

Mount Saint Vincent University
Department of Applied Human Nutrition

**Consumer use and interpretation of
trans fat information on food labels**

by
Sonya Ellis

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Approved:

Theresa Glanville, P.Dt., Ph.D.
Thesis Advisor
Professor of Applied Human Nutrition

Linda Mann, P.Dt., MBA
Associate Professor of Applied Human Nutrition

Judy Fraser Arsenault, P.Dt., MAHE
Department of Applied Human Nutrition

ABSTRACT

Trans fat information has recently been added to Nutrition Facts panels and packages are now permitted to bear a '0 trans fat claim'. With these changes, and the extensive media coverage trans fats have received, more consumers are becoming aware of trans fats. Although consumers are more aware of trans fats, little is known about if and how they use information on food packages to make purchasing decisions.

To investigate this topic, a questionnaire was completed with a total of 244 consumers in 3 grocery stores in the Halifax Regional Municipality. The questionnaire investigated participants' awareness of and attitude towards of trans fats, steps they take to reduce trans fats in their diet, and their interpretation of the '0 trans fat' claim. The Economics of Information Model was used as a theoretical framework for this study.

Data were analyzed using the chi-square test for independence between trans fat awareness and attitude variables and demographic variables. One-way ANOVA was used to test the effect of demographic variables on indices developed for analysis.

Almost all participants were aware of trans fats (98%) and consumers had a fairly negative attitude towards trans fats. Most participants (90%) were aware that trans fats were "bad for heart health" and 9 out of 10 (92%) believed that trans fats should be limited.

Participants were also aware of sources of trans fat; however, approximately one quarter of the sample believed that meat (29%) and dairy (26%) would be high in trans fat.

Most participants (92%) were aware of trans fat information on food packages. Over three quarters (82%) of the sample reported trying to reduce their trans fat intake and the Nutrition Facts panel was the most common method used to do this (59%). Women, older consumers, shoppers at the Bedford store, those using nutrition professionals, and those who used a greater number of sources for nutrition information were more likely to use more

strategies to reduce their trans fat intake. Consumers who were aware of trans fat information on food packages were also more likely to use this information.

Although most participants (75%) interpreted the '0 trans fat' claim correctly as "low in a certain type of fat", a group of shoppers believed products with this claim were low in fat (19%) and/or calories (16%). This claim was generally viewed as positive; however, some participants were skeptical (19%) of the claim and one tenth (10%) believed these products may not "taste as good".

Nutrition professionals should focus efforts on helping younger consumers, especially males, to reduce their trans fat intake. Although this group understands the effects of trans fats, fewer people in this group are attempting to reduce their trans fat intake. Educators should also continue their efforts to teach consumers about reading food labels and how to make healthy food choices using all the information available.

Consumers are concerned about trans fats and are reading food labels to select foods low in trans fat. Food manufacturers should continue efforts to reformulate current products and develop new products that can be marketed and labeled as trans fat free.

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CHAPTER 1.0: INTRODUCTION

1.1 Problem Statement

In 2003, the Government of Canada introduced new labelling regulations. These regulations included a standardized Nutrition Facts panel and consistent guidelines for the use of nutrient content claims and health claims. One unique feature of the food label is that it will now include the trans fatty acid (trans fat) content of the food. As of December 12, 2006 (2007 for small businesses), almost all pre-packaged food products are required to list the trans fat content per serving on their Nutrition Facts panel (1).

Trans fats are formed during partial hydrogenation, a process used to make fats more stable and to extend the shelf-life of products. The highest quantities of trans fats are found in processed foods, due to the use of partially hydrogenated vegetable oils (2,3). Trans fats increase the risk of cardiovascular disease by reducing high-density lipoprotein cholesterol (HDL-C) levels and increasing low-density lipoprotein cholesterol (LDL-C) levels. Even a small reduction in intake of trans fats can lead to a large reduction in risk of cardiovascular disease (4-6). Recent research suggests that although Canadians have reduced their total fat intake over the past 20 years, intakes of trans fat still remain high. One recommendation of the Trans Fat Task Force to reduce trans fat consumption among Canadians is to increase use of food labels when making food-purchasing decisions (7).

In 2005, approximately 79% of Canadians were aware of trans fat (8). As well, we know nutrition labels are the primary source of nutrition information for many people. Approximately 61 to 75% of Canadians use food labels at least sometimes while shopping (9). With the addition of trans fat information to food labels, more consumers are using this information to make

purchasing decisions. The Tracking Nutrition Trends V survey found that 56% of Canadians consider the trans fat content of a food when making food selections (10).

Due to recent media messages regarding the negative impact of trans fats, more consumers are asking for trans fat free products (7) and many companies have responded by eliminating the trans fat from their products. Some examples include Voortman® cookies and Frito-Lay® potato chips. These foods now bear a nutrient content claim stating they are ‘trans fat free’ or contain ‘0 trans fat’.

Although we know that more consumers are considering trans fat information, it is less clear how well consumers comprehend and interpret trans fat information on food labels.

1.2 Practical Importance of Study

This study will be useful to food manufacturers who have, or are planning to, reduce the amount of trans fat in their products. New labelling regulations now require foods to state the trans fat content of their product on the Nutrition Facts panel. There has also been an increased focus on the negative effects of trans fats. As consumers become more aware of the effects of trans fats, there has been an increase in consumers demanding trans fat free products. By better understanding consumers’ awareness and concern about trans fats, manufacturers can market their product to meet the needs of health conscious consumers.

Health professionals will also benefit from the results of this study, particularly those developing education initiatives to help consumers make better purchasing decisions. Consumers are aware of trans fats, but their understanding of the role of trans fats in their diet may be limited. By better understanding how consumers are currently using and interpreting trans fat information on food labels, health professionals can better design education campaigns to meet their needs.

1.3 Research Questions

How does trans fat information on food labels affect purchasing behaviour of consumers in the Halifax Regional Municipality?

How do consumers in the Halifax Regional Municipality interpret trans fat information on food labels?

