

# **Barriers to Changing Food Selection**

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## *Abstract*

Individuals' dietary behaviours are of primary interest to public health professionals, dietitians/nutritionists, and food producers. Although individuals have been exposed to public health messages concerning nutritional recommendations, questions remain as to the degree to which they have responded to, and integrated, these recommendations into their daily lives. In order to increase our understanding of the effectiveness of nutrition education, it is essential to understand the factors that are shaping individuals' dietary choices. The current study is an exploration of individuals' desires for change concerning intake of seven food groups and the barriers to making those modifications. Participants in the Ontario Food Survey (men and women aged 18 to 74, n = 1189) were asked about their desire to increase, decrease or maintain their consumption of seven food categories and to indicate the barriers to making the desired changes. The majority of respondents indicated a desire to maintain their intake for most of the food groups (68% male vs. 59% female). The exception to this was the fruit and vegetable group, with the majority (53% male, 62% female) indicating a desire to eat more of these foods. When responses for all food groups were added together, the major reported barrier to changing intake was preference for the food. This was especially prominent for those who wished to consume less of given food groups. Preference was followed by habit and preparation as the reported barriers to dietary change.

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## Method

A stratified multistage probability sample design was used to select the sample for the Ontario Food Survey. This involves the random selection of communities from different population sizes followed by a random sample from within each of the selected communities and each age and sex group. The purpose is to generate a representative sample of the total population that can be reasonably reached via home visits. A true random sample of Ontario's total population of eleven million over a geographic space equivalent to France and Germany combined would be an impossible task. The target population was all persons living in Ontario at the time of the survey between the ages of 18 and 74, excluding those living in institutions, on Indian Reserves, and in military camps. The Registered Person's Database was used as the sampling frame. A strategy was developed to recruit a sample that was representative of the geographic regions of Ontario (urban and rural), gender, and the age range specified above. A sample of women aged 30–39 from low-income enumeration areas was targeted for a sub-study on food security. To capture the daily and seasonal variation in food intake, the selected persons were assigned to a particular day of the week, as well as to a spring or fall data collection period.

A questionnaire was developed to collect information from individuals about their desire for, and barriers to, dietary change. The questions were structured around seven food groups adapted from the Canada Food Guide for Healthy Eating. The following list corresponds to the order presented in the study.

- Bread, pasta, rice, grains (includes breakfast cereals, couscous, millet, bulgur, buckwheat)
- Fruits, vegetables and juices
- Milk and dairy products (includes cheese, yogurt, ice cream)
- Meats, fish, poultry, eggs
- Meat Alternates (includes legumes, lentils, nuts, seeds, soybeans, tofu)
- Oils, margarine, butter (includes salad dressings)
- Sweets, sugars, soft drinks (includes candies, chocolates, jams, jellies, syrups, honey).

The instrument used was based on results from focus groups on trends related to desired changes to food consumption and the various barriers to those changes. These groups elicited an extensive list of possible barriers to change, which were

classified according to eight categories. After preliminary testing on a sample of volunteers, a final instrument was constructed. The eight categories of barriers were:

1. *Information/Knowledge*: health beliefs (i.e., this food group is good/bad for me), lifestyle messages (media messages that have influenced the decision), and social pressures (it's not right to eat certain foods for political or social reasons).
2. *Preparation*: the impact of family or friends on eating situations (i.e., planning meals that everyone in the household will eat), preparation skills, and time available to prepare foods.
3. *Preference*: "do not like" and therefore will not consume more or "like too much" to reduce intake.
4. *Availability*: access to foods at home or away from home, seasonal limitations, location problems (i.e., difficulties reaching rural locations during winter), and portability issues (i.e., milk requires refrigeration). The item, such as fats, may be widely distributed in foods and therefore unavoidable.
5. *Cost*: difficulty in reducing the intake of cheap foods or increasing the intake of higher priced foods.
6. *Medical Reasons/Health*: lactose intolerance, specific non-religious dietary restrictions or recommendations, health professional dietary advice, problems of intestinal gas or allergic reactions, and other intolerances that may be called allergies by the respondent.
7. *Habit*: the impact of time of day, association with other foods (i.e., milk only consumed at breakfast), influence of friends and social activities, and religious reasons.
8. *Other*: answers that did not fit any of the above categories.

