread and rolls were eaten by 91% of the males and 98% of the females, grains and flour mixtures by 72% of the males and 76% of the females and breakfast cereals by 49% of the males and 37% of the females.

Almost all the breakfast cereals were eaten before 1100 hours. Approximately 80% of the bread and rolls were consumed during designated meal times, evenly divided between the three meal periods. Approximately 95% of the grains and flour mixtures were consumed after 1100 hours with a greater percentage consumed by the males during the evening meal period than during the noon meal period.

8.2.4 Fruit and Fruit Products

For both sexes this food group was a primary source of vitamin C. For the females it was also a primary source of folate and a

secondary source of fibre and carbohydrate. The females' mean consumption of fruit was 208 grams and that of the males 165 grams. This food group was consumed by 69% of the males and 85% of the females. Sixty-eight percent of the fruit was eaten by the males during designated meal periods and the consumption was fairly evenly distributed over the three meal periods. The females consumed 70% of this food group during designated meal periods with more before 0900 hours than during the other designated meal periods.

8.2.5 Vegetables (including potatoes)

For both sexes this food group was the primary source of fibre and folate and a secondary source of vitamin A. In addition, for the males it was a primary source and for the females a secondary source of vitamin C.

The females' mean intake of vegetables was similar to that of the males but their intake of potatoes was much lower (Tables 8.9, 8.10). The vegetables in the vegetable category were consumed by 76% of the males and 83% of the females and potatoes by 73% of the males and 70% of the females. All the vegetables including potatoes, were consumed after 1100 hours. The consumption was evenly divided between the two meal periods.

8.2.6 Fats (butter, margarine, oils and other fats)

For both sexes this food group was a secondary source of dietary fat and for males of vitamin A. The males mean intake of this food group was 24 grams, 50% of which was butter, 40% margarine and 10% oils. The females' mean intake was 16 grams, 45% of which was butter, 41% margarine and 14% oils. For both sexes butter was consumed by approximately 47% and margarine by approximately 39% of this age group. These fats were consumed principally at meal times and the consumption was evenly distributed over the three meal periods.

8.2.7 Foods Primarily Sugar, Beverages and Soft Drinks

For the males this food group supplied 12% of the calories and 21% of the carbohydrate and for the females 9% of the calories

and 16% of the carbohydrate. When foods primarily sugar were considered separately, the males' mean consumption was 56 grams and that of the females 40 grams with approximately 73% consumed during the three meal periods.

The mean daily intake of soft drinks was estimated to be 3 ounces for the males and 1 ounce for the females. The mean caloric intake from pure alcohol was also estimated (Section 1.10.1 (c)). This was 46 kilocalories for the males and 20 kilocalories for the females.

8.2.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Neither of these food groups was considered to be an important source of any nutrient. The mean consumption of nuts and dried legumes was only 8 grams for the males and 5 grams for the females, but was consumed by only 14% of the males and 15% of the females. The miscellaneous group contributed only 2% of the caloric intake of both sexes.

8.2.9 Regional and Seasonal Differences

The mean daily intakes of food groups for different regions are shown in Tables 8.9 and 8.10 and for different seasons of the year in Tables 8.11 and 8.12.

In the Atlantic region both sexes had a higher mean consumption of potatoes than in the other regions and also a higher percentage of those consuming them. Both sexes in Quebec had the highest consumption of foods primarily sugar, and of mixed dishes and soups due to a higher consumption of soups. There was a striking difference in the percentage of those consuming soup. The percentage in Quebec was approximately double that of the other regions. The Quebec males had the highest estimated consumption of soft drinks (6 ounces). The total mean consumption of dairy products was lowest for both sexes in Quebec and for the males in the Atlantic region. The males in the Prairie region had a higher consumption of nuts and dried legumes and those in the Pacific region a higher consumption of vegetables than those in the other regions.

There were some differences in the percentage of this age group in the various regions consuming certain food categories which were not reflected in the quantities consumed. The percentage of females in the Atlantic region and of males in Quebec and in the Prairie region consuming cheese was lower than in the other regions. The percentage of males in the Atlantic region consuming oils and other fats and in Ontario consuming grains and flour mixtures and the percentage of females in the Atlantic region consuming nuts and dried legumes were lower than in other regions. The percentage of both sexes in Ontario consuming foods primarily sugar was lower than in other regions.

Additional data showed that while regionally there were no appreciable differences in total mean consumption of fats by either sex the proportions of butter and margarine varied. For the males the proportion of margarine was higher in the Atlantic region (54%), with a very low proportion from oils (1%) whereas in the Prairie region the proportion from butter was higher (62%). The proportion of margarine and oils consumed by the females changed with the season, with a higher proportion of margarine (50%) and a lower proportion of oils and other fats (6%) during the winter months. The proportion of oils consumed increased to 22% in the spring.

There was no appreciable difference in mean intake due to season for the males in this age group but the females' mean consumption of dairy products was higher during the autumn than during the other seasons. Their mean consumption of fruit and fruit products was higher during the spring and lower during the winter.

Unpublished data indicated that there were regional differences in the percent contribution of the meat and vegetable categories to nutrient intake. These differences were not due to quantity but rather to selection. For the males, when the quantities of the meat category consumed were similar, as in both the Prairie and Pacific regions (approximately 85 grams), the percent contribution to vitamin A intake was 25% in the Prairie region and 1% in the Pacific region. These differences were probably due to a higher proportion of liver in the meat consumed in the Prairie region on

the day preceding the interview. For the females, the percent contribution of vitamin A was approximately 31% in Ontario and the Prairie region and 1% in the Pacific region even though the mean consumption of the meat category was similar. There was also a difference in the mean vitamin A intakes in these regions (Table 8.1, 8.2).

When the vegetable category data was considered separately it was evident that the percent contribution of free folate was related to selection. For example, the females consumed 96 grams of vegetables in the spring, which contributed 24% of the folate, yet in the autumn 118 grams of vegetables contributed only 14% of the folate.

Unpublished data indicated that appreciable regional differences in the percentage of food categories consumed by both sexes at different times of the day were in the meat, poultry and fish categories, vegetable group and in grains and flour mixtures and for the females in dairy products and fruit. In the Atlantic region this age group tended to eat more meat, fish and poultry during the noon meal period than during the evening meal period. The reverse was true in the Pacific region. The percentage of the vegetable group consumed at different times of the day followed the national pattern except in Ontario and in the Pacific region where more was consumed between 1700 hours and 1959 hours than during other time intervals. The percentage of grains and flour mixtures consumed after 1700 hours in Ontario was approximately 70% compared to 50% in the other regions. The Quebec females tended to consume a greater percentage of dairy products during designated meal periods (80%) and more fruit before 0900 hours (44%) than females in other regions.

8.3 Pattern of Intake Throughout the Day

Tables 8.13 and 8.14 indicate the percentages of this age group consuming some food or beverage during various designated time periods, their mean caloric intake during these times and the regional differences. Tables 8.15 and 8.16 indicate the percentage of this age group consuming each food category during the different time intervals of the day preceding the interview. Tables

8.17 and 8.18 indicate the percentage of the nutrients consumed during the different time intervals.

During the 0500-0859 interval some food or beverage (16-17% of calories) was consumed by 77% of the males and by 74% of the females. During this period the percent intake of vitamin C by the females was higher than the percent calories, probably due to the quantity of fruit eaten during this time. Calculations showed that of those eating during this time interval, approximately 83% consumed milk and milk products, 49% of the males and 31% of the females ate breakfast cereals, 32% of the males and 54% of the females fruit, 30% of the males and 20% of the females eggs and 74% of the males and 77% of the females bread and rolls. Unpublished data indicated that there were no appreciable regional differences in these percentages except that a lower percentage of the females in the Pacific region consumed bread and rolls (60%) and a higher percentage consumed breakfast cereals (53%) than in other regions.

During the 0900-1059 time interval the pattern of eating was similar to the earlier morning period and although less than 50% consumed anything at this time it would appear from the data that a large proportion of those eating at this time were consuming a meal rather than just a snack.

During the 1100-1359 time interval some food or beverage (29%-32% of calories) was consumed by 95% of the males and by 97% of the females. The only obvious pattern for consumption of food categories was a protein source other than milk being consumed by 100% of females and 98% of males. Unpublished data indicated that during this time there were regional differences in percentages consuming meat, vegetables and potatoes, grains and flour mixtures and soups. A lower percentage of both sexes in the Pacific region had a source of protein other than milk (approximately 82%) and a lower percentage consumed the meat category and vegetable group than in the other regions. A higher percentage of both sexes in Quebec compared to other regions consumed grains and flour mixtures and soups.

During the 1700-1959 time interval some food or beverage (32-34% of calories) was consumed by 91% of the males and

by 94% of the females. The food pattern during this time interval did not vary from that of the noon meal period to any extent.

Unpublished data indicated that there was some variation from the national pattern in all regions. There were both increases and decreases in the percentage of this age group consuming the various food categories during the evening meal period when compared to the percentages consuming them during the noon meal period. In the Atlantic region a lower percentage of males consumed potatoes and a lower percentage of females consumed meat, vegetables and potatoes. In Quebec a lower percentage of both sexes consumed the meat category and potatoes. In Ontario a higher percentage of males consumed fruit and a higher percentage of females consumed eggs, vegetables and potatoes. In the Prairie region a lower percentage of males consumed meat, vegetables and potatoes. In the Pacific region a higher percentage of both sexes consumed meat, vegetables and potatoes and a lower percentage of females consumed bread and rolls. Less than 80% of the males in the Prairie region and of the females in the Atlantic region consumed a protein source other than milk during this time interval.

8.4 Summary

The data indicated that the average daily consumption of 65 + year-old males was the equivalent of $1\frac{1}{4}$ cups of milk, 5 ounces of meat, 3 slices of bread, a large serving of breakfast cereal, 2 ounces of baked goods, $1\frac{1}{2}$ servings of fruit, 1 serving of vegetables, $1\frac{1}{4}$ servings of potatoes, 5 teaspoons of fats, 8 teaspoons of sugar and 3 ounces of soft drinks. The females had lower caloric intakes than the males and ate correspondingly less food in some of the categories. On the average they had half the amount of breakfast cereal, 2 ounces less meat, $\frac{1}{2}$ serving less potatoes, $1\frac{1}{2}$ teaspoons less fat, 3 teaspoons less sugar and half the amount of soft drinks. On the other hand, their average intake of fruit was $\frac{1}{2}$ serving greater. There were some regional variations in intakes but the same trends were exhibited.

Dairy products were the primary source of calcium and riboflavin; the MPFE group, the primary source of protein, fat,

vitamin A and niacin; cereal products of calories, carbohydrate, iron and thiamine; fruits and vegetables of vitamin C, folate and fibre.

Data on the pattern of food consumption indicated that for 65 + males it was similar to that of 40-64 year-old males except for a higher percent intake of grains and flour mixtures between 1700 and 1959 hours. It was also noted that for both sexes, the consumption of meat, vegetables and potatoes was more evenly divided between the designated noon and evening meal periods than it was for the 40-64 year olds. The food consumption pattern for the 65 + females was similar to that of the males except that the females' consumption of grains and flour mixtures was more evenly divided between the noon and evening meal periods. For both sexes the percentage of all food groups eaten after 2000 hours was lower than for the 40-64 year age group. Regionally the only difference was the tendency in the Pacific region to follow the pattern of the 40-64 year age group with a higher percentage of meat, potatoes and vegetables consumed after 1700 hours and a higher percentage consuming them.

The mean nutrient intake met the recommendations for all nutrients with the exception of calcium, thiamine and folate. When additional data on the nutrient intake of those persons living alone or in families of two or more were examined it was evident that for either sex the mean intake of all nutrients was independent of living arrangements (unpublished data).

Table 8.1 Mean daily nutrient intake of males (65 + years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	2056	2115	2252	1922	2099	1925
Protein (g)	72	73	73	74	70	71
Fat (g)	89	89	98	85	92	80
Total carbohydrate (g)	235	257	258	209	247	227
Fibre (g)	3.86	4.24	3.64	3.82	3.86	4.07
Calcium (mg)	709	781	645	695	725	789
Iron (mg)	13	15	13	12	14	13
Vitamin A (R.E.)	1113	1096	1217	977	1288	1016
Thiamine (mg)	1.08	1.09	1.15	1.02	1.12	1.07
Riboflavin (mg)	1.77	1.80	1.85	1.70	1.73	1.80
Niacin (N.E.)	28	27	30	27	28	28
Vitamin C (mg)	85	100	79	88	74	98
Free folate (μ g)	79	81	74	82	76	86
Total folate (μ g)	151	159	143	148	156	159
Sample Size	881	165	186	121	215	194

Table 8.2 Mean daily nutrient intake of females (65+ years) in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	1530	1513	1665	1520	1447	1422
Protein (g)	54	49	54	57	52	54
Fat (g)	63	62	70	61	62	58
Total carbohydrate (g)	187	194	205	185	175	173
Fibre (g)	3.30	3.19	3.09	3.51	3.02	3.53
Calcium (mg)	619	612	557	682	547	641
Iron (mg)	10	10	10	10	10	10
Vitamin A (R.E.)	1008	849	962	1108	1102	772
Thiamine (mg)	0.85	0.83	0.90	0.88	0.77	0.83
Riboflavin (mg)	1.47	1.37	1.34	1.65	1.33	1.39
Niacin (N.E.)	21	18	22	22	20	20
Vitamin C (mg)	87	84	93	91	72	83
Free folate (μg)	74	65	72	82	67	73
Total folate (μg)	130	121	129	135	123	131
Sample Size	818	178	177	133	172	158

Table 8.3 Percent contribution of food groups to nutrient intake of males (65 + years)

Nutrient	Dairy Products	Meat, Poultry Fish, Eggs	Cereal Products	Fruit & Fruit Products	Vegetables & Potatoes	Fats & Oils	Other*
Calories	12	22	29	5	7	8	16
Protein	18	47	20	1	6	—	6
Fat	15	38	16	—	3	21	5
Carbohydrate	7	—	44	11	12	—	24
Fibre	—	—	28	19	42	—	10
Calcium	56	6	18	4	7	—	8
Iron	2	32	34	7	12	—	14
Vitamin A	16	29	3	3	22	20	6
Thiamine	8	24	40	6	17	—	5
Riboflavin	30	24	27	3	7	—	9
Niacin	11	47	21	2	9	—	9
Vitamin C	6	—	1	47	45	—	1
Free folate	16	14	22	16	28	—	4