1.4 Objectives

To explore consumer interest in nutrition and how source(s) of this information influence awareness and attitudes about trans fats and their impact on purchasing practices.

To investigate how consumer attitudes towards trans fats influence food purchasing practices.

To assess how consumers interpret reading nutrient content claims, nutrition facts panels and/or ingredient lists regarding trans fats.

To determine the effects of demographics (age, gender, size of household) and grocery shopping habits (role and store) on trans fats attitudes, knowledge and purchasing practices.

1.5 Definition of Key Terms

Cardiovascular Disease (CVD) – a number of diseases that reduce the ability of the heart and vascular system to perform required functions. Examples of CVD include: hypertension, coronary heart disease, and stroke. Risk of cardiovascular disease is affected by a number of factors including trans fat intake.

Nutrition Facts Panel – another component of the new nutrition label. This lists the content of 13 core nutrients, including trans fats. Trans fats are a recent addition to the Nutrition Facts panel.

Nutrient Content Claims – claims regarding the nutrients content of the product. One such claim is the ‘zero trans fat’ or ‘trans fat free claim’.

Trans fats/Trans fatty Acids – the trans isomer of unsaturated fatty acids. These fatty acids have been shown to increase the risk of cardiovascular disease.

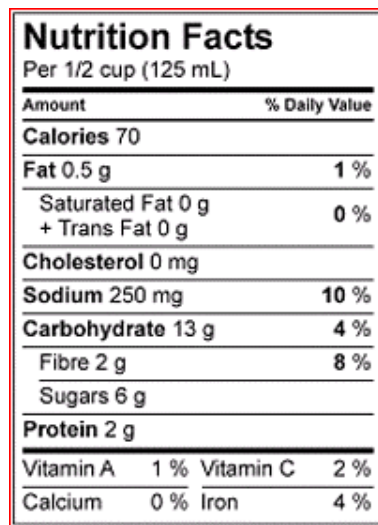
Trans fat Free/0 Trans fat – nutrient content claims permitted on products with less than 0.2 grams of trans fat and less than 2 grams combined saturated and trans fat per serving. As well, products using this claim must contain no more than 15% energy from trans and saturated fat combined.

CHAPTER 2.0: LITERATURE REVIEW

2.1 Labelling Regulations

In December 2002, the Government of Canada introduced new food labelling regulations, which require most pre-packaged foods to include a list of ingredients and a standardized Nutrition Facts panel (see fig. 1). As well, if the food item meets specific criteria, it may also bear an approved Health Claim and/or a Nutrient Content Claim. Certain foods are exempt from the new labelling regulations, such as fresh fruit and vegetables, single ingredient meat, poultry, and seafood, foods prepared in-store, and foods with insignificant amounts of the 13 nutrients listed in the Nutrition Facts panel. However, if a food item bears a Health Claim or Nutrient Content Claim, it must also carry a Nutrition Facts panel (1,11).

Figure 1: Nutrition Fact Panel



Nutrition Facts			
Per 1/2 cup (125 mL)			
Amount	% Daily Value		
Calories 70			
Fat 0.5 g	1 %		
Saturated Fat 0 g + Trans Fat 0 g	0 %		
Cholesterol 0 mg			
Sodium 250 mg	10 %		
Carbohydrate 13 g	4 %		
Fibre 2 g	8 %		
Sugars 6 g			
Protein 2 g			
Vitamin A	1 %	Vitamin C	2 %
Calcium	0 %	Iron	4 %

The Nutrition Facts panel found on food items will contain information on a minimum of 13 core nutrients, including energy, total fat, saturated and trans fats, sodium, carbohydrates (including fibre and sugars), protein, vitamins A and C, calcium and iron. It will also include a % Daily Value where the amount of nutrient in a serving is expressed as a percent of a reference

value. The intent of this is to facilitate comparisons between different products, not as a guide to ensure the requirements for that specific nutrient are met (11,12).

The inclusion of the trans fat content in the Nutrition Facts panel has received a great deal of attention. Trans fat content will now be listed below saturated fat and a percent daily value will be listed for the sum of the two types of fat, based on a reference value of 20 grams. Foods containing less than 0.2 grams of trans fat will be permitted to list the trans fat content as zero (13).

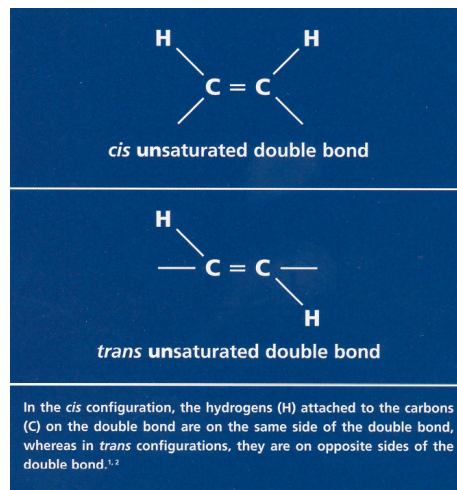
New nutrient content claims are now permitted for trans fat. Foods with zero trans fat and no more than 2 grams combined saturated and trans fat will also be able to bear a nutrient content claim of ‘zero trans fat’ or ‘trans fat free’. Foods using this claim must also contain no more than 15% energy from trans and saturated fat combined. As well, a ‘reduced trans fat’ claim is now permitted on products reformulated to contain at least 25% less trans fat and no more saturated fat per serving (13). The ‘reduced trans fat’ claim is rarely used on packages and instead manufacturers have focused on the ‘0 trans fat’ claim. Approximately 154,000 products in the United States will be affected by the new trans fat labelling regulations (14), although regulations differ somewhat in Canada a large number of products are affected as all products are now required to include trans fat information in the Nutrition Facts panel.