Desire for a change in food intake was determined by asking the participant if he/she would like to consume more, the same amount, or less of each food group. If the participant chose the option to maintain, they were asked for a reason. If he/she chose the option to increase or decrease, the individual was probed about the barrier to change. Participants were asked to select the strongest barrier when more than one was identified. The interviewer recorded the answer under one of the eight categories. If in doubt, interviewers recorded the participant's words directly onto the instrument for interpretation by the study coordinator or investigators.

All data were precoded and analyzed by the Statistical Package for the Social Sciences (SPSS 9.0, 1998, SPSS Inc., Chicago, Ill.). The results are preliminary and descriptive.

## Results and Discussion

The participants in the survey are described in Table 1. The sampling frame initially included 6284 potential subjects, of whom 2951 could not be contacted (moved away, died, no response to repeated phone calls). Of the 2881 eligible people contacted, 1189 participated (481 males, 708 females) for a response rate of 41%. People who refused were asked to answer a few short questions about dietary intake, smoking behaviour, and demographic background. Future analyses will assess similarities and differences between completers and refusers.

TABLE 1 - SAMPLE CHARACTERISTICS (%)

<b>Gender</b>	Males	40.5
	Females	59.5
<b>Age</b>	18-29	14.6
	30-39	21.7
	40-49	15.9
	50-59	18.1
	60-69	18.5
	70-74	11.2
<b>Education</b>	Less than secondary	21.0
	Graduated secondary	22.0
	Some post secondary	21.9
	Graduated post-secondary	34.2
<b>Employment</b>	Employed	47.3
	Unemployed	4.0
	Retired	23.0
	Homemaker	7.7
	Student	3.5
	Any combination	13.2
<b>Marital Status</b>	Single	18.3
	Married	66.4
	Separated/divorced/widowed	14.6
<b>BMI</b>	20 & under	5.8
	20.01-25	33.0
	25.01-30	32.8
	30.01 & over	21.4

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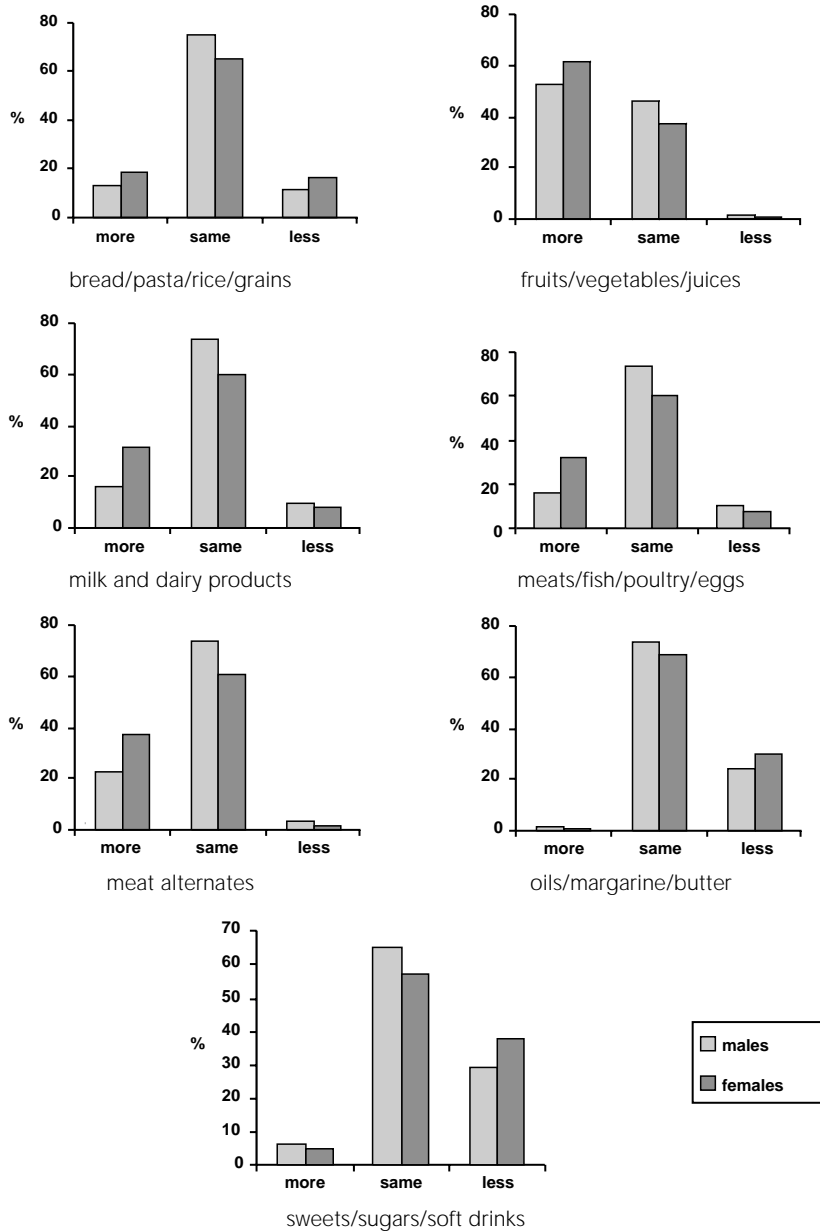