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 8.4 Percent contribution of food groups to nutrient intake of females (65 + years)

Nutrient	Dairy Products	Meat, Poultry Fish, Eggs	Cereal Products	Fruit & Fruit Products	Vegetables & Potatoes	Fats & Oils	Other*
Calories	15	18	31	8	7	7	13
Protein	22	40	22	2	6	—	6
Fat	20	32	18	1	3	20	5
Carbohydrate	9	—	44	17	11	—	19
Fibre	—	—	26	26	39	—	9
Calcium	58	4	18	5	7	—	8
Iron	2	27	34	9	12	—	14
Vitamin A	16	34	3	4	22	14	5
Thiamine	10	19	39	10	16	—	5
Riboflavin	33	21	26	4	6	—	9
Niacin	13	43	24	3	8	—	8
Vitamin C	4	1	—	62	31	—	1
Free folate	15	13	18	25	25	—	3

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

Table 8.5 Percentage of males (65 + years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	93	94	85	96	93	96
Cheese & Cheese Products	34	29	17	54	18	41
Poultry	17	18	24	11	17	20
Meat	83	80	82	89	80	79
Fish & Shellfish	11	29	7	10	7	17
Eggs	44	32	40	49	46	41
Butter	46	46	53	39	50	43
Margarine	40	56	37	39	32	49
Oils & Other Fats	21	5	23	27	18	18
Nuts & Dried Legumes	14	11	14	14	15	16
Bread & Rolls	91	98	95	84	94	93
Pasta	9	3	12	13	6	5
Grains & Flour Mixtures	72	82	80	61	74	74
Breakfast Cereals	49	45	42	56	52	46
Fruit & Fruit Products	69	71	59	74	66	78
Vegetables	76	78	68	80	73	85

Table 8.5 (cont'd) Percentage of males (65+ years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	73	86	73	72	71	66
Foods Primarily Sugar	88	93	96	77	93	94
All Beverages	98	100	98	97	96	99
Mixed Dishes	5	2	6	7	6	2
Soups	35	15	64	27	30	21
Miscellaneous	40	26	34	47	39	43
Sample Size	881	165	186	121	215	194

Table 8.6 Percentage of females (65 + years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	89	97	77	96	83	92
Cheese & Cheese Products	37	19	37	45	31	37
Poultry	17	18	20	12	23	18
Meat	80	76	81	84	81	68
Fish & Shellfish	10	18	7	9	7	16
Eggs	36	29	18	47	45	29
Butter	47	49	49	47	47	40
Margarine	38	54	38	32	39	45
Oils & Other Fats	23	16	23	27	19	22
Nuts & Dried Legumes	15	6	13	14	23	17
Bread & Rolls	98	99	99	99	99	94
Pasta	11	1	21	9	6	9
Grains & Flour Mixtures	76	89	86	67	71	79
Breakfast Cereals	37	35	25	42	36	45
Fruit & Fruit Products	85	74	85	89	79	87
Vegetables	83	87	75	86	83	88

Table 8.6 (cont'd) Percentage of females (65+ years) in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Potatoes	70	84	62	73	73	60
Foods Primarily Sugar	83	91	92	72	90	86
All Beverages	97	98	96	99	99	87
Mixed Dishes	4	3	2	4	5	6
Soups	30	16	50	27	26	17
Miscellaneous	40	29	23	47	49	41
Sample Size	818	178	177	133	172	158

Table 8.7 Percentage of selected food categories consumed by males (65+ years) during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	28	10	19	8	21	14
Meats	3	1	39	3	51	3
Eggs	48	11	11	1	26	4
Bread & Rolls	27	6	28	6	26	7
Breakfast Cereals	77	14	4	2	1	2
Grains & Flour Mixtures	2	3	30	8	46	11
Fruit & Fruit Products	23	12	18	9	27	12
Vegetables	2	2	41	4	48	3
Potatoes	1	—	48	2	48	1
Foods Primarily Sugar	26	11	17	7	30	10
Sample Size 881						

Table 8.8 Percentage of selected food categories consumed by females (65+ years) during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	23	10	27	7	17	17
Meats	2	1	44	3	49	2
Eggs	41	8	15	1	35	—
Bread & Rolls	28	9	26	3	29	6
Breakfast Cereals	65	23	1	1	9	1
Grains & Flour Mixtures	3	3	35	13	37	10
Fruit & Fruit Products	30	12	20	8	20	10
Vegetables	1	1	41	3	53	2
Potatoes	—	—	47	2	50	1
Foods Primarily Sugar	20	9	22	10	31	9
Sample Size 818						

Table 8.9 Mean daily intake of food groups (grams) by males (65+ years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	273	228	236	300	279	298
Meat, Fish, Poultry, Eggs	162	158	161	173	158	142
Cereal Products including breakfast cereals	252	296	245	230	283	236
Breakfast Cereals	62	71	45	58	88	58
Fruit & Fruit Products	165	184	143	166	167	186
Vegetables <i>not</i> including potatoes	118	116	113	117	98	162
Potatoes	124	155	123	139	95	107
Fats and Oils	24	28	29	18	27	22
Nuts and Legumes	8	6	7	7	14	2
Foods Primarily Sugar	56	48	71	47	59	54
Mixed Dishes and Soups	108	53	235	57	97	64
Sample Size	881	165	186	121	215	194

Table 8.10 Mean daily intake of food groups (grams) by females (65+ years) in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	255	223	196	301	223	289
Meat, Fish, Poultry, Eggs	102	91	99	107	110	90
Cereal Products including breakfast cereals	183	179	210	173	181	166
Breakfast Cereals	26	27	21	24	40	29
Fruit and Fruit Products	208	188	205	220	189	217
Vegetables <i>not</i> including potatoes	103	106	100	106	89	118
Potatoes	80	107	78	81	81	56
Fats and Oils	16	20	18	14	17	15
Nuts and Legumes	5	8	4	4	4	7
Foods Primarily Sugar	40	42	56	30	46	28
Mixed Dishes and Soups	82	59	152	61	65	55
Sample Size	818	178	177	133	172	158

Table 8.11 Mean daily intake of food groups (grams) by males (65+ years) for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	273	272	267	280	273
Meat, Fish, Poultry, Eggs	162	170	166	158	142
Cereal Products including breakfast cereals	252	255	265	238	246
Breakfast Cereals	62	61	53	72	63
Fruit and Fruit Products	165	175	167	148	168
Vegetables <i>not</i> including potatoes	118	119	126	104	126
Potatoes	124	133	114	123	129
Fats and Oils	24	26	27	16	26
Nuts and Legumes	8	8	9	9	1
Foods Primarily Sugar	56	46	60	66	52
Mixed Dishes and Soups	108	128	92	94	119
Sample Size	881	255	290	174	162

Table 8.12 Mean daily intake of food groups (grams) by females (65+ years) for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	255	222	210	341	253
Meat, Fish, Poultry, Eggs	102	100	106	111	80
Cereal Products including breakfast cereals	183	177	179	193	183
Breakfast Cereals	26	27	28	27	19
Fruit and Fruit Products	208	241	207	185	169
Vegetables <i>not</i> including potatoes	103	96	106	118	84
Potatoes	80	80	70	91	70
Fats and Oils	16	16	18	16	15
Nuts and Legumes	5	5	5	4	5
Foods Primarily Sugar	40	45	37	35	43
Mixed Dishes and Soups	82	99	66	65	109
Sample Size	818	230	277	153	158

Table 8.13 Percentage of males (65 + years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	77	462	71	457	75	564	84	367	76	526	64	451
0900-1059	41	288	38	317	42	241	29	302	51	257	56	357
1100-1359	95	628	99	676	96	769	95	527	95	667	88	519
1400-1659	57	246	47	274	55	247	54	201	63	267	66	296
1700-1959	91	760	90	697	93	742	88	889	90	666	96	624
2000-0459	63	254	73	305	67	246	52	248	66	255	76	235
Sample Size	881		165		186		121		215		194	

Table 8.14 Percentage of females (65 + years) in different regions eating during different time periods and their mean caloric intake (kcal)

Time of day (International Time)	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	74	322	69	346	88	345	75	312	66	301	60	307
0900-1059	45	219	49	247	35	159	40	242	57	229	64	210
1100-1359	97	499	95	468	100	611	99	474	93	475	95	399
1400-1659	50	188	55	218	56	236	39	160	55	168	68	169
1700-1959	94	519	89	491	88	565	99	507	97	475	91	545
2000-0459	72	170	77	183	65	107	74	214	73	160	73	148
Sample Size	818		178		177		133		172		158	

Table 8.15 Percentage of males (65+ years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	65	27	57	24	55	32
Cheese & Cheese Products	5	—	13	—	12	—
Poultry	—	—	9	—	9	—
Meats	11	—	52	5	49	6
Fish & Shellfish	—	—	6	—	5	—
Eggs	23	5	7	—	12	—
Butter	26	9	23	7	24	6
Margarine	24	5	26	—	21	—
Oils & Other Fats	—	—	9	—	13	—
Nuts & Dried Legumes	—	—	—	—	—	—
Bread & Rolls	57	15	54	12	57	16
Pasta	—	—	7	—	—	—
Grains & Flour Mixtures	5	—	39	12	42	18
Breakfast Cereals	38	9	—	—	—	—
Fruit & Fruit Products	25	11	24	11	33	14
Vegetables	—	—	48	5	47	—
Potatoes	—	—	43	—	41	—
Foods Primarily Sugar	60	27	49	29	48	31
All Beverages & Soft Drinks	70	32	71	37	70	35
Mixed Dishes	—	—	—	—	—	—
Soups	—	—	21	—	17	—
Miscellaneous	10	—	19	5	23	5
Percent Eating	77	41	95	57	91	63
Sample Size 881						

Dashes denote anything less than 5%.

Table 8.16 Percentage of females (65+ years) consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	61	30	61	24	64	40
Cheese & Cheese Products	8	—	22	—	13	5
Poultry	—	—	12	—	5	—
Meats	5	—	51	—	47	5
Fish & Shellfish	—	—	—	—	5	—
Eggs	15	—	7	—	16	—
Butter	24	7	20	—	29	6
Margarine	20	9	20	—	19	7
Oils & Other Fats	—	—	12	—	12	—
Nuts & Dried Legumes	—	—	5	—	5	—
Bread & Rolls	57	21	58	8	56	17
Pasta	—	—	6	—	5	—
Grains & Flour Mixtures	—	7	44	14	41	21
Breakfast Cereals	23	10	—	—	—	—
Fruit & Fruit Products	40	20	36	13	40	19
Vegetables	—	—	51	—	61	—
Potatoes	—	—	36	—	41	—
Foods Primarily Sugar	51	25	37	23	42	28
All Beverages & Soft Drinks	68	33	73	29	72	33
Mixed Dishes	—	—	—	—	—	—
Soups	—	—	19	—	14	—
Miscellaneous	10	—	22	—	15	7
Percent Eating	74	45	97	50	94	72
Sample Size 818						

Dashes denote anything less than 5%.

Table 8.17 Percentage of mean intake of nutrients consumed by males (65 + years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	17.2	5.7	29.0	6.8	33.6	7.8
Protein	15.0	4.6	32.3	5.2	36.9	5.9
Fat	15.7	4.5	31.1	5.5	36.2	7.0
Carbohydrate	19.5	7.2	26.9	7.7	30.3	8.6
Calcium	22.9	7.9	24.8	7.4	26.3	10.9
Iron	22.2	6.5	28.2	4.6	32.9	5.6
Vitamin A	16.3	5.0	35.6	5.2	31.7	6.3
Thiamine	23.5	6.8	28.7	4.3	30.9	5.9
Riboflavin	24.6	7.8	27.1	5.7	27.4	7.7
Niacin	16.1	5.0	31.8	5.4	36.4	5.6
Vitamin C	19.2	8.3	29.4	5.9	30.2	7.1
Free Folate	20.6	6.2	29.2	4.9	33.2	6.1
Percent Eating	77	41	95	57	91	63
Sample Size	881					

Table 8.18 Percentage of mean intake of nutrients consumed by females (65+ years) during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	15.6	6.5	31.8	6.2	31.9	8.0
Protein	13.5	4.8	36.2	4.5	34.7	6.2
Fat	12.8	5.4	34.7	4.8	34.9	7.4
Carbohydrate	18.9	8.0	28.4	7.2	28.8	8.8
Calcium	19.9	7.8	30.1	6.4	24.6	11.3
Iron	18.3	10.1	29.0	4.9	32.8	5.1
Vitamin A	11.6	4.1	36.9	7.5	34.3	5.6
Thiamine	20.1	10.3	29.5	3.8	31.0	5.5
Riboflavin	19.0	10.3	29.8	6.0	26.9	8.2
Niacin	14.3	6.5	35.4	5.0	33.9	5.1
Vitamin C	27.3	10.8	24.9	5.4	25.0	6.5
Free Folate	19.9	8.6	28.1	5.7	31.5	6.3
Percent Eating	74	45	97	50	94	72
Sample Size 818						

Chapter 9

Pregnant Women

(Second and Third Trimester)*

Abstract

Pregnant women had a pattern of food consumption similar to that of the 20-39 year-old females except for modest increases in milk and fruit consumption. There was also an increase in caloric intake and a proportionate increase in other nutrients. The mean nutrient intakes from food were below the recommended levels for pregnancy for folate, iron and calcium. The use of vitamin and mineral supplements was reported by 88% of this group.