2.2 Trans Fats

Trans fatty acids are the trans-isomer of unsaturated fatty acids (see fig. 2). Health Canada defines trans fats as “unsaturated fatty acids that contain one or more isolated (non-conjugated) double bonds in a *trans* configuration” (Canada Gazette, June 7, 2001). These fatty acids are more rigid than cis-unsaturated fatty acids and have a higher melting point. They are formed through partial hydrogenation, a process that turns liquid oil into a semi-solid fat. Trans

fats are used in commercial products because they are more stable under high-temperatures than unsaturated fatty acids and they are less susceptible to oxidative damage, resulting in a longer shelf life. Although small amounts of trans fats are found naturally in dairy products and other ruminant animal fats (such as beef and lamb), it is industrial trans fats that present the greatest risk both because of the amount of trans fat consumed and the type of trans fat present. The main fatty acid formed through the hydrogenation of vegetable oils is elaidic acid whereas vaccenic acid is the dominant fatty acid found in meats and dairy products (15,16). Vaccenic acid is partially converted to conjugated linoleic acid in the body (17). Animal studies suggest that conjugated linoleic acid may offer health benefits, but further research is needed (18). Research is currently underway to determine the effects of naturally-occurring trans fats on human health (16).

Figure 2: Configuration of Trans fatty Acids



From: Canadian Dairy Products. Fatty Acids: Then and Now. Produced May 1999.

Trans fats increase the risk of cardiovascular disease by changing the blood lipid profile most notably by increasing LDL-C and reducing HDL-C levels (4,5,19). The effect of trans fat on HDL-C levels differs from saturated fat, which raises HDL-C levels (20). Trans fats may also

impact on the risk of cardiovascular disease through other changes. Trans fats increase small, dense LDL-C, increase blood triglyceride levels, and decrease the threshold for cardiac arrhythmia, all of which have been shown to increase risk of cardiovascular disease and sudden death (20-22). In fact, trans fats have been estimated to be between 3 and 10 times more dangerous to heart health than saturated fats when replacing monounsaturated fats or carbohydrates (23). Replacing just 2% of energy from trans fat with unsaturated fatty acids may reduce the risk of coronary heart disease by as much as 53% (24). Researchers are also studying a link between trans fats and diseases such as cancer (24,25) and type 2 diabetes (26,27). This research is in its early stages and is not yet considered conclusive.

Trans fats are typically found in foods such as stick margarines, commercially prepared baked goods, and fried foods. Processed foods, such as bakery products, snacks, and fast foods, are the largest contributors of trans fats to the diet of Canadians (7). Due to product reformulation, which has occurred as the negative effects of trans fats have been revealed (19), many products are now lower in trans fats (19). In a survey of Canadian grocery stores, the Trans Fat Task Force observed that trans fats have been eliminated from virtually all bread products and salad dressings. Many trans fat free choices are also available in the potato chip and French fry categories. However, some products, such as baked goods, snack puddings, hard margarines, microwave popcorn, and oriental noodles may still be high in trans fats (28). Although more trans fat free alternatives are now available, foods with a lower trans fat content may be more expensive. Margarines lower in trans fats, and lower in combined saturated and trans fat, cost significantly more than those with a higher amount of these fats (29).

Although Canadians have decreased their total fat intake over the last 20 years, trans fat intake is still too high (7). Trans fat intake is difficult to estimate due to lack of comprehensive

databases and product reformulation (19). The most current estimate places the trans fats intake of Canadians between 3 to 9 grams per day (28). One estimate places the trans fat intake of Canadians at 9.5 grams per day, with 8.5 grams of this coming from industrially-produced trans fats and the other 1.0 gram is from naturally occurring trans fat. The majority of Canadians trans fat intake comes from processed foods (4.0 grams per day). The next largest contributors to the trans fat consumption of Canadians are restaurant meals (2.7 grams per day) and margarine (1.8 grams per day) (30). Research suggests that Canadians consume higher amounts of trans fat than people in the United States and Europe (2,3).

Industrially produced trans fats provide no known health benefit. It is therefore recommended that people lower their intake of trans fats as much as possible while maintaining a healthy diet (19). Health Canada recommends that Canadians limit their consumption of trans and saturated fats to 20 grams per day. Saturated and trans fat are considered together as both have a negative impact on risk of cardiovascular disease. Although trans fats have been shown to have a greater impact than saturated fat, people tend to consume larger quantities of saturated fat (5,6,19,23). As industrially produced trans fats represent the largest form of trans fat in our diets (2,3,30), it is recommended that people consume amounts as low as possible (1,7).

The Trans Fat Task Force recommends the Government of Canada introduce formulation regulations to limit trans fat in vegetable oils and margarines to 2% of the total fat intake and limit trans fat in all other foods to 5% of total fat content, excluding foods of exclusively ruminant meat or dairy products. It is expected that these restrictions would reduce the trans fat intake of Canadians to less than 1% of energy, which is consistent with the World Health Organization's guidelines. This would reduce the average of trans fat intake of Canadians by 55% and would remove most of the industrially produced trans fat from the diets of Canadians.

As well, imposing a limitation on all foods would benefit all Canadians, not just those who read food labels. The Trans Fat Task Force recommends that the Government of Canada finalize these guidelines by 2008 and allow food manufacturers until 2010 for implementation (28).

2.3 Impact of Cardiovascular Disease

Cardiovascular disease (CVD) is the leading cause of death in Canada. In 2002, 33% of all deaths in Canada were due to this disease. It is estimated that over 5 million Canadians are affected by cardiovascular disease (31). In Nova Scotia, heart disease is also the leading cause of death and accounts for 36% of all deaths (32). CVD is the most costly of all diseases in Canada, accounting for \$18.5 billion in health care costs. \$11.7 billion of this was due to indirect costs (33).

2.4 Point-of-Purchase Nutrition Education

The nutrition label is designed as a point-of-purchase tool to help consumers make more informed food choices. By using the information on food labels, Canadians may be able to reduce their risk of diet related diseases such as cardiovascular disease, stroke, diabetes, and some types of cancer. The economic burden of a poor diet is estimated to be \$6.6 billion annually, with a direct cost of \$1.8 billion. Health Canada estimates that the new food label could save approximately \$5.3 billion over the next 20 years in both direct and indirect health care costs (7,11,12,13,29).