Figure 1 - Desire to eat more, the same, or less of each food group (males vs. females)

## Desire for Dietary Change

Figure 1 illustrates men and women's responses to the questions about dietary change for each of the seven food groups. The results reveal that the majority of respondents (ranging from 57% to 75%) indicated a desire to maintain their consumption of each of the food groups, with the exception of the fruits/vegetables/juices group. For this latter food group, the majority reported a desire to increase consumption. Most respondents expressed a desire to maintain their intakes of the two groups: oils/margarine/butter and sweets/sugars/soft drinks. The rest predominantly desired to consume "less", with very few indicating a desire to increase consumption. In contrast, for the food groups fruit/vegetables/juices and meat alternates, very few reported a desire to decrease consumption. When respondents were asked "why" they wanted to maintain their current intake, the most common answer provided for six of the food groups was "I already eat well" (see Table 2). The only exception to this pattern was the response given for meat alternates where the frequency for the answer, "I do not want to make any changes" (43%) was similar to that of the answer, "I already eat well" (48%).

TABLE 2 - REASONS FOR MAINTAINING INTAKE FOR EACH FOOD GROUP (%)

	Bread/ pasta/rice/ grains	Fruits/ vegetables/ juices	Milk and dairy products	Meats/ fish/ poultry/ eggs	Meat alternates	Oils/ margarine/ butter	Sweets/ sugars/ soft drinks
"I already eat well"	79	82	75	78	48	77	76
"I have made changes"	10	9	9	12	4	16	14
"I do not want to"	8	6	12	8	43	5	8
"It is too much work"	1	1	0.3	0.4	2	0	0.4
Other	2	2	5	3	4	1	2

A comparison of men versus women indicates that a higher proportion of men would prefer to maintain their consumption of the food groups (see Table 3).

TABLE 3 - PERCENTAGE OF MALES VS FEMALES WHO PREFER TO MAINTAIN INTAKE OF FOOD GROUPS

	Males	Females
Bread/rice/pasta/grains	75%	65%
Fruits/vegetables/juices	46	37
Milk and dairy products	74	60
Meats/fish/ poultry/eggs	70	67
Meat alternates	74	61
Oils/margarine/butter	74	69
Sweets/sugars/soft drinks	65	57
Mean	68	59.4

The results concerning desire to maintain intake are similar to those of Kearney, Gibney, Martinez, et al., who studied a large cross section of the population of all member states of the European Union (1). An average of 71% agreed that "I do not need to make changes to the food I eat as it is already healthy enough". The results ranged, however, from 47% in Finland to 87% in Italy. Similarly, in a study of Australians' perceptions of dietary guidelines, Worsley and Crawford found that the major barrier to dietary change was the belief that there was no need to change food behaviour (2). In their analysis of gender differences, Lappalainen, Saba, Holm, et al. also found that men were more likely to resist dietary changes (3).