9.1 Nutrient Intake

The national and regional mean intakes of the various nutrients are shown in Table 9.1. The mean caloric intake was approximately 250 kilocalories more than that of the 20-39 year-old females. The differences in caloric intake showed considerable regional variation with an increase of 476 kilocalories in the Pacific region and of only 160 kilocalories in Ontario. As would be expected with the increase in caloric intake, the increase in all nutrients was highest in the Pacific region. The percentages of calories from fat and from protein were similar to those of the 20-39 year-old females. Although there was some increase in the consumption of dairy products, the mean nutrient intake of calcium was below the recommended intake for pregnancy (Appendix A). As with the 20-39 year-old females the mean intake of thiamine was borderline and the intakes of folate and iron were below recommended levels. There were regional differences in the intake of certain nutrients due to differences in the amounts of dairy products consumed and in food selection within the meat group.

9.2 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The percent contribution of food groups to nutrient intake, the
**Because of the mode of selection⁽¹⁾ data were not weighted and therefore do not represent unbiased estimates of the pregnant population.*

percentage of pregnant women consuming each food category and the percentage of food categories consumed during designated time periods are shown in Tables 9.2 to 9.4.

9.2.1 Dairy Products (milk, milk products and cheese)

This food group was the primary source of calcium, riboflavin and free folate and a secondary source of calories, protein, fat, vitamin A and niacin. The mean consumption was 544 grams (including 17 grams of cheese) which, when based on calcium content, can be equated to 2.4 cups of milk. This was an increase of one cup over that consumed by the 20-39 year-old females. Milk and milk products were consumed by 95% and cheese by 37% of these females compared to 92% and 34% of the 20-39 year-old females. Approximately two thirds of the milk and milk products was consumed at designated meal times.

9.2.2 Meat, Poultry, Fish and Eggs (MPFE)

This food group was the primary source of protein, fat, iron, vitamin A and niacin and a secondary source of calories, thiamine and riboflavin. The mean intake of this food group was 160 grams, composed of meat (99 grams), eggs (31 grams), poultry (17 grams) and fish (13 grams). This was very similar to the amount consumed by the 20-39 year-old females. Meat was eaten by 83% of these females. It was evident that eggs were consumed for the most part during the morning. Approximately 27% of the meat, fish and poultry was consumed during the noon meal period with 65% after 1700 hours.

9.2.3 Cereal Products (bread, rolls, pasta, grains and flour mixtures and breakfast cereals)

Cereal products were the primary source of calories, carbohydrate and thiamine and a secondary source of calcium, iron and niacin. The mean consumption was 202 grams, very similar to that of the 20-39 year-old females and was composed of 49% bread, rolls and pasta, 38% grains and flour mixtures and 13% breakfast

cereals. Bread and rolls were eaten by 94% and grains and flour mixtures by 77% of these women. Breakfast cereals were consumed by 35% compared to 21% of the 20-39 year-old females. The pattern of consumption of cereal products (excluding breakfast cereals) during the day was similar to that of the 20-39 year-old females. The percentage of breakfast cereals consumed between 0900 and 1059 hours by the pregnant women was higher and before 0900 hours lower than that of the 20-39 year-old females.

9.2.4 Fruit and Fruit Products

This food group was a primary source of vitamin C and a secondary source of fibre and folate. The mean consumption was 301 grams which was 97 grams more than that of the 20-39 year-old females. This food group was consumed by 83% of these women compared to 72% of the 20-39 year-old females. The data indicates an increase in the quantity of fruit as well as in the percentage of the population eating it. The consumption was evenly distributed throughout the day.

9.2.5 Vegetables (including potatoes)

This food group was the primary source of fibre and folate and a secondary source of vitamin A and vitamin C.

The mean intake of vegetables and potatoes was 270 grams which was only slightly higher than that of the 20-39 year-old females. The vegetables in the vegetable category were consumed by 90% and potatoes by 70% of these women. This food group was consumed principally after 1100 hours. More was consumed during the evening meal period than the noon period except in Quebec where the consumption was evenly divided between these two meal periods.

9.2.6 Fats (butter, margarine, oils and other fats)

This food group was a secondary source of dietary fat. The mean intake was 24 grams, 56% of which was butter, 24% margarine and 20% oils and other fats. Additional data showed that these

proportions varied among regions. The proportion from butter was higher in Quebec (68%) and lower in the Pacific region (45%). Butter was consumed by 65% and margarine by 31% of these females.

These fats appeared to be consumed principally at meal times with more consumed during the noon meal period than during other meal periods.

9.2.7 Foods Primarily Sugar, Beverages and Soft Drinks

This food group supplied 9% of the calories and 18% of the carbohydrate. When foods primarily sugar were considered separately the mean consumption was 50 grams. Consumption of foods primarily sugar was fairly evenly distributed throughout the day.

The mean daily intake of soft drinks was estimated to be 4½ ounces. The mean caloric intake from pure alcohol was estimated to be only 13 kilocalories.

9.2.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Neither of these food groups was considered to be an important source of any nutrient. The mean consumption of nuts and dried legumes was only 15 grams, and was consumed by 20% of these females. The miscellaneous group contributed only 4% of the caloric intake.

9.2.9 Regional and Seasonal Differences

The mean daily intakes of food groups for different regions are shown in Table 9.5 and for the different seasons in Table 9.6.

The regional differences were similar to those for the 20-39 year-old females. The pregnant women in Quebec had a lower mean intake of dairy products and of calcium and a higher consumption of foods primarily sugar. They had a higher mean consumption of the vegetable category and along with those in the Atlantic region a higher mean consumption of potatoes. The Quebec pregnant women also had a higher consumption of mixed dishes and soups than those in the other regions. The pregnant

women in Ontario and the Pacific region had a higher mean consumption of dairy products than in the other regions. There were no regional differences in the percentages consuming milk and milk products (Table 9.3). The percentage of these women consuming butter was higher in Quebec and lower in the Atlantic and Pacific regions than in the other regions.

The only appreciable difference in consumption due to a change in season was for fruit and fruit products. More was consumed in the summer than during the winter season.

Unpublished data indicated that there were regional differences in the percent contribution of meat and vegetable categories to nutrient intakes. These differences were not due to quantity but rather to selection. Although the quantity of meat consumed in the Atlantic region was the same as that in the Pacific region the percent contribution to vitamin A intake was 7% in the Atlantic region and 43% in the Pacific region. This was probably due to a higher proportion of liver in the meat category consumed in the Pacific region on the day preceding the interview. When the vegetable category data was considered it was evident that the percent contribution of vitamin A was related to selection. For example, the mean quantity of the vegetable category was similar in the Atlantic and the Prairie regions but contributed 28% of the vitamin A in the Atlantic region and 14% in the Prairie region.

9.3 Pattern of Intake Throughout the Day

Table 9.7 indicates the percentage of pregnant women consuming some food or beverage during various designated time periods, their mean caloric intake during these times and the regional differences. The percentage eating at different times of the day was very similar to that of the 20-39 year-old females except for a slight increase in the percentage eating after 2000 hours. This was most evident in the Atlantic region.

Table 9.8 indicates the percentage of these women consuming each food category during the different time intervals of the day preceding the interview. Table 9.9 indicates the percentage of nutrients consumed during the various designated time periods.

During the 0500-0859 interval some food or beverage (11% of the calories) was consumed by 62% of these women. During this period the percent intake of vitamin C was higher than the percentage of calories probably due to the selection of fruit at this time. Calculations showed that for those eating during this time interval a higher percentage consumed fruit and breakfast cereals than did the 20-39 year-old females. Unpublished data indicated that there were regional differences in percentages with a lower percentage consuming bread in Ontario and a higher percentage consuming cheese and bread in Quebec than in other regions.

During the 0900-1059 time interval the pattern of eating was similar to that of the 20-39 year-old females except that a higher percentage seemed to be eating more breakfast foods at this time.

During the 1100-1359 time interval some food or beverage (25% of the calories) was consumed by 93% of these females. As with the 20-39 year-old females there was no pattern of eating and the percentages eating the various food categories was very similar. The most striking regional difference was in the consumption of potatoes. Of those eating during this period, less than 10% in the Pacific and Ontario regions consumed potatoes compared to 57% in Quebec. Unpublished data indicated some regional differences in the percentages of vitamin C and folate consumed during this time period. In Quebec these were higher than in the other regions, probably due to the higher consumption of potatoes and other vegetables at this time.

During the 1400-1659 time interval some food or beverage (10% of the calories) was consumed by 76% of these females. There was no pattern to the food intake, which was similar to the 20-39 year-old females, except for an increase in the percentage eating fruit.

During the 1700-1959 time interval some food or beverage (33% of the calories) was consumed by 93% of these females. The food pattern during this time interval was similar to that of the 20-39 year-old females with the same regional variations except for a slight increase in Quebec in the percentage consuming bread during this time period compared to a decrease in the other

regions (unpublished data). During this period the percentages of protein, fat, vitamin A and niacin were higher than the percent calories because of the consumption of meat.

During the 2000-0459 time interval some food or beverage (13% of the calories) was consumed by 86% of these females and the pattern of intake was similar to that of the 20-39 year-old females.

9.4 Changes in Food Consumption Pattern because of Pregnancy

In order to ascertain the pregnant women's opinion concerning any dietary changes during pregnancy, questions were asked during the dietary interview. It was indicated by 92% of the women that they had made some change and by 67% of them that this change was primarily self-imposed. Only 19% of the total sample said the change was on the advice of a doctor or clinic, although there was some regional variation. The doctor or clinic seemed to have a greater influence in Quebec (30%) and less in the Pacific region (13%).

The percentage of pregnant women who reported a change in their pattern of food consumption during pregnancy is shown in Table 9.10. Milk and fruit were the foods for which the greatest percentage reported a change in consumption. Approximately 60% of this group reported that they had increased their consumption of these foods. These opinions were confirmed by comparing the mean intakes from the dietary recall data of the pregnant women with those of the 20-39 year-old females. This comparison indicated an increase in the consumption of dairy products and fruits and no change in the consumption of the MPFE group, with insignificant changes in the other food groups. In addition, regional differences in reported changes also followed the mean consumption of specific food groups in the various regions. For example, the lowest percentage claiming an increase in milk consumption (45%) was in Quebec (unpublished data), which also had the lowest mean consumption of milk and milk products.

9.5 Use of Supplemental Vitamins and Minerals

Based on the direct question as to the use of vitamin and mineral

supplements, only 12% indicated non-use. Of those who indicated that they took supplements, 87% responded that either a doctor or nurse had recommended this measure. The recall data indicated that 23% of the pregnant women had not taken a supplement.

There were some regional differences in the percentages reporting non-use of supplements — a high of 19% of the group in the Atlantic region and a low of 5% in Quebec. However, according to the dietary recalls 33% in both these regions indicated non-use.

The supplements used by pregnant women did not all contain the same nutrients. Additional data indicated that supplements containing vitamin C and/or those containing iron were consumed by 41% of the users of supplements. Vitamin A and vitamin D were each ingested by approximately 37%, calcium by 35%, thiamine, riboflavin and niacin by 28% and folate by 22% of this group.

9.6 Summary

The data indicated that the average daily consumption of food by pregnant women was similar to that of the 20-39 year-old females except for an increase of about 1 cup of milk and almost 1/2 serving of fruit, and a slight decrease in the quantity of soft drinks. The food groups which were primary sources of nutrients were also the same as those of the 20-39 year-old females. The increase in calories could be attributed to the increase in milk consumption and a slight increase in the consumption of most other food groups.

The pattern of food consumption was also similar to that of the 20-39 year-old females except that a higher percentage of breakfast cereals was consumed between 0900 and 1059 hours by the pregnant women. The percentage of those eating at different times of the day was similar to the 20-39 year olds except for a small increase in the percentage eating after 2000 hours.

The conscious change in eating patterns during pregnancy reported by the women agreed with the 24-hour recall data. This change was primarily self-imposed. A high percentage reported that they took vitamin and mineral supplements and that these had been recommended by a doctor or a nurse. When considering

the total mean nutrient intake from food and from supplements, additional data indicated that the mean intake of the group taking supplements containing thiamine, iron, calcium or free folate met the recommendations for these particular nutrients. The mean nutrient intakes from food were below the recommended levels for pregnancy for folate, iron and calcium.

References

1. Canada, Department of National Health and Welfare, Ottawa. *Nutrition Canada National Survey. Nutrition: A National Priority*. Information Canada. 1973 pp. 57-58.

Table 9.1 Mean daily nutrient intake of pregnant women in different regions

Nutrient	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Calories	2259	2325	2443	2110	2206	2238
Protein (g)	83	80	81	82	83	87
Fat (g)	99	102	107	91	100	97
Total carbohydrate (g)	264	280	295	244	249	258
Fibre (g)	4.14	4.24	4.58	3.95	3.98	4.05
Calcium (mg)	1063	967	901	1139	1023	1214
Iron (mg)	13	13	13	13	13	15
Vitamin A (R.E.)	1529	1181	1561	1221	1553	1935
Thiamine (mg)	1.21	1.15	1.20	1.18	1.19	1.31
Riboflavin (mg)	2.28	2.01	2.00	2.31	2.22	2.69
Niacin (N.E.)	31	30	31	30	31	33
Vitamin C (mg)	121	118	128	119	114	125
Free folate (μg)	104	88	104	110	96	118
Total folate (μg)	179	168	184	180	170	190
Sample Size	769	135	129	138	164	203

Table 9.2 Percent contribution of food groups to nutrient intake of pregnant women

Nutrient	Dairy Products	Meat, Poultry Fish, Eggs	Cereal Products	Fruit & Fruit Products	Vegetables & Potatoes	Fats & Oils	Other*
Calories	18	20	24	7	9	7	15
Protein	27	41	16	2	6	—	7
Fat	20	35	13	1	6	18	7
Carbohydrate	12	—	35	17	13	—	23
Fibre	—	—	20	23	44	—	13
Calcium	69	4	11	4	5	—	7
Iron	2	32	29	8	14	—	14
Vitamin A	17	40	2	4	19	13	6
Thiamine	14	25	29	9	16	—	6
Riboflavin	43	22	19	3	6	—	7
Niacin	17	45	17	2	9	—	8
Vitamin C	5	1	—	57	34	—	2
Free folate	23	14	14	20	24	—	5

*includes Nuts and Dried Legumes, Foods Primarily Sugar, Beverages and Soft Drinks, Mixed Dishes, Soup, Miscellaneous.