Consumers have expressed confusion over the conflicting nutrition messages reported in the media. They have expressed desire for clear, authoritative, and easy to understand nutrition advice (33). Food labels may be able to help to reduce confusion and improve consumers' diets (34). The Trans fat Task Force, co-chaired by Health Canada and the Heart and Stroke

Foundation of Canada, has identified nutrition labelling of trans fats on food labels as a key step to reducing trans fat intake among Canadians (7).

Consumers who use food labels and other point-of-purchase nutrition programs are more likely to have a higher diet quality (34) and a lower fat intake (35, 36). This suggests that people interested in following a healthy diet can use nutrition labels to access the information to do so (35).

Consumers make up from 66 to 80% of final purchasing decisions in the grocery store (36,37), as such, in-store nutrition education programs are able to influence consumer purchases.

In Canada, there are currently six point-of-purchase nutrition programs in grocery stores. This includes the Heart and Stroke Foundation of Canada's Health Check™ symbol, which is the only non-industry led program in Canada. Other programs include the Blue Menu line of President's Choice products and Sobeys Compliment's balance/équilibre. These programs offer a line of healthy products with a simplified nutrition message, which highlights that the product meets some specific criteria. Many of these programs highlight products with zero grams trans fat (38).

These products may appeal to consumers who are interested in and able to make healthier choices. Eight out of 10 Canadians (83%) agree "it would be very helpful if food and beverage packages clearly distinguished between regular and healthier options". Although many Canadians would like food manufacturers to identify healthier options, many are skeptical of these claims. Three quarters (78%) of Canadians agree that although many manufacturers claim their products are healthier, they do not believe they are (39).

Health messages may only influence the purchasing behaviour of 1/3 of consumers and price may be a more powerful factor (38). Consumers use a variety of tools to make product

selections in-store, such as, advertising, word of mouth, prior experience, and nutrition labelling. Thus, it is difficult to make real behaviour change with point-of-purchase labelling alone. For point-of-purchase nutrition education campaigns to be successful, they must include other strategies, such as education about the importance of healthy choices, increased availability and access to healthier food choices, and incentives to make healthier choices (40).

Food labelling can also have an effect on the food supply through manufacturers (37). Manufacturers may alter the ingredients in their products in order to use a specific health claim, such as '0 trans fat' or to improve the profile on the Nutrition Facts panel. With the inclusion of the trans fat content per serving on the new food label and greater numbers of foods being labelling '0 trans fat', many food manufacturers are attempting to reduce or eliminate the trans fat in their products. Product reformulation can help to reduce the trans fat intake of Canadians, even without label use among consumers (28).

2.5 Use of the Food Label

Food label use by consumers in North America is quite variable with estimates ranging from 45 to 85% (41). Studies in Canada have found that approximately 61 to 75% of consumers read food labels. The food label is the primary source of nutrition information for many people (10,41). When comparing the impact of the food label to the food guide on purchase decisions, 61% of respondents stated they had changed their food purchases because of the food label while only 27% indicated that they changed their purchases because of the food guide (42).

While the use of the food label has increased, there are still many consumers who do not read the label. Some of the barriers to food label use include: lack of interest from consumers, the feeling that it takes too much time to read the labels or that they are too hard to understand or

read due to the small print. Older and less educated participants tended to experience the most difficulty reading nutrition labels (43).

In Canada, nutrition labels appear to be well understood by a majority of consumers. 61% of consumers report 'mostly' understanding the food label, with only 3% reporting that they do not understand the label "at all" (44,45). In Atlantic Canada, 57% of respondents agree that they "find reading nutrition labels on food packages a quick and easy thing to do". However, consumers also report some confusion about using food labels. Sixty one percent (61%) of Canadians find that it is difficult to know which products are healthy, as there are so many different things to look for on food labels (39).

Consumers most often use food labels when purchasing a food item for the first time and to compare products. Various estimates report 47 to 80% of consumers use the food label when purchasing a new product (33, 44, 45,46). Other reasons Canadian consumers may read food labels include: when buying certain types of food (26%) or when on a diet or trying to lose weight (17%). In contrast, only 21% of Canadian consumers report always reading the food label (44,45). Some other common reasons people read food labels are to search for information on the energy content of the product, to find foods that claim to be good for health, to look for specific ingredients and to compare similar foods (47).

Consumers also use food labels to look for information on specific nutrients. Consumers tend to focus more on negative nutrients, such as fat, when using food labels (47,48,49). Fat and the energy content of the product are the nutrients most commonly searched for (9,39,43-45,50). The majority of Canadians (56%) regularly check the fat information on food labels. Trans fat (49%), sugar (45%) and the energy content (42%) ranked as the next most commonly examined nutrients (43,44). Consumers appear to equate looking for fat content on food labels with being

“health conscious” (50). Women and older Canadians are more likely than men and younger Canadians to look for products with less fat and no hydrogenated oils (39).

In the Halifax region, dietitians report that while many people use food labels, they may not be using them properly. Fat is one major area of interest, particularly trans fat. Many people look for zero trans fat on food labels, but they may be confused about the types of fats listed. As well, interpreting the % Daily Value presents a challenge for many people and they may believe the % Daily Value represents the percent of that item in the food product. At a class for people with diabetes on label reading, participants most wanted to learn about information on carbohydrates, specifically sugars and fibre, and fat. They were also interested in learning which products were healthier choices for people with their condition (51).

2.6 Factors Affecting Food Label Use

Nutrition is only one factor that consumers use when making decisions about food purchases. Other factors include taste, price, and convenience. If consumers do not value nutrition, even though they may be knowledgeable about nutrition, it will not play a role in their food choices. Taste has been shown to be the number one factor in food selection. Over 75% of respondents to the Food Marketing Institute’s Trends survey have rated nutrition as very important (42), although health messages may affect only 1/3 of purchasing decisions (38).