The finding that the majority of participants had a desire to increase their fruit/vegetable/juice consumption could be related to the long standing nutrition messages from a range of sources to encourage intake of fruits and vegetables for better health. This particular message has remained consistent since the origin of the Canada Food Guide. By contrast, it is possible that individuals' desire to maintain their intake of the other food groups could be related to inconsistent nutrition messages. The messages regarding breads/cereals, dairy products, meat/fish/poultry, and even oils have perhaps overwhelmed consumers over the last twenty years and led to confusion and concern. It is interesting to note that despite the emphasis of nutrition messages on dietary fat reduction, the majority of respondents did not want to decrease their intake of oils/margarine/butter.

The greater desire to increase consumption of milk and dairy products reported by women (32%) compared to men (16%), could be consistent with health messages targeted to women regarding the maintenance of bone health. Similarly, more women (37%) had a desire to increase their intake of meat alternates (including legumes, lentils, nuts, seeds, soybeans and tofu), than men (23%), which might signify women's greater responsiveness to nutrition messages about alternate protein sources. The increased tendency for women to want to decrease their intake of sweets/sugars/soft drinks (38%) compared to men (29%), could be linked to women's greater tendency to be concerned with body weight issues.

### **Barriers to Change**

A summary of the frequencies of barriers is presented in Table 4. Each frequency includes the total number of times the barrier was identified for each of the seven food groups. Separate sums are provided for those who wanted to increase or decrease consumption of the food groups. The patterns varied by food group; however, the barrier that was the most frequent mode was preference. For four of the seven food groups (bread/pasta/rice/grains or oils/margarine/butter or meats/fish/poultry/eggs or sweets/sugars/soft drinks) the most common barrier to decreasing consumption was preference. It was also the most common barrier to increasing consumption of the two groups meats and milk and dairy products.

TABLE 4 - SUMMARY OF FREQUENCY OF BARRIERS  
TO CHANGE FOR ALL FOOD GROUPS ACCORDING  
TO DESIRE TO CONSUME MORE OR LESS OF FOOD GROUPS

BARRIER	Frequency		Total	Rank	
	More	Less		More	Less
Preference	303	621	924	3	1
Habit	397	327	724	1	2
Preparation	359	68	427	2	3
Availability	165	59	224	5	4
Health	180	38	218	4	5
Cost	157	5	162	6	8
Knowledge	111	9	120	7	7
Other	58	18	76	8	6

Responses to the question "What prevents you from making a change?" are presented as frequencies for each food group for men's and women's responses in Tables 5a and b. Of the 364 people who said that they wanted to consume more or less of the bread/pasta/rice/grains group, 31.0% (113) stated preference as the barrier to change (21.4% and 42.3% of those who wanted to increase or decrease intake respectively). Habit was the next most common barrier cited, being reported by 24.7% (90) of the respondents who had a desire to increase or decrease intake. For the 196 people who wanted to increase their intake of the bread/pasta/rice/grains group, 25.5% (50) cited preparation required for these foods as a barrier.

As previously reported, a 57.5% majority (684) of the total sample wanted to increase their intake of the fruits/vegetables/juice group. For this group as a whole, 27.8% (190) cited habit, 15.5% (106) reported preparation, and 14.5% (99) noted preference as the major barrier.

Two hundred and twenty-four women had a desire to consume more milk and dairy products. For this group, 31.7% (71) reported preference, and 23.2% (52) cited habit, as barriers to increasing intake. Preference was also the primary barrier for men who wished to decrease consumption, being cited by 63.0% (29) of the 46 men who wished to consume less of this food group. Health reasons were noted by 21.9% (66) of the combined group of men and women (301) as a barrier to increasing consumption. This would include such issues as medical advice or lactose intolerance.