190 Table 9.3 Percentage of pregnant women in different regions consuming each food category

Food Category	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Milk & Milk Products	95	97	92	95	93	97
Cheese & Cheese Products	37	27	39	41	31	43
Poultry	19	23	23	14	18	17
Meat	83	78	86	83	82	85
Fish & Shellfish	15	16	14	14	14	15
Eggs	41	52	37	40	34	42
Butter	65	51	84	64	73	54
Margarine	31	49	21	22	25	37
Oils & Other Fats	36	29	37	37	37	39
Nuts & Dried Legumes	20	23	16	14	27	19
Bread & Rolls	94	97	96	93	96	91
Pasta	10	6	14	9	10	8
Grains & Flour Mixtures	77	77	86	67	80	76
Breakfast Cereals	35	30	27	37	36	42
Fruit & Fruit Products	83	82	80	81	87	83
Vegetables	90	88	92	84	92	94

Potatoes	70	77	86	60	71	63
Foods Primarily Sugar	91	94	95	86	90	91
All Beverages	90	97	94	86	88	88
Mixed Dishes	12	13	11	16	10	13
Soups	33	26	46	32	37	25
Miscellaneous	49	42	55	48	53	49
Sample Size	769	135	129	138	164	203

Table 9.4 Percentage of selected food categories consumed by pregnant women during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	15	12	25	10	28	12
Meats	1	1	27	6	59	6
Eggs	32	22	26	2	13	5
Bread & Rolls	20	14	31	7	18	10
Breakfast Cereals	58	28	7	1	2	4
Grains & Flour Mixtures	3	5	23	15	36	20
Fruit & Fruit Products	17	14	18	18	16	16
Vegetables	1	2	29	7	53	8
Potatoes	—	—	26	8	61	5
Foods Primarily Sugar	16	14	23	15	18	16
Sample Size 769						

Table 9.5 Mean daily intake of food groups (grams) by pregnant women in different regions

Food Groups	National	Atlantic	Quebec	Ontario	Prairies	Pacific
Dairy Products	544	442	387	629	543	657
Meat, Fish, Poultry, Eggs	160	162	158	155	163	160
Cereal Products including breakfast cereals	202	199	219	185	199	208
Breakfast Cereals	26	13	20	33	23	37
Fruit and Fruit Products	301	270	302	317	289	320
Vegetables <i>not</i> including potatoes	156	137	191	153	146	157
Potatoes	114	152	150	90	110	83
Fats and Oils	24	25	30	19	23	22
Nuts and Legumes	15	23	8	17	14	12
Foods Primarily Sugar	50	56	69	42	43	45
Mixed Dishes and Soups	116	110	169	121	113	85
Sample Size	769	135	129	138	164	203

Table 9.6 Mean daily intake of food groups (grams) by pregnant women for different seasons of the year

Food Groups	National	Spring	Summer	Autumn	Winter
Dairy Products	544	542	536	556	545
Meat, Fish, Poultry, Eggs	160	161	150	159	173
Cereal Products including breakfast cereals	202	203	198	196	213
Breakfast Cereals	26	17	21	38	35
Fruit and Fruit Products	301	308	349	270	255
Vegetables <i>not</i> including potatoes	156	157	173	140	147
Potatoes	114	107	108	118	126
Fats and Oils	24	27	24	21	22
Nuts and Legumes	15	8	14	18	21
Foods Primarily Sugar	50	55	47	47	50
Mixed Dishes and Soups	116	129	107	138	90
Sample Size	769	225	219	159	166

Table 9.7 Percentage of pregnant women in different regions eating during different time periods and their mean caloric intake (kcal)

	National		Atlantic		Quebec		Ontario		Prairies		Pacific	
Time of day (International Time)	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake	Percent Eating	Mean Intake
0500-0859	62	381	62	372	64	430	60	336	62	369	61	394
0900-1059	61	315	53	393	64	301	64	281	63	293	61	317
1100-1359	93	607	95	600	96	723	91	549	92	624	91	556
1400-1659	76	303	76	315	77	316	66	303	80	282	80	303
1700-1959	93	792	94	723	95	806	91	822	95	763	93	812
2000-0459	86	328	94	393	86	294	81	327	82	305	88	320
Sample Size	769		135		129		138		164		203	

Table 9.8 Percentage of pregnant women consuming each food category during different time periods

Food Category	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Milk & Milk Products	52	39	63	32	66	45
Cheese & Cheese Products	5	—	16	5	10	6
Poultry	—	—	5	—	11	—
Meats	5	5	39	9	60	9
Fish & Shellfish	—	—	6	—	6	—
Eggs	14	9	11	—	7	—
Butter	30	18	34	8	27	11
Margarine	12	8	15	—	13	7
Oils & Other Fats	—	—	15	—	18	6
Nuts & Dried Legumes	—	—	5	—	6	5
Bread & Rolls	44	29	52	13	36	19
Pasta	—	—	—	—	6	—
Grains & Flour Mixtures	—	7	33	24	36	24
Breakfast Cereals	21	10	—	—	—	—
Fruit & Fruit Products	31	25	34	31	33	30
Vegetables	—	—	45	11	71	13
Potatoes	—	—	23	7	51	7
Foods Primarily Sugar	47	37	40	30	36	39
All Beverages & Soft Drinks	41	33	42	36	46	47
Mixed Dishes	—	—	—	—	7	—
Soups	—	—	20	—	11	—
Miscellaneous	—	5	17	5	26	9
Percent Eating	62	61	93	76	93	86
Sample Size 769						

Dashes denote anything less than 5%.

Table 9.9 Percentage of mean intake of nutrients consumed by pregnant women during different time periods

Nutrient	Time of day (International Time)					
	0500-0859	0900-1059	1100-1359	1400-1659	1700-1959	2000-0459
Calories	10.5	8.6	25.2	10.3	33.0	12.6
Protein	9.1	7.1	26.5	7.9	39.9	9.5
Fat	9.0	7.4	26.6	8.9	37.3	11.0
Carbohydrate	12.4	10.2	23.8	12.3	26.7	14.8
Calcium	13.4	10.3	26.2	10.4	27.9	11.9
Iron	14.1	9.6	23.9	7.6	35.8	9.2
Vitamin A	8.9	6.0	31.0	6.8	39.6	7.7
Thiamine	13.8	10.8	23.8	7.6	35.0	9.1
Riboflavin	14.8	11.3	24.4	8.1	31.2	10.2
Niacin	9.9	7.7	25.4	7.6	40.4	9.0
Vitamin C	16.4	11.3	20.3	11.9	29.3	10.9
Free Folate	13.8	9.2	24.4	8.5	34.8	9.3
Percent eating	62	61	93	76	93	86
Sample Size	769					

Table 9.10 Percentage of pregnant women who reported a change in their pattern of food consumption during pregnancy

Food Group	Increased Consumption	Decreased Consumption	No Change in Consumption
Milk	59	3	38
Cheese	33	6	61
Meat, Poultry, Fish	21	5	74
Eggs	36	7	57
Bread	18	24	59
Cake, Pastry	13	35	52
Fruits	61	2	37
Vegetables	35	2	63
Potatoes	10	27	63
Candies	33	6	61
Soft Drinks	9	26	65

Chapter 10

Indians

Abstract

The food consumption patterns of the various age groups were compared with the national patterns. On the average the Indians consumed less milk, more meat, fish and poultry, more cereal products and less fruits and vegetables than the national population. The mean caloric intakes for all groups were similar to those of corresponding age groups in the national population, except for the 5-11 age group, males 12 years of age and over and the pregnant women which were lower. Many of the mean intakes of vitamins and minerals were lower than the national means but only calcium and folate were below recommended intakes for all age groups as was the mean intake of iron for females 12-54 years. Thiamine intakes were below recommendations for pregnant women and borderline for those groups over 40 years of age.

10.1 Introduction

The dietary data for the Indian population needs to be interpreted with caution. The sample for each age group was a composite of six cultural groups from across Canada and from areas both close to and remote from urban centres. Regions, distance from urban centres and cultural areas were combined to produce 13 strata (1). The numbers in each of these strata in each age group were too small for detailed analysis of the 24-hour recall data. Consequently all data within each age group was combined for the calculation of mean daily intakes. It must be recognized that as these age groups were not homogeneous that any differences in food consumption patterns due to any of these variables would not be evident when mean food and nutrient intakes were computed. Therefore the means for any one age group may not be representative of this group in all parts of Canada.

10.2 Nutrient Intake

The mean intakes of the various nutrients for all physiological groups are presented in Table 10.1. The oldest age group for the Indian sample is 55 years and over, rather than 65 years and over as in the national survey. This recognizes that the Indian population has a lower proportion of persons 65 years of age and over (1). Although the mean caloric intakes of all groups were either the same or lower than the national means and the mean intake of fat of all groups except 55 years + males and females was lower, the percentage of calories from fat was similar. The percent calories from protein ranged from 13-14% for those groups under 20 years of age to 15-16% for all adult age groups, including pregnant women.

For the 1-4 age group, because of the lower consumption of milk, the intakes of calcium, riboflavin and vitamin A were lower than the national means for these nutrients, but the levels were still above the recommendations (Appendix A).

The 5-11 age group and the 12-19 year-old males had lower mean intakes than the national mean intakes of all nutrients, and of these, calcium, vitamin A and free folate were below the recommendations, particularly for those who were 10-11 years of age. The 12-19 year-old females had mean intakes lower than the national mean intakes of all nutrients except iron and thiamine, and were lower than the recommendations for iron, free folate, calcium and vitamin A.

The 20-39 year-old males had mean intakes lower than the national mean intakes of all nutrients except iron. The mean intakes of calcium and folate were below the recommendations. The 20-39 year-old females had mean nutrient intakes that were lower than the national means for calcium, vitamin A, riboflavin, vitamin C and folate, but only calcium, iron, vitamin A and folate were below recommended levels.

Comparing the mean nutrient intakes of the 40-54 year-old age groups and the 40-64 year-old age groups in the national sample, the mean intakes of the males were lower in all nutrients except protein, iron, thiamine and niacin but calcium, thiamine and folate were the nutrients below the recommended intakes.

The mean nutrient intakes of the 40-54 year-old females were similar to the national means except for vitamin C and folate which were lower and, as reported for the national group, were below the recommendations for calcium, thiamine, folate and iron.

Comparing the 55 years + Indian age groups with the 65 years + national age groups the mean nutrient intakes of the males were lower for calcium, iron, vitamin A, riboflavin, vitamin C and folate and were below recommended levels for calcium and folate. The mean nutrient intakes of the 55 + year-old females were lower than the national means in calcium, vitamin A, riboflavin, vitamin C and folate and, as reported for the national group, were below recommended levels for calcium, thiamine and folate.

The pregnant Indians had lower mean intakes of all nutrients than the national group with the exception of iron and were below recommended levels for calcium, iron, thiamine and folate. There were no appreciable differences between the mean nutrient intakes of the 20-39 year-old Indian females and those of the pregnant group.

10.3 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The mean daily intakes of food groups for different physiological groups are shown in Table 10.2.

10.3.1 Dairy Products (milk, milk products and cheese)

For all Indian age groups the mean dairy product consumption was lower than that of the corresponding national age group. For the 1-4 year olds, based on calcium content, this could be equated to 2 cups of fluid milk and for the 5-11 year olds to 1.6 cups of milk. Both sexes of the 12-19 year-old group, as well as the 20-39 year old males, consumed the equivalent of slightly more than 1 cup of milk but the mean for the other age groups and pregnant women was equivalent to less than 1 cup.

For all ages except the 20-39 year-old females, this food group was the primary source of calcium. In addition it was the primary source of fat, vitamin A, riboflavin and folate for the

1-4 year olds and of riboflavin for the 5-11 year olds and the 12-19 year-old females. It should also be noted that 22% of the vitamin C for the 1-4 year-old group was supplied by milk in contrast to the corresponding national mean of 10% for this age group. This percentage was also higher for all physiological groups and may be attributed to the consumption of evaporated milk by the Indians in the Atlantic region and in the more remote areas.

The consumption pattern of this food group for Indians of all ages was similar to that of the national pattern except that about 10% more of their dairy products was consumed during the morning meal period and less during the evening meal period.

10.3.2 Meat, Poultry, Fish, Eggs and Wild Game

For each physiological group the mean intake of this food group was similar to the national mean intake, except that it was approximately 50 grams higher for the 40-55 years + males, 55 years + females and pregnant women. For the different age groups the composition of the food group varied, but generally the mean intake of fish by Indians was higher than the national mean. There was no consistent pattern for the composition of the meat, poultry and wild game categories of this food group and the differences in mean consumption of these by corresponding Indian and national groups were within 26 grams. The mean daily intake of eggs by all age groups was similar to the corresponding national mean intake.

For all ages this food group was the primary source of protein, fat and niacin and, except for the 1-4 year olds and adolescent females, of vitamin A (Table 10.4).

For the 12-19 year-old males and all adult groups it also was the primary source of iron and riboflavin and in addition, for the adult males, the females over 55 years and the pregnant women a primary source of calories and thiamine. It was also the primary source of iron for adolescent females and of folate for 40-54 year-old females and pregnant women.

The daily consumption pattern for eggs followed the national pattern although on the whole a higher percentage of the eggs

was consumed by the Indians during the morning. For the children up to 11 years of age the pattern for meat consumption was similar to the national pattern of these age groups but for the other age groups a lower proportion of meat (approximately 40%) was consumed at the designated evening meal.

10.3.3 Cereal Products (bread, bannock*, rolls, pasta, grains and flour mixtures and breakfast cereals)

For all physiological groups except the 12-19 and the 40-55 + year-old males, the mean cereal product consumption was higher than the national mean. In many cases this difference could be attributed to the consumption of breakfast cereals which was higher for all groups except the 40-55 + year-old males. However, because of the method of recording the intake of breakfast cereals, as previously described in section 1.10.1 (a), the differences in consumption were not as great as they appeared. Based on the calculation of protein contribution to the diet, the Indians, particularly the age groups of 1-4, 5-11 and adolescent females, seemed to consume more cooked cereal than did the national population. Because of the absence, in most cases, of enrichment of hot cereals with vitamins and particularly iron, this would also partly account for the lower contribution by breakfast cereals of B vitamins and iron to the diet. In addition, it was noted that for all age groups the mean consumption of bread and rolls was higher, and of grains and flour mixtures lower, than the national means.