Females are more likely to read food labels when shopping than males (9,35,41,52,53). This may be because males tend to be less interested in nutrition and health issues and may perceive nutrition as less important than females (37,52,53). Males and females with similar nutrition knowledge levels may not differ in their nutrition label use (53). When males do use food labels they tend to search for specific information related to diet-disease relationships (41).

Age can impact on label use in a variety of ways. Consumers over the age of 60 are less likely to use food labels (43) while those in the 18 to 34 age group are also not likely to use food labels (41). Older consumers tend to be more concerned about nutrition issues than younger ones (41,54); however, they also tend to experience more difficulty processing nutrition information (43).

Label use is also impacted by education level with less educated consumers being less likely to use food labels (35,41,43,55). Educated consumers may be more likely to use nutrition labels at home (56). More educated consumers are more likely to view nutrition as important and to have more exposure to nutrition messages (52). Less educated consumers may find the nutrition label difficult to use and comprehend (43).

In general, a diagnosis of chronic disease does not increase label use. Rather, people with a chronic disease may look at only specific information that is relevant to their condition. For example, participants with hypertension or dyslipidemia were more likely to look for information on sodium and fat only (35). Using nutrition labels to access information on only a select group of nutrients may not lead to healthier choices. For consumers to make healthier food choices, they must be able to use and process all the information on the food label (56).

One of the strongest factors in predicting label use is the strength of one's belief in the diet-health relationship. Consumers tend to be more aware of relationships that have been promoted through public health campaigns, such as hypertension and sodium and heart disease and fat. Although consumers may be aware of a link between diet and disease, they may not fully understand the specifics of the relationship. For example, in 1995, more than 60% of consumers identified high fat intake as a risk factor for heart disease, but they tended to focus on total fat, not saturated fat (42). This could relate to their need to simplify information (57).

The diet-health belief has a greater effect on label use than nutrition knowledge (52,53). Consumers who more strongly believe health is affected by external factors are more likely to use labels (41). Consumers who use food labels are also more likely to participate in other healthy behaviours such as exercise and multi-vitamin use. They are also less likely to smoke (35,55).

2.7 Consumer Awareness of Dietary Fats

2.7.1 Dietary Fats

Although consumers are reading food labels to determine the fat content of the product, they may not be aware of how much fat they should be consuming. In 1993, the American Dietetic Association found that less than 10% of consumers were correctly able to identify the recommended level of fat intake. However, 78% of respondents in the 1994 USDA Diet and Health Knowledge Survey knew that 20 grams of fat was high for a food product and 69% knew that 10 grams of saturated fat was high (42).

Consumers do not fully understand the role of various fatty acids in their diet. The Health and Diet Survey (1995) found that 49% of respondents thought saturated fats were higher in calories than polyunsaturated fatty acids. Only 11% of respondents were aware that this type of fatty acids would raise blood cholesterol indicating a low level of knowledge about the physiological effect of consuming these fatty acids (48). In another study, only 58% of Canadian consumers reported understanding the difference between saturated and unsaturated fat (44,45).

Consumers are aware that there are 'good' fats that should be included in their diet, but overall they still look for low-fat foods. In general, consumers tend to perceive saturated and animal fats as 'bad' fats (58). Middle-aged and well-educated consumers show greater knowledge of the role of fats in their diet (42).

2.7.2 Trans Fats

Consumers are becoming more concerned about trans fats and they are considering this information when making food purchases (8). In 2005, 79% of Canadians were aware of trans fats, 51% felt that they were a major concern, and 62% indicated they were attempting to eliminate them from their diet by modifying their food purchases (8). Estimates of Canadians who are regularly looking for trans fat information on food labels range from 49 to 68% (10,44,45,47). This has increased since 2002, when trans fat information was not mandatory on food labels. At that time only 41% of consumers reported considering trans fat information when making food purchases (10). An internal study completed by Kellogg's also found that awareness of trans fat increased by 10% from 2004 to 2005. Tracking Nutrition Trends VI found that the percentage of consumers basing food purchasing decision on trans fat information increased 12% since 2004 (47). The number of people trying to reduce their trans fat intake has also increased recently (59). Overall, women tend to be more concerned about trans fat intake than men (8).

Although Canadians are attempting to reduce their intake of trans fats, they may not have the knowledge to make effective change. Only 17% of respondents felt that they "knew a lot" about trans fats and this number was even lower in the Atlantic Canada where only 7% of those questioned felt very knowledgeable about trans fats (8). One third (31%) of health conscious adults in an American population were also found to have a low knowledge about trans fats (14). Canadian consumers also appear to be confused about the role of trans fats in their diets. For example, Tracking Nutrition Trends V found that 70% of respondents believed that dietary cholesterol was a major factor affecting their blood cholesterol levels and 36% believed that trans fats played the same role in their diet as saturated fats (10). Tracking Nutrition Trends VI

found similar numbers in 2006 (47). Women, older Canadians, and those who are already more knowledgeable about nutrition tend to be more knowledgeable about trans fats (8,10, 47).

Consumers want trans fat free, not low or reduced, products and they want these products to taste good. About 1/3 of consumers indicated that they would be willing to pay more for these products. However, industry experts also report that there is confusion among consumers about this fatty acid (7).

2.8 Consumer use of Nutrient Content Claims

As food producers respond to consumer pressure and reduce trans fat content of their products, more and more ‘zero trans fat’ products are appearing in the market. Although industry experts report that people are demanding these products, it is not clear how people interpret the ‘0 trans fat’ claim (7).

Consumers want nutrition information that is simple, such as nutrient claims, rather than more comprehensive information, such as the Nutrition Facts panel (49). However, consumers may not trust nutrient content claims as much as the Nutrition Facts panel, and may view content claims as promotional items for the product (48,60). Although consumers may be skeptical of claims on foods, they do view foods with health claims as healthier and are more likely to purchase these products (60).

Nutrient content claims can help consumers identify foods low/high in a particular nutrient, but they do not educate consumers on the effects of the nutrient. There is also concern that the health claim may have a “halo effect” and that consumers may overlook other negative information about the product (60).