For the 184 people who wished to increase consumption of the food group meats/fish/poultry/eggs, 26.6% (49) and 23.9% (44) reported preparation or cost, respectively, as the major barrier. This is the only food group for which cost was noted as a primary barrier, and it was noted by almost a quarter of both women and men. For the 192 people who preferred to reduce their intake of this food group, 41.7% (80) reported preference and 26.6% (51) cited habit as the major barriers.

For the meat alternates group, 366 people claimed that they wanted to increase consumption. The primary barriers to eating more were preparation, reported by

TABLE 5A - FREQUENCY OF WOMEN'S REPORTED BARRIERS TO DIETARY CHANGE FOR EACH FOOD GROUP

FOOD GROUP		Total	Infor- mation	Prepara- tion	Prefe- rence	Availa- bility	Cost	Health	Habit	Other
Bread/pasta/ rice/grains	More	132	10	32	27	7	5	14	27	9
	Less	114		11	51	8	3	4	29	5
Fruits/veg/ juices	More	434	9	73	70	62	56	37	105	13
	Less	6	1		2			1	2	
Milk and dairy products	More	224	20	8	71	8	12	44	52	7
	Less	52	1	4	20	2	1	13	9	1
Meats/fish/ poultry/eggs	More	107	5	24	16	8	25	10	17	2
	Less	125	6	16	50	4		4	34	7
Meat alternates	More	258	24	101	43	15	2	11	50	10
	Less	13			7	2		2	1	
Oils/margarine/ butter	More	7	2	1				3		1
	Less	212	6	15	112	4	3	6	61	3
Sweets/sugars/ soft drinks	More	33	11	1			2	17	1	1
	Less	267	3	3	159	18	1	4	75	1

TABLE 5B - FREQUENCY OF MEN'S REPORTED BARRIERS TO DIETARY CHANGE FOR EACH FOOD GROUP

FOOD GROUP		Total	Infor- mation	Prepara- tion	Prefe- rence	Availa- bility	Cost	Health	Habit	Other
Bread/pasta/ rice/grains	More	64	2	18	15	4	1	5	16	3
	Less	54	1	5	20	4	2	1	18	3
Fruits/veg/ juices	More	250	3	33	29	42	30	12	85	9
	Less	9	2	1	4	1				
Milk and dairy products	More	77	5	7	13	6	8	22	12	3
	Less	46	1	2	29	2		4	6	1
Meats/fish/ poultry/eggs	More	77	2	25	6	6	19	9	7	2
	Less	67	1	7	30	7	1	1	17	3
Meat alternates	More	108	12	38	16	7	1	2	26	4
	Less	15	2	2	9				2	
Oils/margarine/ butter	More	10	5	1			2	2		
	Less	116	2	7	60	7		5	32	1
Sweets/sugars/ soft drinks	More	28	8	1		1	2	15		1
	Less	138	2	2	72	7	1	4	46	4

38.0% (139) and habit, cited by 20.8% (76). Increased time and effort were seen as barriers to incorporating these foods into meals, along with the fact that many men and women were not in the habit of including these foods in their diet.

Preference and habit were the major barriers to decreasing consumption of oils/margarine/butter and sweets/sugars/soft drinks. A total of 328 men and women wanted to eat less oils/margarine/butter; 52.4% (172) and 28.4% (93) claimed that preference or habit, respectively, was the barrier. Of the 405 people who had a desire to consume less sweets/sugars/soft drinks, 57.0% (231) said that preference was the barrier to change and 29.9% (121) claimed that habit was the barrier. Most indicated that they like these products too much to reduce their intake and that these products were important components of recipes and, therefore, difficult to remove from habitual consumption.

The results concerning the importance of preference to individuals' dietary intakes are consistent with Australian, American, and European surveys. Worsley and Crawford also found that, in addition to a lack of any perceived need to change, taste preference was a primary barrier to altering food consumption among the Australian population studied (2). Similarly, American subjects indicated that taste or sensory appeal was the most important influence on their food choices (4,5). In the survey of barriers to healthy eating among adults in the EU countries, there was great variability between the fifteen participating countries. Overall, 23% of the sample reported reluctance to give up favourite foods, and 18% reported insufficient willpower, as barriers to making dietary change (3). In a study of the barriers to the adoption of reduced fat diets in a UK population, the most consistently reported problem was a reduction of taste quality (6).