For all physiological groups, cereal products were the primary source of carbohydrate (Table 10.5). They were a primary source of calories for all age groups except the males over 40 years and of free folate, except for the 1-4 year olds and pregnant women. In addition, they were the primary source of thiamine for all groups under 20 years of age, for the adult females, and for the 40-54 year-old males; of iron for the younger age groups; of calcium for the 20-39 year-old females and of riboflavin for the adolescent males.

The consumption pattern of the food group for all ages was similar to that of the national pattern except that more of the

**Recipe for bannock used for food composition table included milk.*

grains and flour mixtures were consumed during the morning by the pregnant women, the 12-19 year-old males and the 20-39 year-old age group. The 55 years + females ate more of the grains and flour mixtures after 2000 hours than did the 65 + years females in the national population.

10.3.4 Fruit and Fruit Products

For all age groups the Indians' mean daily consumption of fruit and fruit products was approximately 100 grams less than the corresponding national mean. This food group was a primary source of vitamin C for all age groups except for the adult males and the 40-54 year-old females where potatoes were a more important source of vitamin C (Table 10.6). The consumption pattern was similar to the national pattern and consumption was fairly evenly distributed throughout the day.

10.3.5 Vegetables (including potatoes)

The mean daily consumption of this food group by the Indian population was approximately 35 grams less than the corresponding national mean for all age groups except the pregnant women, 55 + years males and adolescent males, who consumed approximately 75 grams less, the 5-11 year olds who consumed 58 grams less, and the 1-4 year olds who consumed 16 grams more. The mean intake of the vegetable category was only one half to one third that of the corresponding national mean intake for all age groups except the 1-4 year olds, where it was two thirds that of the national mean. The average quantity of potatoes consumed was higher than the national mean for all but two age groups — the 5-11 year olds and the 12-19 year-old males. The vegetable group was the primary source of fibre for all age groups and of vitamin C for the 20-54 year-old females and all adult males (Table 10.7). In addition, it was the primary source of folate for the 40-54 year-old females. The pattern of intake was similar to the national pattern and followed that of the meat group.

10.3.6 Fats (butter, margarine, oils and other fats)

The mean consumption of this food group is shown in Table 10.2.

The proportions of the categories within the group differed from the proportions for the corresponding national population. Except for the 12-19 year-old females, the proportion of oils and other fats was appreciably higher for the Indian groups. This food group was the primary source of vitamin A for the 5-19 year olds and of fat for the 1-4 year olds and the 12-19 year-old males (Table 10.8). The pattern of intake was similar to that of bread.

10.3.7 Foods Primarily Sugar, Beverages and Soft Drinks

In all cases, the percentage of caloric intake from this food group was essentially the same as that for the corresponding physiological group in the national population. For some age groups, the percentage of carbohydrate from this food group was slightly higher, but this was not due to an increased consumption of foods primarily sugar or to soft drinks, but rather to a lower mean consumption of total carbohydrate by the Indian groups compared to the national population.

The mean consumption of soft drinks was estimated and was found to be similar to that of the corresponding age group in the national population except for the 20-39 year-old males who consumed 9 ounces, 5 ounces less than the corresponding national group. The mean daily caloric intake from pure alcohol was estimated to be 156 kilocalories for the 20-39 year-old males and 114 kilocalories for the 40-54 year-old males. It was insignificant for the other age groups.

10.3.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

Although in most instances the mean daily consumption of nuts and dried legumes was greater than the corresponding national mean it was still so low that it could not be considered an important source of any nutrient. The mean consumption of mixed dishes by the Indians was lower than that of the corresponding age group in the national population. However, there was an increase in the mean consumption of soup for the 1-4 year olds, the 20-39 year-old males and the 40-54 year-old females. The nutrient contribution of this food group was minimal.

10.3.9 Cultural Differences

Additional data indicated that when the mean daily consumption of food groups was computed for the different cultural groups there were differences in mean intake of fish, wild game and dairy products.

For all age groups the mean intake of fish by the Algonkian and Iroquoian Indians was very much less than that of the other cultural groups. There were striking differences in the mean consumption of wild game with the Iroquoian and Pacific Indians consuming virtually no wild game. The only other difference in consumption that could be attributed to cultural group rather than geographic region was a very low mean intake of dairy products by Pacific Indians over 40 years of age.

10.4 Pattern of Intake Throughout the Day

Table 10.9 indicates the percentage of each physiological group consuming some food or beverage during the various designated time periods. In comparing the percentage of the Indian and national populations eating at various times of the day it was evident that, for most of the physiological groups, the only difference was a slightly lower percentage of Indians eating during the designated noon and evening meals. Table 10.10 presents the mean caloric intake in each physiological group of those eating during the various designated time periods. In comparing the mean caloric intakes of the Indian and national populations eating during the various time periods it was evident that except for the 1-4 year olds, 20-39 year-old females and 55 + years females the mean caloric intake between 1700 hours and 1959 hours was considerably less for the Indian populations than the national.

10.5 Summary

The data indicated that the average daily consumption of foods differed from the corresponding national averages for the various Indian age groups. First, they consumed less milk. The mean intake ranged from less than 1 cup for the older age groups to 2 cups for the 1-4 year-old group. ~~On the other hand, the mean~~

intake of meat was higher, except for the 20-39 year-old males, and ranged from an equivalent of 3 ounces for the 1-4 year olds to over 9 ounces for the 20-39 year-old males. Very little wild game was eaten.

For all age groups the average daily consumption of cereals included approximately 1 serving of breakfast cereal and for females 40 years of age and over, pregnant women and 55 + year-old males the average consumption was the equivalent of 3 slices of bread and for the other age groups 5 slices of bread. The average daily consumption of food also included 1-2 servings of fruit (except for the 55 + year-old males who consumed less than 1 serving), less than 1/2 serving of vegetables and 1-2 servings of potatoes depending on the age group. The number of servings of foods primarily sugar was similar to that of the corresponding age group in the national population, as was the consumption of soft drinks. There was one exception. The Indian 20-39 year-old males consumed on the average 5 ounces of soft drinks less than the same national age group.

The data also indicated that for all age groups the mean dietary intake of nutrients was lower than the recommended levels for calcium and free folate. All the females from 12 to 54 years of age were below the recommendations for iron. In addition, thiamine intakes were below recommendations for pregnant women and borderline for those groups over 40 years of age.

The patterns of eating throughout the day were similar to those of the corresponding age group in the national population except for a slight decrease in the percentages eating during the designated noon and evening meal periods and generally a lower mean caloric intake between 1700 and 1959 hours.

References

1. Canada. Department of National Health and Welfare, Ottawa. *Nutrition Canada: The Indian Survey Report*. Information Canada 1975, p. 5-7.

Table 10.1 Mean daily nutrient intake of Indian physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	1678	2025	2584	2129	2893	1970	2469	1623	1879	1531	1900
Protein (g)	60	67	89	69	105	72	96	62	74	57	75
Fat (g)	74	87	118	91	121	86	110	72	89	70	82
Total Carbohydrate (g)	197	250	299	264	311	230	246	181	188	171	220
Fibre (g)	2.16	2.84	3.30	3.15	3.53	2.65	2.88	2.14	2.01	2.37	2.63
Calcium (mg)	881	798	791	661	733	631	682	601	530	470	598
Iron (mg)	10	11	16	12	18	13	16	10	12	10	13
Vitamin A (R.E.)	703	784	971	724	1173	684	1045	1054	976	863	1039
Thiamine (mg)	1.00	1.13	1.53	1.12	1.54	1.14	1.33	0.85	1.09	0.83	1.09
Riboflavin (mg)	1.72	1.71	2.04	1.57	2.17	1.46	1.93	1.40	1.58	1.33	1.79
Niacin (N.E.)	21	25	35	27	41	30	39	24	29	22	29
Vitamin C (mg)	81	71	70	83	82	68	68	59	49	50	67
Free Folate (μg)	60	61	66	61	72	54	63	52	47	48	64
Total Folate (μg)	117	133	155	137	163	110	140	104	105	103	125
Sample Size	183	368	154	195	137	196	133	180	113	104	49

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Table 10.2 Mean daily intake of food groups (grams) by Indian physiological groups

Food Groups	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55 + years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Dairy Products	401	322	220	229	190	100	157	151	164	135	164
Wild Game	12	7	25	11	30	19	28	12	14	7	18
Meat, Poultry, Fish, Eggs	90	124	197	140	260	177	249	146	201	140	199
Cereal Products including Breakfast Cereals	253	320	317	269	308	254	263	180	211	185	239
Breakfast Cereals	112	86	49	55	23	30	32	28	43	44	41
Fruit & Fruit Products	179	201	154	202	149	138	127	112	72	114	180
Vegetables <i>not</i> including Potatoes	39	36	37	33	59	52	74	61	35	43	56
Potatoes	110	99	165	175	268	145	157	115	137	101	133
Fats and Oils	22	27	43	28	43	28	34	24	29	20	26
Nuts and Dried Legumes	9	25	27	13	17	9	18	6	5	11	9
Foods Primarily Sugar	38	50	68	52	65	45	44	42	41	39	51
Mixed Dishes & Soups	143	85	79	93	167	99	105	124	108	112	93
Sample Size	183	368	154	195	137	196	133	180	113	104	49

Table 10.3 Percent contribution of dairy products to nutrient intake of Indian physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	20	13	8	10	7	6	6	9	8	8	8
Protein	30	21	12	15	9	8	8	13	10	12	11
Fat	25	15	9	12	8	7	8	11	9	10	11
Total Carbohydrate	13	9	6	7	5	4	4	6	6	5	5
Fibre	—	—	—	—	2	—	—	—	—	—	—
Calcium	71	59	44	53	43	31	41	43	49	47	47
Iron	1	1	1	1	1	1	1	1	1	1	1
Vitamin A	34	21	14	19	11	11	11	9	11	10	11
Thiamine	13	10	6	7	5	3	4	6	5	5	5
Riboflavin	50	38	24	30	19	17	19	25	22	23	21
Niacin	22	14	8	9	6	5	5	8	7	7	7
Vitamin C	22	13	13	8	9	9	11	13	14	13	12
Free Folate	32	24	16	17	13	10	13	15	17	14	13
Sample Size	183	368	154	195	137	196	133	180	113	104	49

Table 10.4 Percent contribution of meat, poultry, fish, eggs, wild game to nutrient intake of Indian physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	16	17	21	19	25	25	30	24	30	26	26
Protein	35	39	52	46	60	59	63	56	63	55	62
Fat	26	29	33	32	43	41	47	38	45	42	41
Total Carbohydrate	—	—	—	—	—	—	—	—	—	—	—
Fibre	—	—	—	—	—	—	—	—	—	—	—
Calcium	2	4	7	5	10	7	9	5	9	7	9
Iron	26	29	37	33	46	40	46	39	44	38	48
Vitamin A	16	28	33	21	42	37	44	53	47	49	54
Thiamine	23	22	31	26	40	32	39	36	42	35	39
Riboflavin	17	19	31	25	40	35	38	34	33	35	41
Niacin	38	39	49	47	57	55	59	57	60	54	60
Vitamin C	1	—	1	—	2	1	2	2	1	1	2
Free Folate	7	10	14	10	20	15	21	22	22	20	25
Sample size	183	368	154	195	137	196	133	180	113	104	49

Table 10.5 Percent contribution of cereal products to nutrient intake of Indian physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	26	34	29	28	24	28	26	26	25	27	24
Protein	20	26	22	23	18	20	17	18	17	20	16
Fat	10	15	10	12	10	9	11	11	9	12	9
Total Carbohydrate	41	49	46	41	40	46	48	42	47	43	39
Fibre	26	27	25	20	21	22	26	23	25	26	18
Calcium	15	24	33	24	27	44	32	22	25	26	24
Iron	47	42	36	33	24	29	26	27	28	26	24
Vitamin A	3	4	1	3	1	1	1	3	2	1	1
Thiamine	40	48	43	40	31	43	38	35	36	36	33
Riboflavin	22	30	30	27	19	23	21	19	23	17	20
Niacin	22	29	26	23	18	22	18	18	18	20	17
Vitamin C	—	—	—	—	—	—	—	—	—	—	—
Free Folate	25	32	35	28	28	34	32	24	29	26	22
Sample Size	183	368	154	195	137	196	133	180	113	104	49

Table 10.6 Percent contribution of fruit and fruit products to nutrient intake of Indian physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	6	5	3	5	3	4	3	4	2	5	5
Protein	1	1	1	1	—	1	—	1	—	1	1
Fat	—	—	—	—	—	—	—	—	—	—	—
Total Carbohydrate	13	12	7	11	7	9	8	9	6	10	12
Fibre	17	20	13	21	11	16	11	13	15	21	24
Calcium	3	3	2	4	2	2	2	2	1	4	4
Iron	6	5	3	5	2	3	3	3	2	7	5
Vitamin A	2	3	2	3	1	2	1	1	1	3	3
Thiamine	6	5	3	5	2	3	2	3	2	4	5
Riboflavin	2	2	1	2	1	1	1	1	1	2	2
Niacin	2	1	1	1	1	1	1	1	1	1	2
Vitamin C	54	59	45	53	32	45	39	40	34	44	46
Free Folate	14	12	8	16	7	11	7	10	8	13	13
Sample Size	183	368	154	195	137	196	133	180	113	104	49