Consumers are more likely to use nutrient content claims rather than the ingredients list or the Nutrition Facts panel. Females were most likely to consult any nutrition information and

67% of female respondents stated that they used the nutrient content claims at least half the time (41).

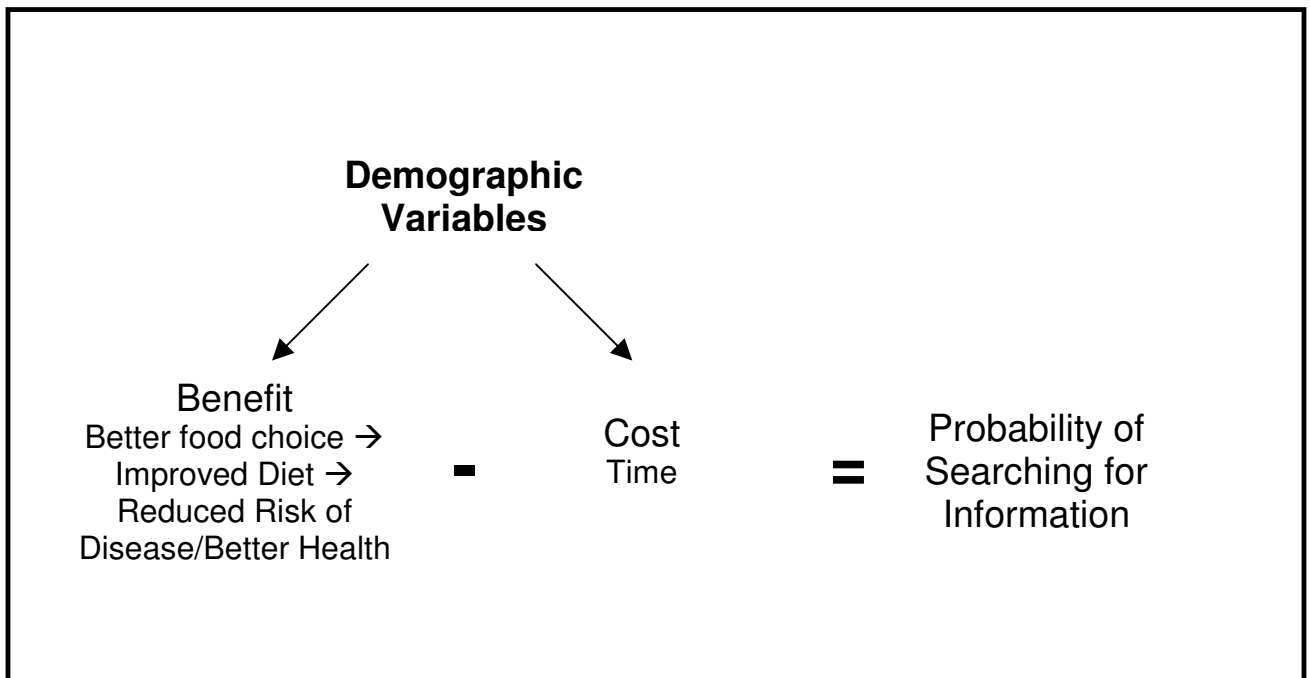
The use of nutrient content claims may affect the price of the food item. On average, margarines with a nutrient content claim related to saturated or trans fat are 37% more expensive than those without a claim. This was true both for margarines that did and did not qualify for a saturated or trans fat claim (29). A scan of a Toronto-area store found that some products marketed as healthier were more costly than regular products, others were the same price, and others cost less. Point-of-purchase nutrition programs developed by an outside organization, such as the Heart and Stroke Foundation's Health Check™ program, typically prohibit price increases for products participating in the program (38).

Although consumers may use nutrient content claims to assess the health value of a product, questions remain as to how consumers interpret this information. As the '0 trans fat' claim is a relatively new one on the market, further research is needed to determine how consumers understand this claim.

CHAPTER 3.0 : THEORETICAL FRAMEWORK

The Economics of Information model (61) can be applied to understand factors affecting label use among consumers. This theory predicts that consumers will continue to acquire and process information as long as the cost of acquiring and processing additional information does not exceed the benefits obtained from the information.

Figure 3: Economics of Information Model



The main cost of acquiring and processing information is time (61). Those who do not work may not perceive as great a loss from time spent reading labels. Consumers who are more skilled at reading labels, either due to higher education or nutrition knowledge, may not require as much time to read and process the information and thus, the cost would not be as high (56).

The benefit of label use is better food choices and a healthier diet. This could lead to the benefit of reduced risk of disease. Those who more strongly believe in a diet-health relationship

are more likely to see this benefit. As well, consumers who are more concerned about their health are more likely to attempt to reduce their risk of disease through food choice. Consumers who are more interested in nutrition and those who have had nutrition education may use labels more frequently because they have a greater awareness of diet-disease relationships and may be better able to process information on food labels (53,56).

The perceived relationship of cost and benefit of searching for information on food labels can also be affected by demographic variables. Females are more likely to perceive a greater risk in not following a healthy diet and for this reason they are more likely to read labels. The age variable can impact on label use in two ways. One, it may increase the cost as older people may find it more difficult to process information on labels. However, older consumers may also perceive a greater benefit of label use due to their increased risk for disease (53).

When someone is purchasing food for others, they may perceive a greater benefit from using information on food labels. Therefore, the primary grocery shopper is more likely to read food labels (53).

Income can also affect the search for information on food labels. People with a higher income may perceive a greater cost of time required to read food labels; however, this effect is moderated by nutrition knowledge (53). Foods lower in trans fat may also be more expensive than foods lower in these types of fats. These healthier choices may be too costly for people with lower incomes (28).

In this study, it would be expected that people who are interested in nutrition and those who see a relationship between trans fats and disease would be more likely to search for information to reduce their intake of trans fats (53,56). Nutrition counseling should also increase concern about trans fats as these consumers should be more aware of the risks of a high trans fat

intake and better understand how to choose foods with a low trans fat content. Consumers shopping for their household and women would also be more likely to attempt to limit their trans fat consumption as they tend to perceive a greater benefit from using nutrition information (53).