In the current study, habit was the second ranked barrier to changing food behaviour. Habit was a major barrier to increasing the consumption of fruits and vegetables. In a British intervention program to increase fruit and vegetable consumption, factors related to intake included support of family and friends, cost, time limitations, shopping practicalities, and availability of these foods away from home (7). Although these factors differ from habit, the suggestions cited for increasing intake are related to habit, and include taking fruit as a dessert or between meal snack and eating two portions of vegetables with meals.

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Preparation, which included the influence of family on meal planning and time available to prepare foods, was noted as a barrier to increasing consumption of meat alternates, bread/pasta/rice/grains/and fruits/vegetables/juices. In a study of British families' accounts of the causal process in food choice, the dominant concern was the provision of foods that were acceptable to the family. Mothers were more concerned about choosing foods that children and partners would eat than about nutrition or health issues (8). As noted, barriers in the British study on fruit and vegetable intake included time constraints and family influence (7). Lack of time (irregular working hours and busy lifestyle) was the most frequently mentioned obstacle (24%) by EU subjects to not following nutritional advice (3).

Barriers for which there were less than 225 responses included availability, health, cost, and knowledge (in decreasing order). Nevertheless, other studies have found cost and health to be important factors on food choice (4,5). Cost was mentioned by 15% of the subjects in the EU survey, ranging from 10% in Germany and Italy to 23% in the UK and 24% in Luxembourg. The majority in that study did not report knowledge as a barrier (3).

## ***Conclusion***

When asked about the desire to make changes to their intake of each of seven food groups, the majority of respondents indicated that they would maintain their current consumption patterns. The primary explanation for this was "I already eat well". Overall, there was a greater tendency for men, compared to women, to want to maintain their present intake. The one exception to this desire to maintain consumption was a majority of men and women who indicated a desire to increase their intake of fruits/vegetables/juices.

For those who indicated a desire to either increase or decrease their consumption of any of the food groups, questions were asked about the barriers to making

these changes. For all food groups, the major barrier to changing intake cited was preference for the food. This was especially prominent for those who wished to consume less of given food groups. Preference was followed by habit and preparation as the reported barrier to dietary change. Other barriers such as knowledge, cost, health, and availability were not identified as major factors in changing consumption of most of the food groups. For the purposes of this study, participants were asked to identify the primary barrier for each food group, although it is likely that multiple factors interact with this dominant barrier at various times.

These findings are a component of a work in progress. Future work will involve a more extensive analysis of the relationship between the findings reported in the current paper and demographic and behavioural characteristics, i.e., education, income, and smoking behaviour. Furthermore, we are planning to link these responses to dietary data including 24-hour recalls and food frequency questionnaires, as well as to results concerning food security and physical activity/body weight.

This study confirms the need for partnerships between food and health professionals to promote nutrition recommendations. Increased effort must be made to develop and promote foods that address consumers' preferences, habits, preparation concerns, and health requirements.

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*Rena Mendelson*

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## *Biography*



### ***Rena Mendelson***

Rena Mendelson is the Associate Vice President, Academic at Ryerson Polytechnic University in Toronto, where she has responsibility for graduate studies, international activities and research. She is also a Professor of Nutrition in the School of Nutrition at Ryerson with a cross appointment to the Department of Nutritional Sciences at the University of Toronto. She obtained her undergraduate degree at the University of Western Ontario, her Master of Science in Nutrition at Cornell University and her Doctor of Science in Nutrition at the Harvard School of Public Health.

She has taught university students at Simmons College in Boston, the University of Toronto and Ryerson Polytechnic University since 1974. Her publications include scientific journals as well as popular books and newsletters. She is currently the Principal Investigator for the Ontario Food Survey. This is a collaborative project of the federal and provincial governments and the University of Toronto Program in Food Safety which measures the food intake of the people of Ontario along with other investigations including barriers to changing food behaviour. Rena serves on a number of Advisory Councils and Boards including the National Institute of Nutrition (in Canada) and Obesity Canada.