Table 10.7 Percent contribution of vegetables including potatoes to nutrient intake of Indian physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	8	7	9	12	10	10	8	10	8	8	9
Protein	6	4	5	7	7	6	5	6	5	5	5
Fat	5	5	8	11	6	7	5	7	4	6	6
Total Carbohydrate	12	9	12	15	17	14	13	14	13	13	14
Fibre	39	30	40	42	52	49	48	51	49	37	45
Calcium	3	3	4	5	7	5	5	5	5	5	4
Iron	9	8	9	12	11	10	9	11	8	9	9
Vitamin A	11	11	11	10	11	18	13	12	11	12	10
Thiamine	12	10	12	17	17	15	13	16	12	13	14
Riboflavin	4	4	5	6	6	6	5	5	4	5	4
Niacin	9	7	8	12	10	9	7	8	7	8	8
Vitamin C	22	25	39	36	54	43	46	43	49	39	38
Free Folate	16	13	18	22	25	24	21	24	20	20	22
Sample Size	183	368	154	195	137	196	133	180	113	104	49

Table 10.8 Percent contribution of fats to nutrient intake of Indian physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	10	10	13	10	11	11	10	11	11	10	10
Protein	—	—	—	—	—	—	—	—	—	—	—
Fat	26	26	32	26	30	29	26	28	28	24	27
Total Carbohydrate	—	—	—	—	—	—	—	—	—	—	—
Fibre	—	—	—	—	—	—	—	—	—	—	—
Calcium	—	—	—	—	—	—	—	—	—	—	—
Iron	—	—	—	—	—	—	—	—	—	—	—
Vitamin A	24	26	32	33	28	21	24	16	23	16	15
Thiamine	—	—	—	—	—	—	—	—	—	—	—
Riboflavin	—	—	—	—	—	—	—	—	—	—	—
Niacin	—	—	—	—	—	—	—	—	—	—	—
Vitamin C	—	—	—	—	—	—	—	—	—	—	—
Free Folate	—	—	—	—	—	—	—	—	—	—	—
Total Folate	—	—	—	—	—	—	—	—	—	—	—
Sample Size	183	368	154	195	137	196	133	180	113	104	49

Table 10.9 Percentage of Indians eating during different time periods

Time of day (International Time)	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
0500-0859	61	75	73	56	72	52	84	76	78	76	64
0900-1059	75	37	34	44	64	64	59	59	49	50	54
1100-1359	92	94	89	92	94	89	84	88	85	87	92
1400-1659	71	60	66	65	68	66	64	65	57	56	64
1700-1959	93	87	78	84	93	89	87	89	80	88	84
2000-0459	67	58	72	73	77	81	74	82	76	72	76
Sample Size	183	368	154	195	137	196	133	180	113	104	49

Table 10.10 Mean caloric intake (kcal) of Indians eating during different time periods

Time of day (International Time)	1-4 yrs		5-11 yrs		12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	M	F	
0500-0859	422	449	568	441	562	437	490	322	422	320			381
0900-1059	342	335	497	354	347	262	277	232	243	195			420
1100-1359	460	591	746	701	930	548	740	449	626	462			522
1400-1659	237	422	534	409	298	333	386	230	291	195			328
1700-1959	447	634	853	627	918	711	743	493	558	535			582
2000-0459	209	318	394	343	407	232	416	215	297	189			277

Chapter 11

Eskimos

Abstract

The food consumption patterns and nutrient intakes of the various physiological groups were compared to the national data. On the average the Eskimos had a higher mean consumption of the meat group, particularly fish and wild game, than the corresponding national population whereas the mean consumption of all other food groups, except foods mostly sugar, beverages and soft drinks, was lower. The average caloric intake of the Eskimos was lower than the corresponding national group with a lower percentage of calories from fat and, except for children under 12 years of age, with a higher percentage of calories from protein. All other mean nutrient intakes were lower than the national means and were, for most age groups, below recommended levels for calcium, vitamin A and folate and also for vitamin C for the older age groups and pregnant women.

11.1 Introduction

The dietary data for the Eskimo population needs to be interpreted with caution. Not only was the sample size very small but the life style of the Eskimo does not lend itself to the 24-hour recall method. There were also differences in the food consumption patterns of each of the four communities studied because of the variation in availability of certain foods in each of these areas. These differences disappeared with the use of mean values for each age group.

11.2 Nutrient Intake

The mean intakes of the various nutrients for all physiological groups are presented in Table 11.1. The oldest age group for the Eskimo sample is 55 years and over, rather than 65 years and over as in the national survey. This recognizes that the Eskimo population has a lower proportion of persons 65 years of age and over

(1). When compared with the national mean caloric intakes these were approximately 600 kilocalories lower than the corresponding physiological groups except for the 12-19 year-old females which were similar. The recorded mean intakes of fat for all physiological groups were considerably lower than the national means as were the percentages of calories from fat which ranged from a low of 23% for the 20-39 year-old females to a high of 33% for the 12-19 year age groups. The mean protein intakes for the 1-4, and 5-11 age groups were lower than the corresponding national means but all other physiological groups had higher mean protein intakes. The 40-54 year-old males had a mean intake of 71 grams more protein than those in the national population. The percentage of calories from protein ranged from 16-19% for those groups under 20 years of age and from 21-35% for adults and for pregnant women.

For the 1-4 year-old age group, the mean intakes of all nutrients, except iron, were lower than the national means but were below recommended levels (Appendix A) only for vitamin A and folate. The 5-11 year-old age group had lower mean intakes of all nutrients except for B vitamins and iron, and were below recommended levels for calcium, vitamin A and folate. The mean intakes of the 12-19 year-old males were lower for all nutrients except protein, iron, vitamin A, riboflavin and niacin but were below recommended levels only for calcium and folate. It was obvious that liver was included in the foods eaten the day before the interview by some of the 12-19 year-old males, since the mean intakes of vitamin A and free folate from meat and poultry were much higher than for the other age groups. The remaining physiological groups had mean nutrient intakes lower than the corresponding national means for all nutrients except protein, iron and the B-vitamins and were below recommended intakes for vitamin A and folate. In addition, all adult age groups and pregnant women were below the recommendations for calcium. The vitamin C intakes of the 40-54 year-old females, males and females over 55 years and pregnant women were below the recommendations.

11.3 Mean Intake of Food Groups and Their Contribution to Nutrient Intake

The mean daily intakes of food groups for different physiological groups are shown in Table 11.2.

11.3.1 Dairy Products (milk, milk products and cheese)

For all age groups the mean dairy product consumption was very low — lower than the mean intakes of the Indian and national populations. For the 1-4 year-old age group, based on calcium content, this was equated to 1.3 cups of fluid milk; for the 5-11 age group and adolescent males to 0.9 cups; for the adolescent females and 20-39 year-old males to 0.8 cups; for the 20-39 year-old females and 40-55 + year-old males to 0.4 cups; for the females over 40 years to 0.2 cups and for pregnant women to 0.6 cups.

In spite of the low consumption, this food group was the primary source of calcium for the age groups 1-4, 5-11, males of 20-39 years and over 55 years (Table 11.3). In addition, it was a primary source of fat, vitamin A and riboflavin for the 1-4 year olds and of vitamin A for the 5-11 year olds.

It should also be noted that the percentage contribution of dairy products to the Vitamin C intake of all Eskimo physiological groups was higher than that of the corresponding national group. This was particularly true for the 1-4 year olds and females over 55 years where 25% of their vitamin C was contributed by this food group. However, at the same time, the mean vitamin C intake for each of these age groups was much lower than that of the corresponding national group.

The consumption pattern differed from the national pattern but this would be expected with such a low intake. For the most part, the consumption was spread throughout the morning with 70% of the food group consumed before 1400 hours by all age groups except the 12-19 year-old males where 77% was consumed between 1100 and 1359 hours.

11.3.2 Meat, Poultry, Fish, Eggs and Wild Game

For all age groups, except for the 1-4 year olds, the mean consumption of this food group was higher than the mean for the Indian population and in all cases was higher than the national mean. The composition of the food group varied for the different age groups but generally the average amount of fish consumed was higher than that of the Indians, ranging from a mean of 18 grams for the 20-39 year-old males to 73 grams for the 12-19 year-old males. The mean consumption of meat, poultry and eggs was extremely low, ranging from 13 grams to 56 grams but the consumption of wild game, principally caribou, more than compensated for this.

For all physiological groups this food group was the primary source of protein, iron (except 1-4 year olds), thiamine (except 1-4 and 5-11 year olds), riboflavin and niacin (Table 11.4). It was not a primary source of fat, except for the over 55 years females because of the low fat content of wild game. In addition, it was the primary source of vitamin A for the 5-11 year olds, 12-19 year-old males, 40-54 year old females and 55 + year-old males and females. It was the primary source of calcium for the 55 + males and females because of their low intake of dairy products. It was the primary source of calories and vitamin C for the males and females over 40 years and of calories for the 20-39 year-old females and pregnant women and of folate for the 12-19 year-old males.

The pattern of intake of wild game, when compared to the national pattern of meat consumption, showed some variation. For all age groups the percentage consumed before 1100 hours was generally much higher than that of the corresponding national population. It was also higher between 1100 hours and 1359 hours with a lower percentage being consumed after 1700 hours.

11.3.3 Cereal Products (bread, bannock,* rolls, pasta, grains and flour mixtures and breakfast cereals)

For all physiological groups, except the 12-19 year-old males and

**Recipe for bannock used for food composition table included milk.*

females, the mean cereal product consumption, including breakfast cereals, was lower than the means for the Indian and national populations. In most cases, this difference was due to the lower consumption of grains and flour mixtures and breakfast cereals, except for the 12-19 year-old males, where the consumption of grains and flour mixtures was higher than the national mean for this age group. The 12-19 year-old females had a higher mean consumption of the cereal products group because of their higher consumption of bannock (classified under bread and rolls).

For all age groups except for the 20-39 year-old males and females, the 40-54 year-old males and the 55 + year-old females, cereal products were the primary source of carbohydrate (Table 11.5). This food group was the primary source of fibre for all age groups except for the 55 + year-old males, and of folate for all groups except for the 12-19 year-old males. For pregnant women, the 40-54 year-old females and all age groups up to 39 years of age, it was also the primary source of calories. In addition, for the 1-4 year olds it was the primary source of iron and thiamine; for the 5-11 year olds, of thiamine; for all age groups except the 1-4 year olds and 55 + year-old females, of calcium. The consumption pattern for all age groups followed the national pattern for bread and rolls to some extent. It was noted that the percentage of bread and rolls consumed before 1100 hours by the 1-4 year olds was considerably less than that of the national group. The consumption pattern for grains and flour mixtures was quite different for all age groups. Generally, 28% of these mixtures were consumed before 1100 hours in contrast to the 6% by the national population. The exception to this pattern was the 20-39 year-old female group who consumed 60% of these foods before 1100 hours.

11.3.4 Fruit and Fruit Products

The mean consumption of this food group was considerably less than that of either the Indian or national populations. This was particularly true for those over 40 years of age whose mean consumption was less than 50 grams. This food group was the primary source of vitamin C for those under 40 years of age who also had

the highest mean consumption. However, it was evident that, because of the lack of contribution to nutrient intakes of nutrients other than vitamin C (Table 11.6) this food group consisted principally of synthetic fruit drinks with added vitamin C.

There was no consistent daily pattern of consumption.

11.3.5 Vegetables (including potatoes)

This food group did not play a significant part in the diet of the Eskimos. For all age groups the mean consumption of the vegetable category was less than 32 grams and of potatoes less than 44 grams.

11.3.6 Fats (butter, margarine, oils and other fats)

The mean consumption of fats was slightly higher than the national mean for those under 20 years of age and for the 20-54 year-old males. It was slightly lower for the other physiological groups. The composition of this food group differed from that of the national and Indian populations with a lower proportion of butter, very little margarine and a much higher proportion of oils and other fats.

This food group was a primary source of fat (Table 11.8) for all physiological groups, except the females over 55 years and of vitamin A for the 5-11 year olds, 12-19 year-old females, 20-39 year-old age group, 40-54 year-old males and pregnant women. The daily pattern of intake was similar to that of bread and bannock.

11.3.7 Foods Primarily Sugar, Beverages and Soft Drinks

In all cases, the percentages of the caloric and carbohydrate intakes from this food group (Table 11.9) were higher than those of the corresponding physiological group in the national population. The percentage of carbohydrate intake from this food group for the various physiological groups, ranged from 20% to 50% (Table 11.10).

The mean consumption of foods primarily sugar was much higher than the national mean for all age groups except the 1-4

year olds, the 40-54 year-old females and the 55 + year-old males. On the other hand, when considering the mean intake of carbohydrate in grams from beverages and soft drinks it was evident that the differences in consumption of carbohydrate from this source were not great. In those cases where the mean intake was greater than the national mean, that is for the 5-11 year olds, 12-39 year-old females and 40-54 year-old males, the greatest difference was for the 5-11 year olds (13 grams or about 4-5 fluid ounces more). This would indicate that in the sample studied the mean daily intake of soft drinks was not a great deal higher than the national mean and the consumption of sugar, candy and jam accounted for the higher percentage of calories and carbohydrate from this food group.

11.3.8 Nuts and Dried Legumes and Miscellaneous (including mixed dishes, soups)

These food groups could not be considered an important source of any nutrient for this population. Although the mean quantity of soup consumed was higher than the national mean for all groups except the 1-4 year olds, 20-39 year-old males and 55 + year-old males, it only contributed approximately 1.5% of the caloric intake.

11.4 Pattern of Intake Throughout the Day

Table 11.11 presents the percentage of each physiological group consuming some food or beverage during the designated time periods. Table 11.12 presents the mean caloric intake of those in each physiological group eating during the various designated time periods. In comparing the percentages eating at various times of the day with the national population, it was evident that there were no consistent patterns among age groups. The only consistency in the caloric intake indicated that the greatest caloric intake for any one period during the day was between 1100 and 1359 hours, about 30% of the total. When the percentages of calories consumed during the different time periods were compared to those of the national population it was evident that the Eskimos

had a higher percentage of their caloric intake before 1400 hours, and a lower percentage between 1700 and 1959 hours.