The age of the participant may also impact on their responses. Consumers in the highest age category (above 60 years old) may not search for trans fat information as much as younger consumers due to the time required to process the information (43). Middle-age consumers may be attempting to reduce their trans fat intake, as they may be more concerned about the health risks of a high trans fat intake. Younger consumers may not perceive as great a risk from a high trans fat intake and thus are less likely to be attempting to reduce their intake (53).

CHAPTER 4.0: METHODOLOGY

4.1 Participant Selection

Participants were selected using self-selected convenience sampling conducted in three Atlantic Superstores in the Halifax Regional Municipality (HRM). In 2001, Halifax Regional Municipality had a population of approximately 360,000 people (62).

4.2 Data Collection Tool

A questionnaire was used to collect data (Appendix A). It included 11 questions and required approximately three minutes to complete. Questions were developed to determine participants' awareness and knowledge of trans fats, steps they take to reduce trans fats in their diet, their interpretation of the 'zero trans fat' claim found on food labels and some simple demographic information. All questions offered a choice of responses for participants to select. Researchers also recorded any 'other' answers given.

The questionnaire was developed by the researcher. Questionnaires from previous nutrition labelling studies (8,9,35,41,46,53,54) were reviewed to gather information to include in the questionnaire. Questions were developed considering the objectives of this study. The questionnaire was kept short and basic to reduce burden on participants and to ensure the questionnaire was accessible to the general public. Through discussions with the thesis committee, changes were made to the questionnaire to ensure that no personal or sensitive questions were included. The wording of some questions was changed to increase ease of administration and changes to the appearance of the questionnaire were also made.

Members of the thesis committee, a statistician and two other Registered Professional Dietitians (PDts) reviewed the questionnaire for face-validity.

A pre-test of the questionnaire was conducted to test the questionnaire for ease of administration and understanding of the questions. The pre-test was conducted by the researcher

in a University cafeteria. The questionnaire was administered to 10 participants in the same manner as planned for the study. Feedback from the pre-test lead to minor modifications, such as order of the questions, to increase ease of administration of the questionnaire.

4.3 Design and Procedures

Grocery stores were selected as the ideal location to collect data as they allow access to people where they make the majority of their purchasing decisions (37,38). Administering the questionnaire in grocery stores also allowed access to a large group of shoppers from varying demographics. Two major grocery store chains were contacted through their Nutrition Services to gain permission to conduct the research in grocery stores and to request samples to be used for the research. A letter, research proposal, and copy of the questionnaire were sent to a member of the Nutrition Services team at each chain. One chain declined to participate due to the concern about burden on shoppers. The manager of Nutrition Services at the other chain agreed to allow the researcher to administer the questionnaire in stores. The manager also offered to provide samples to be used in the research. Names of the store locations chosen and time periods when the questionnaire would be administered were forwarded to the manager when these details were finalized.

Three Atlantic Superstores from different areas of the Halifax Regional Municipality were selected. A store in Dartmouth, Bedford, and central Halifax were sampled. Stores were selected from different areas of HRM in an attempt to obtain a broad sample of varying demographics. Larger stores were selected to maximize the number of shoppers invited to participate in the study. The socioeconomic profile of the neighbourhood was determined using the first three letters of the store's postal code and data from the 2001 census from Statistics Canada. The average and median income, as well as the number of residents with a college or

university education, for each census tract containing the first three letters of the postal code where the store is located is available from Statistics Canada (See Appendix B). A census tract is a small area within a larger metropolitan area. Census tracts range in population from 2,500 to 8,000. All three stores were located in neighbourhoods with similar levels of average income and education. Each store neighbourhood included census tracts with a range of income levels (63). The stores selected were:

1. **Bedford Superstore, Bedford** – income by census tracts in the neighbourhood ranged from \$19,018 to \$47,056. Weighted average income for the postal code area for adults over 15 years old was \$31,960. Over half (51%) of residents over age 15 had a college or university education (63).

2. **Braemar Superstore, Dartmouth** – income by census tracts in the neighbourhood ranged from \$19,018 to \$47,056. Weighted average income for the postal code area for adults over 15 years old was \$29,267. Nearly half (48%) of residents over age 15 had a college or university education (63).

3. **Joseph Howe Superstore, Halifax** – income by census tracts in the neighbourhood ranged from \$21,796 to \$45,010. Weighted average income for the postal code area for adults over 15 years old was \$28,874. Fifty three percent (53%) of residents over age 15 had a college or university education (63).

Data collection took place over a total of three weeks (one week per store). At each store, the questionnaire was administered during four time frames. Each data collection period lasted for three to four hours (some time periods were extended to increase the number of participants). A variety of time frames were selected to reach shoppers from different demographic groups. As well, each time frame was chosen to maximize the number of shoppers

that would be present (e.g., supper time is one of the busiest times in the store so the evening time period was positioned over the supper hour). Questionnaires were administered during the same time frames at each store. The time frames selected were:

- Tuesday morning – 9:00am to 12:00
- Thursday evening – 5:00pm to 8:00pm
- Friday afternoon – 1:00pm to 4:00pm
- Saturday – 10:00am to 1:00pm

To administer the questionnaire, a table was set-up in the front entrance of the store. This area was selected as it was visible to a high number of shoppers as they entered/exited the store. Samples of two types of Blue Menu trans fat free crackers were available at the booth to attract consumers to the area. Samples were peanut-free and were not provided to children under 12, unless an adult accompanied the child. The research team maintained the sample display. Two crackers were placed in muffin cups for shoppers to sample. Several samples and the cracker boxes were displayed on the table used by the researchers. As shoppers approached the table, they were offered samples and they were also invited to participate in the research study.

The researcher and research assistants stood behind the table. Research assistants were undergraduate nutrition students from Mount Saint Vincent University, recruited through an undergraduate class. The research team dressed in business casual clothing and the researcher also wore a white lab coat, similar to those worn by people giving out samples in-store. Members of the research team did not wear excessive make-up or jewellery. As well, the research team wore plain name tags that did not include a university or store logo.