11.5 Summary

The data indicated that for all Eskimo age groups the average daily consumption of dairy products was very low ranging from 0.2 cups for the 40-55 + year-old females to 1.3 cups for 1-4 year olds. The average daily consumption of the meat group, other than wild game, was less than 3 ounces for all age groups except the 12-19 year-old males but was compensated for by a higher mean daily intake of wild game (up to 15 ounces for 40-54 year-old males). The average daily consumption of fruit products was about one serving up to age 39 but was minimal for the older age groups. Much of the fruit group seemed to consist of synthetic fruit drinks with added vitamin C. The average daily intake of vegetables including potatoes, was less than 2 ounces for all age groups. The mean consumption of foods primarily sugar ranged from the equivalent of 7 teaspoons of sugar for the 1-4 year olds to a high of 7 tablespoons for the 20-39 year-old males. The average intake of soft drinks was estimated to be approximately 10-13 ounces for 20-39 year olds and for 40-54 year-old males and 5-8 ounces for 5-19 year olds. It was minimal for the age groups over 55 years.

The data also indicated that the mean caloric intakes of the Eskimos were lower than the corresponding national means, as was the percentage of calories from fat. The percentage of calories from protein was higher than the corresponding national percentages. The nutrient intakes were below recommendations for vitamin A, folate and calcium for most age groups and also for vitamin C for the older age groups and pregnant women.

The only consistency in the pattern of eating among age groups was that in each age group the highest percentage eating at any one time and the highest caloric intake was during the 1100-1359 hours period. When the percentage of calories consumed during the different time periods was considered it was evident that when compared to the national population the Eskimos had a

higher percentage of their caloric intake before 1400 hours and a lower percentage between 1700 and 1959 hours. The data also indicated that there were no daily meal patterns.

References

1. Canada. Department of National Health and Welfare, Ottawa. *Nutrition Canada: The Eskimo Survey Report*. Information Canada 1975, p. 5.

Table 11.1 Mean daily nutrient intake of Eskimo physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	1024	1711	2683	2243	2309	1384	2251	1052	1270	873	1772
Protein (g)	49	70	112	99	123	90	165	76	107	77	126
Fat (g)	35	55	98	81	77	36	64	30	35	24	53
Total Carbohydrate (g)	129	239	346	276	268	177	224	118	133	88	203
Fibre (g)	0.77	1.39	1.24	1.42	1.30	0.65	0.85	0.62	0.81	0.30	1.20
Calcium (mg)	659	657	817	844	713	415	714	374	412	273	597
Iron (mg)	15	14	21	20	26	18	34	16	22	17	25
Vitamin A (R.E.)	374	380	3942	422	775	216	322	263	694	159	359
Thiamine (mg)	0.83	1.26	1.64	1.66	1.80	1.27	2.34	1.10	1.58	1.05	1.87
Riboflavin (mg)	1.68	2.25	3.77	2.85	3.42	2.48	4.70	2.23	2.96	2.25	3.60
Niacin (N.E.)	19	29	47	43	56	39	73	33	46	33	52
Vitamin C (mg)	46	40	59	50	52	48	38	17	19	10	48
Free Folate (μg)	22	35	87	45	40	23	31	20	20	13	28
Total Folate (μg)	46	74	149	85	80	53	63	40	54	29	72
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.2 Mean daily intake of food groups (grams) by Eskimo physiological groups

Food Groups	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Dairy Products	139	137	147	133	112	47	47	27	36	23	57
Wild Game	60	109	175	198	306	219	464	191	277	216	325
Meat, Fish, Poultry, Eggs	36	53	130	54	62	48	66	44	77	44	89
Cereal Products including breakfast Cereals	110	208	329	324	185	134	192	111	165	74	197
Breakfast Cereals	17	23	5	11	—	9	10	7	60	5	19
Fruit and Fruit Products	134	113	173	95	76	112	46	39	5	8	95
Vegetables <i>not</i> including Potatoes	6	12	6	17	12	8	8	8	31	—	20
Potatoes	10	43	19	41	39	20	25	21	28	—	43
Fats and Oils	13	24	38	47	39	14	41	16	17	6	23
Nuts and Legumes	2	9	5	7	1	1	2	2	—	—	—
Foods Primarily Sugar	22	61	112	59	111	59	88	38	54	42	63
Mixed Dishes and Soups	60	180	118	195	107	144	170	88	59	80	143
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.3 Percent contribution of dairy products to nutrient intake of Eskimo physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	21	8	6	6	6	6	4	3	6	4	7
Protein	23	11	7	7	5	4	2	2	3	2	4
Fat	32	12	9	9	10	13	7	6	11	8	12
Total Carbohydrate	13	6	3	3	4	4	3	3	6	3	5
Fibre	—	—	—	—	—	—	—	—	—	—	—
Calcium	60	41	34	28	33	30	18	17	28	21	31
Iron	1	1	—	—	—	—	—	1	—	—	—
Vitamin A	37	22	3	22	12	26	18	12	7	15	23
Thiamine	12	5	4	3	2	2	1	2	1	1	3
Riboflavin	34	17	10	11	10	7	4	4	5	3	8
Niacin	15	6	4	4	3	2	1	2	2	1	2
Vitamin C	25	13	9	12	20	7	11	19	16	25	7
Free Folate	35	19	7	15	16	10	7	7	14	10	8
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.4 Percent contribution of meat, poultry, fish, eggs, wild game to nutrient intake of Eskimo physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	13	13	16	15	20	25	30	29	37	40	29
Protein	51	60	67	65	77	78	86	83	87	88	83
Fat	11	12	14	12	13	18	19	15	26	33	17
Total Carbohydrate	—	—	—	—	—	—	—	—	—	—	—
Fibre	—	—	—	—	—	—	—	—	—	—	—
Calcium	5	9	12	9	17	21	26	20	27	33	23
Iron	29	52	65	60	73	73	82	72	79	79	78
Vitamin A	19	20	91	6	28	19	34	38	75	68	15
Thiamine	31	37	51	49	72	70	77	71	80	81	70
Riboflavin	34	41	68	55	68	69	77	67	78	73	72
Niacin	53	59	71	64	72	78	83	82	89	87	84
Vitamin C	5	9	20	14	22	16	44	41	52	71	25
Free Folate	11	8	56	7	18	13	15	15	20	25	20
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.5 Percent contribution of cereal products to nutrient intake of Eskimo physiological groups

Nutrient	1-4 yrs		5-11 yrs		12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	M	F	
Calories	33	33	42	36	23	26	22	29	25	27			32
Protein	21	19	19	20	10	9	7	9	7	7			9
Fat	15	16	28	13	14	22	11	17	13	27			26
Total Carbohydrate	49	45	58	58	36	36	43	48	47	44			49
Fibre	58	34	47	46	39	38	43	34	35	48			49
Calcium	30	39	45	51	32	34	44	47	27	28			37
Iron	63	30	22	25	11	11	9	10	8	7			13
Vitamin A	3	14	2	17	3	4	4	2	2	2			8
Thiamine	54	47	38	43	20	21	20	23	15	17			22
Riboflavin	27	30	14	20	8	10	7	9	6	8			13
Niacin	27	25	18	20	9	10	9	10	6	8			10
Vitamin C	—	—	—	—	—	—	—	—	—	—			—
Free Folate	40	49	28	55	39	46	56	50	43	52			47
Sample Size	32	66	24	19	32	39	38	39	29	17			18

Table 11.6 Percent contribution of fruit and fruit products to nutrient intake of Eskimo physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55 + years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	7	4	4	2	2	4	1	2	—	1	3
Protein	—	—	—	—	—	—	—	—	—	—	—
Fat	—	—	—	—	—	—	—	—	—	—	—
Total Carbohydrate	14	7	7	5	4	9	3	5	1	2	6
Fibre	17	9	6	2	9	8	4	24	3	19	4
Calcium	1	—	—	—	1	1	—	—	1	—	—
Iron	3	1	—	—	1	1	—	—	—	—	1
Vitamin A	—	2	—	1	1	2	—	—	—	—	—
Thiamine	1	—	—	1	1	1	—	—	—	—	—
Riboflavin	1	—	—	—	—	—	—	—	—	—	—
Niacin	—	—	—	—	—	—	—	—	—	—	—
Vitamin C	68	60	65	54	41	66	36	19	10	1	41
Free Folate	3	2	1	3	8	8	3	5	3	3	1
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.7 Percent contribution of vegetables including potatoes to nutrient intake of Eskimo physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	1	6	2	2	3	2	1	2	3	—	3
Protein	1	2	1	1	1	1	—	1	1	—	1
Fat	1	10	3	1	3	2	1	2	3	—	2
Total Carbohydrate	1	5	2	3	4	3	2	4	5	—	5
Fibre	12	32	17	17	27	29	14	28	57	—	35
Calcium	1	2	1	1	1	1	1	1	4	—	2
Iron	1	3	1	1	2	1	—	1	2	—	2
Vitamin A	16	4	1	8	2	10	2	14	2	—	13
Thiamine	1	4	2	2	2	2	1	2	2	—	3
Riboflavin	—	1	—	1	1	—	—	1	1	—	1
Niacin	1	3	1	1	2	1	—	1	1	—	1
Vitamin C	2	14	5	14	14	7	8	19	22	—	25
Free Folate	4	11	2	9	9	9	7	13	17	—	19
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.8 Percent contribution of fats to nutrient intake of Eskimo physiological groups

Nutrient	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
Calories	10	12	12	18	14	8	15	13	11	61	11
Protein	—	—	—	—	—	—	—	—	—	—	—
Fat	34	41	37	55	47	35	60	53	45	24	39
Total Carbohydrate	—	—	—	—	—	—	—	—	—	—	—
Fibre	—	—	—	—	—	—	—	—	—	—	—
Calcium	—	—	—	—	—	—	—	—	—	—	—
Iron	—	—	—	—	—	—	—	—	—	—	—
Vitamin A	22	20	3	27	49	32	42	23	14	5	34
Thiamine	—	—	—	—	—	—	—	—	—	—	—
Riboflavin	—	—	—	—	—	—	—	—	—	—	—
Niacin	—	—	—	—	—	—	—	—	—	—	—
Vitamin C	—	—	—	—	—	—	—	—	—	—	—
Free Folate	—	—	—	—	—	—	—	—	—	—	—
Total Folate	—	—	—	—	—	—	—	—	—	—	—
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.9 Percent contribution of selected food categories to total caloric intake of Eskimo and National physiological groups

Physiological Group	Foods mostly sugar		Beverages and soft drinks		
	Eskimo	National	Eskimo	National	
1-4 yrs	9	6	2	1	
5-11 yrs	14	7	5	2	
12-19 yrs	Males	14	7	2	3
	Females	10	7	6	3
20-39-yrs	Males	19	6	10	9
	Females	15	7	8	4
40-54 yrs	Males	14	7	10	8
	Females	14	7	4	4
55+ yrs	Males	15	8	1	4
	Females	19	7	1	2
Pregnant Women	12	7	2	3	

Table 11.10 Percent contribution of selected food categories to total carbohydrate intake of Eskimo and National physiological groups

Physiological Group	Foods mostly sugar		Beverages and soft drinks		
	Eskimo	National	Eskimo	National	
1-4 yrs	16	11	5	2	
5-11 yrs	23	12	9	3	
12-19 yrs	Males	24	13	4	6
	Females	19	13	8	5
20-39 yrs	Males	37	14	13	11
	Females	30	15	15	7
40-54 yrs	Males	35	15	12	7
	Females	31	14	7	4
55+ yrs	Males	38	17	2	3
	Females	44	14	5	2
Pregnant Women	27	13	6	5	

Table 11.11 Percentage of Eskimos eating during different time periods

Time of day (International Time)	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
0500-0859	48	78	66	70	54	57	90	77	77	64	50
0900-1059	58	52	59	51	86	65	74	73	57	44	56
1100-1359	92	97	96	91	98	85	92	100	89	100	94
1400-1659	61	57	81	75	80	66	83	74	61	73	78
1700-1959	87	77	92	95	83	86	80	91	74	75	67
2000-0459	50	82	83	86	98	97	93	100	77	74	100
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Table 11.12 Mean daily caloric intake (kcal) of Eskimos eating during different time periods

Time of day (International Time)	1-4 yrs	5-11 yrs	12-19 yrs		20-39 yrs		40-54 yrs		55+ years		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	
0500-0859	224	398	604	456	469	337	435	252	240	157	510
0900-1059	237	270	241	295	315	255	334	77	221	265	424
1100-1359	336	507	839	877	604	461	686	323	492	269	544
1400-1659	227	326	437	231	218	181	258	94	134	110	328
1700-1959	290	405	794	435	551	334	618	300	450	130	493
2000-0459	161	326	309	453	503	190	260	136	139	140	170
Sample Size	32	66	24	19	32	39	38	39	29	17	18

Chapter 12

Overall Summary and Recommendations*

This report has presented a picture of the "average" Canadian pattern of eating for each of eight physiological groups. The type of food consumed was little influenced by region or season indicating the ability of the Canadian food distribution system to ensure the continual supply of all types of food in most parts of the country.

The quantity of the various food groups consumed was influenced by the age of the physiological group not only because of a difference in caloric requirements but also a change in the pattern of consumption. The younger age groups and adolescent males had similar mean daily intakes of dairy products which were sufficient to meet their calcium recommendations. The mean intakes of this food group gradually decreased with age (Table 12.1). For the males over 65 years of age and the adult female groups, including pregnant women, the mean intakes were not sufficient to meet the calcium recommendations. Consideration should be given to programs encouraging some increase in the consumption of milk products and cheese by these particular groups.

The mean daily intake of the meat, poultry, fish and egg group increased with age for both sexes to a maximum for the 20-39 year olds. Intake then decreased gradually with age to about half this maximum for those over 65 years. There was no change with age in the percentage eating this food group. The mean consumption of eggs was fairly constant as was the percentage of the population consuming them. Mean consumption was estimated to be 3 eggs per week for all age groups except the adult males whose mean intake was estimated to be as high as 6 per week. The mean consumption of the MPFE group as a whole was considered to be higher than required as a source of protein and of fat. The percent calories from protein was 15% for 1-4 years olds, 13% for 5-11 year olds and 14% for all others. This percentage is higher than required for health though not incompatible with it. The actual

**The Indian and Eskimo samples were not sufficiently representative to include in the overall summary. Each of these chapters must be considered separately.*

mean intake of protein in grams was higher than that recommended in the Dietary Standard for all groups, particularly the 1-4 year olds. The percent calories from fat was 40% for all age groups except for the children up to 11 years of age (38%) and for those over 65 years of age (39%). Many authorities consider that this high fat intake may be deleterious to health and a lower percentage of calories from fat should be recommended. The mean intake of the fats group followed the same pattern of intake as bread because the recorded fats were used principally as spreads. However, for those over 5 years of age such fats provided only 6-8% of the calories and therefore a reduction in the quantity of high fat meats would have a greater effect in reducing the percent calories from fat than would a reduction in fat spreads.

Bread and rolls were eaten by over 91% of all age groups on the day preceding the interview. After the age of 4 years the females' mean consumption was fairly constant but that of the males was highest for the 12-39 year olds, gradually decreasing thereafter. The consumption of breakfast cereals followed a different pattern. The percentage of 1-4 year olds eating breakfast cereals was higher than that of any other group whereas it was lowest for the 12-19 and 40-64 year-old females, and the 20-39 year old group.

The enrichment of breakfast cereals and of flour used in bread and rolls played an important role in the percent contribution of the cereal group to thiamine intake (from 29 to 40%) and iron intake (from 23 to 39%). The highest mean daily intake of iron was for the infant group, which was two to four times the recommended amount and was due to the consumption of enriched infant cereals. There is no indication that this level of intake is any cause for concern.

For those age groups with low thiamine and iron intakes there is no one solution to increasing the intake of these nutrients. Compulsory fortification of all flour with these two nutrients will be of some benefit but an accompanying increase in the consumption of cereal products will also be required if the recommended intake is to be achieved. It is difficult for women of child-bearing age to

meet the recommendations for iron from food alone without the inclusion of foods rich in iron.

The mean intake of the fruits group and the vegetable category was not appreciably influenced by age or sex. The mean intake of potatoes, on the other hand, was influenced by these factors. Adolescent and adult males had the highest mean intake of potatoes due to an increase in the quantity consumed and not to a difference in the percentage eating them. Fruits and vegetables were the primary source of vitamin C, the mean intake of which was at least three times the recommendations in the Dietary Standard for all age groups. These mean intakes however were all based on calculated values, and although average losses due to storage and cooking are taken into consideration in the formulation of food composition tables, actual intakes may have been lower. Care must be taken in food preparation and storage to prevent unnecessary losses of this vitamin. The value of potatoes, properly prepared, is evident in this report, not only as a source of vitamin C but also of fibre and free folate.

Caution is advised in interpretation of the folate intake data. These were based on tables which were compiled for this report⁽¹⁾, and which indicate a lower folate content than tables used previously. The recommended folate intakes listed in the latest editions of the Canadian Dietary Standard, and the Recommended Dietary Allowances of the U.S. were based on previous tables and assays, and assumed higher folate contents for the foods analyzed in the present study. A study of the folate sufficiency of a Canadian population indicates that folate deficiency in Canada is unusual, and that the folate available to more than 90% of Canadians is adequate to maintain a normal level of serum folate⁽²⁾. These data are identical with those obtained with a population of white Americans in the United States⁽³⁾. A group of consultants recommends that these data be interpreted to indicate the absence of significant folate deficiency in Canada, and that the folate intake for all age groups be considered adequate when assessed by these new tables.

The mean intake of foods mostly sugar was fairly constant for those over 12 years of age and the percent contribution to

caloric and carbohydrate intakes was also constant for these age groups — approximately 7% of the caloric intake and approximately 13-15% of the carbohydrate intake. The mean daily consumption of soft drinks was estimated and found to be much higher for the 20-39 year-old males than for any other age group. Mean daily alcohol consumption was also estimated and was found to be lower than that indicated in food disappearance data. The fact that alcohol consumed on Fridays and Saturdays was not recorded because the survey clinics did not operate on Saturdays or Sundays contributed to this discrepancy.

A high percentage of the population consumed some milk and milk products, meat, fish and poultry, bread and rolls, fruits and vegetables, grains and flour mixtures and foods mostly sugar. A smaller percentage consumed cheese, breakfast cereals and eggs. Age influenced the percentage of people consuming some food groups. These included cheese, which increased for those over 20 years of age; fruit, which decreased with age for the males and increased after 40 years of age for the females; and margarine, where there seemed to be an increase in the percentage of the population eating margarine and a decrease in the percentage eating butter after 40 years of age.

Data on the pattern of eating indicated that over 90% of all age groups in the population consumed approximately one third of their caloric and nutrient intakes between 11 a.m. and 2 p.m. and also between 5 p.m. and 8 p.m. Except for the pregnant women, over 66% of the population consumed 10-17% of their calories before 9 a.m. The 12-64 age groups consumed a significant percentage of their calories after 8 p.m. (males 13-16%, females 10-11%).

There were some regional differences in the pattern of eating that were consistent for most age groups. Those in the Atlantic region consumed a higher proportion of their fat from margarine than butter and more evaporated milk, potatoes, fish and less fruit than other regions. The percentage of meat, potatoes and vegetables consumed was more equally divided between the noon and evening meal periods in both the Atlantic region and Quebec than in other regions. Those in Quebec had a much higher consumption

of soup, foods primarily sugar and soft drinks and along with the Atlantic region a higher mean intake of potatoes. Except for the 1-4 year olds, the mean consumption of dairy products was lower in Quebec than in other regions and breakfast cereals were eaten by a lower percentage of the population in most age categories. The patterns of eating in the other regions were similar with a higher proportion of meat, vegetables and potatoes eaten after 5 p.m. than during the noon period. Those in the Pacific region had a mean intake of potatoes which was lower than in any other region.

The only consistent seasonal differences for all groups were increases during the summer months in the mean daily intake of soft drinks and of vegetables. There was a lower proportion of oils in the fats group consumed by adults during the winter, which along with a slightly lower consumption of vegetables, may indicate a reduction in the consumption of salads.

The pregnant women had patterns of food consumption similar to those of the 20-39 year-old females except for modest increases in milk and fruit consumption. Greater emphasis on the increased consumption of milk and milk products and the selection of fruits and vegetables are required to increase the intakes of calcium and folic acid by these women. Although 88% of these women reported the use of vitamin and mineral supplements, the data indicated, that with a greater increase in the consumption of milk, this augmentation of the diet would be unnecessary except for iron and folic acid. It is noteworthy that 87% of those who took supplements did so on the advice of their physician while only 19% reported receiving dietary advice from their physician.

References

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Table 12.1 Mean daily intake of food equivalents for different physiological groups*

	1-4 yrs		5-11 yrs		12-19 yrs		20-39 yrs		40-64 yrs		65+ yrs		Pregnant Women
	M & F	M & F	M	F	M	F	M	F	M	F	M	F	
Milk (cup)	3	2½	2¾	2	2	1½	1½	1	1¼	1¼	2½		
MPFE (oz)	3	4	6	4	9	5	6	4	5	3	5		
Eggs (each)	½	< ½	½	⅓	1	< ½	¾	½	⅘	½	⅗		
Bread (slices)	1½	3	5	3½	5	3	4	3	3	3	3		
Breakfast Cereals (serv.)	1	1	1	< ½	½	½	1	½	1+	1	1		
Baked Foods (oz)	2	3	4	3½	4	3	3	2½	2	3	3		
Fruit (serv.)	2½	3	2½	2½	2½	2	2	2½	1½	2	3		
Vegetables (serv.)	½	1	1	1	1½	1½	1½	1½	1	1	1½		
Potatoes (serv.)	1	1	2	1	2	1	1½	1	1¼	¾	1		
Fat (tsp)	2	4	7	5	7	5	6	4	5	3½	5		
Sugar (tsp)	5	7	10	7	10	6	9	5	8	5	6		
Soft Drinks (oz)	1½	3	8	5	14	6	7	3	3	1½	5		

1 Serving Breakfast Cereals — 30g
 Fruit, vegetables, potatoes — 100g

*Does not include Indian and Eskimo groups.

APPENDIX A: RECOMMENDED DAILY

Age	Sex	Weight (kg)	Height (cm)	Energy ^a		Protein (g)	WATER-SOLUBLE VITAMINS				
				(kcal)	(MJ) ^b		Thiamin (mg)	Niacin (NE) ^c	Riboflavin (mg)	Vitamin B ₆ ^d (mg)	Folate ^e (µg)
0-6 mo	Both	6	—	kg x 117	kg x 0.49	kg x 2.2(2.0) ^f	0.3	5	0.4	0.3	40
7-11 mo	Both	9	—	kg x 108	kg x 0.45	kg x 1.4	0.5	6	0.6	0.4	60
1-3 yrs	Both	13	90	1400	5.9	22	0.7	9	0.8	0.8	100
4-6 yrs	Both	19	110	1800	7.5	27	0.9	12	1.1	1.3	100
7-9 yrs	M	27	129	2200	9.2	33	1.1	14	1.3	1.6	100
	F	27	128	2000	8.4	33	1.0	13	1.2	1.4	100
10-12 yrs	M	36	144	2500	10.5	41	1.2	17	1.5	1.8	100
	F	38	145	2300	9.6	40	1.1	15	1.4	1.5	100
13-15 yrs	M	51	162	2800	11.7	52	1.4	19	1.7	2.0	200
	F	49	159	2200	9.2	43	1.1	15	1.4	1.5	200
16-18 yrs	M	64	172	3200	13.4	54	1.6	21	2.0	2.0	200
	F	54	161	2100	8.8	43	1.1	14	1.3	1.5	200
19-35 yrs	M	70	176	3000	12.6	56	1.5	20	1.8	2.0	200
	F	56	161	2100	8.8	41	1.1	14	1.3	1.5	200
36-50 yrs	M	70	176	2700	11.3	56	1.4	18	1.7	2.0	200
	F	56	161	1900	7.9	41	1.0	13	1.2	1.5	200
51+ yrs	M	70	176	2300 ^g	9.6 ^g	56	1.4	18	1.7	2.0	200
	F	56	161	1800 ^g	7.5 ^g	41	1.0	13	1.2	1.5	200
Pregnancy				+300 ^d	1.3 ^d	+20	+0.2	+2	+0.3	+0.5	+50
Lactation				+500	2.1	+24	+0.4	+7	+0.6	+0.6	+50

^aRecommendations assume characteristic activity pattern for each age group.

^bMegajoules (10⁶ joules). Calculated from the relation 1 kilocalorie = 4.184 kilojoules and rounded to 1 decimal place.

^cRecommended energy intake for age 66+ years reduced to 2000 kcal (8.4 MJ) for men and 1500 kcal (6.3 MJ) for women.

^dIncreased energy intake recommended during 2nd and 3rd trimesters. An increase of 100 kcal (418.4 kJ) per day is recommended during the 1st trimester.

^eRecommended protein intake of 2.2 g/kg body wt. for infants age 0-2 mo and 2.0 g/kg body wt. for those age 3-5 mo. Protein recommendation for infants 0-11 mo assumes consumption of breast milk or protein of equivalent quality.

^f1NE (niacin equivalent) is equal to 1 mg of niacin or 60 mg of tryptophan.

^gRecommendations are based on estimated average daily protein intake of Canadians.

^hRecommendations given in terms of free folate.

NUTRIENT INTAKE — Revised 1975

FAT-SOLUBLE VITAMINS					MINERALS					
Vitamin B ₁₂ (μ g)	Vitamin C (mg)	Vitamin A (RE) ⁱ	Vitamin D (μ g cholecalciferol) ^k	Vitamin E (mg d- α -tocopherol)	Calcium (mg)	Phosphorus (mg)	Magnesium (mg)	Iodine (μ g)	Iron (mg)	Zinc (mg)
0.3	20 ^l	400	10	3	500 ^m	250 ^m	50 ^m	35 ^m	7 ^m	4 ^m
0.3	20	400	10	3	500	400	50	50	7	5
0.9	20	400	10	4	500	500	75	70	8	5
1.5	20	500	5	5	500	500	100	90	9	6
1.5	30	700	2.5 ^l	6	700	700	150	110	10	7
1.5	30	700	2.5 ^l	6	700	700	150	100	10	7
3.0	30	800	2.5 ^l	7	900	900	175	130	11	8
3.0	30	800	2.5 ^l	7	1000	1000	200	120	11	9
3.0	30	1000	2.5 ^l	9	1200	1200	250	140	13	10
3.0	30	800	2.5 ^l	7	800	800	250	110	14	10
3.0	30	1000	2.5 ^l	10	1000	1000	300	160	14	12
3.0	30	800	2.5 ^l	6	700	700	250	110	14	11
3.0	30	1000	2.5 ^l	9	800	800	300	150	10	10
3.0	30	800	2.5 ^l	6	700	700	250	110	14	9
3.0	30	1000	2.5 ^l	8	800	800	300	140	10	10
3.0	30	800	2.5 ^l	6	700	700	250	100	14	9
3.0	30	1000	2.5 ^l	8	800	800	300	140	10	10
3.0	30	800	2.5 ^l	6	700	700	250	100	9	9
+1.0	+20	+100	+2.5 ^l	+1	+500	+500	+25	+15	+1 ⁿ	+3
+0.5	+30	+400	+2.5 ^l	+2	+500	+500	+75	+25	+1 ⁿ	+7

ⁱConsiderably higher levels may be prudent for infants during the first week of life to guard against neonatal tyrosinemia.

^l1RE (retinal equivalent) corresponds to a biological activity in humans equal to 1 μ g retinol (3.33 IU) or 6 μ g β -carotene (10 IU).

^kOne μ g cholecalciferol is equivalent to 1 μ g ergocalciferol (40 IU vitamin D activity).

^lMost older children and adults receive vitamin D from irradiation but 2.5 μ g daily is recommended. This intake should be increased to 5.0 μ g daily during pregnancy and lactation and for those confined indoors or otherwise deprived of sunlight for extended periods.

^mThe intake of breast-fed infants may be less than the recommendation but is considered to be adequate.

ⁿA recommended total intake of 15 mg daily during pregnancy and lactation assumes the presence of adequate stores of iron. If stores are suspected of being inadequate, additional iron as a supplement is recommended.



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