Members of the research team attempted to ask each shopper who approached the booth if they were interested in participating in a study on consumer understanding and use of trans fat

information on food labels (some shoppers were excluded because researchers were busy with other participants or shoppers left the area too quickly to be asked to participate). Only consumers 19 years of age and over were invited to participate in the study. If researchers were not sure if a shopper was over 19, the researchers asked their age before inviting them to participate in the study. If shoppers agreed to participate, researchers administered the questionnaire to them and recorded the answers on the questionnaire form. Researchers tracked the number of shoppers invited to participate and the number who declined. They also recorded pertinent data, such as the store, time, date, weather, and interviewer on the questionnaire form.

4.4 Ethical Considerations

The proposed study was submitted for review to the Mount Saint Vincent University Research Ethics Board (Appendix C). Reviewers granted ethical approval after minor modifications to the letter provided and the information read to participants.

Although signed informed consent was not practical, all potential participants who were invited to participate in the study were told all pertinent ethical data and provided with the information. To do this, research assistants read the following statement to all potential participants who approached the booth:

“We are conducting a questionnaire on consumers awareness and interpretation of trans fat information on food labels. This research is being conducted as part of a master degree thesis by a student in the Applied Human Nutrition department at Mount Saint Vincent University. We would like you to complete a short questionnaire that will require about 3 minutes of your time. It will gather information on your thoughts about trans fats. No personal or identifying information will be collected and all information will be kept confidential. This is a voluntary questionnaire and you are free to withdraw

your participation at any time. After you have completed the questionnaire we would like to offer you a copy of Canada's Food Guide and an information sheet on trans fats.

Would you like to participate in the study?"

As well, participants were provided with an information sheet that included all pertinent ethical information, contact numbers for the researcher, supervisor and an arm's length contact (the University Research Ethics Board) (see Appendix D). This information was printed on Mount Saint Vincent University letterhead.

To reduce any literacy concerns, the questionnaire was interviewer-administered to all participants.

As a benefit of participating in the study, participants were offered Canada's Food Guide to Healthy Eating and an information sheet on trans fats developed by Health Canada.

After data collection, completed questionnaires were stored in a locked drawer. Only the researcher had access to the questionnaires to code and enter data results. Once research data were compiled, questionnaires were destroyed.

4.5 Data Analysis

Data collected from completed questionnaires was entered in Microsoft® Excel 2000 (Microsoft Office 2000 Inc.). Variables were analyzed using descriptive statistics to determine levels of consumer interest in nutrition and source(s) of information; awareness, beliefs and purchase practices regarding trans fats; interpretation of trans fats label information (nutrient content claim, Nutrition Facts panel and ingredient list); and demographic variables. Variables were compared to demographic data using the chi-square test for independence. A relationship was considered significant if the p-value was less than 0.05.

Three summary scores were also developed to analyze the data. Scores were calculated for each participant and compared to demographic variables and other scores. The average score was calculated for each interval of the independent variable and standard error was calculated to determine if there was a significant difference between the variables. Relationships between average scores and demographic variables were analyzed using SAS 9.1 for Windows (2002-2003, SAS, Cary, NC). The one-way analysis of variance (ANOVA) Student-Newman-Keuls procedure was used to determine significance. A p-value of less than 0.05 was considered significant.

4.5.1 Trans Fat Attitude Score

The researcher developed a score for attitude towards trans fats (Table 1). This score was tested for internal validity using Cronbach's alpha coefficient of reliability. Cronbach's alpha score was calculated using SAS. The standardized alpha score for this index was 0.69.

Table 1: Trans Fat Attitude Score

	Scoring Response
Trans fats are bad for heart health	Agree
Trans fats are fattening	Agree
Trans fats improve the taste of food	Disagree
Trans fats should be limited	Agree

4.5.2 Source of Trans Fat Knowledge Score

A score was developed to assess how well consumers were able to identify sources of trans fat. This score was based on five foods that were either high or low in trans fat. Foods that could be either high or low were excluded from the summary score (e.g., margarine: hard margarines are high in trans fat; however, soft margarines are low in trans fat). One point was given for each food correctly identified as high or not high in trans fat (Table 2).

Table 2: Sources of Trans Fat Knowledge Score

	Scoring Response
Meat	Not High
Fried Foods	High
Baked Goods	High
Snack Foods	High
Dairy Products	Not High

4.5.3 Purchasing Practices Score

A score for purchasing practices was also determined for each participant (Table 3). This score determined the number of methods a participant was using to attempt to reduce their trans fat intake. Data were entered into SAS and this index was tested for internal validity using Cronbach's alpha score. The standardized Cronbach alpha score for this index was 0.72.

Table 3: Purchasing Practices Score

	Scoring Response
Purchased foods labeled "0 trans fats"	Yes
Read Nutrition Facts panels to choose foods with a low trans fat content	Yes
Reduced intake of high fat foods	Yes
Read ingredients lists to select foods with no partially hydrogenated fats	Yes

4.6 Budget

The majority of expenses were incurred during data collection. Costs were incurred to print the questionnaire, trans fat fact sheet, and ethical information. A small amount of funds were also required for supplies used during data collection, such as nametags and clipboard. The Atlantic Superstore agreed to donate trans-fat free crackers to provide as samples for the in-store booths.

CHAPTER 5.0: RESULTS

The response rate of shoppers asked to participate was 61%. A total of 403 shoppers were invited to participate in the study, with 159 declining to participate, yielding a total of 244 completed questionnaires for this study. See Appendix E for the Summary Questionnaire.

5.1 Demographic Distribution

Three quarters (76%) of participants who completed questionnaires were female. Most of the participants were over age 40 and very few were under the age of 25. (19-24: 3%, 25-39: 25%, 40 to 59: 44%, and 60 and over: 27%). For statistical purposes, the 19 to 24 and 25 to 39 year old age groups were combined to create a group large enough for statistical analysis.

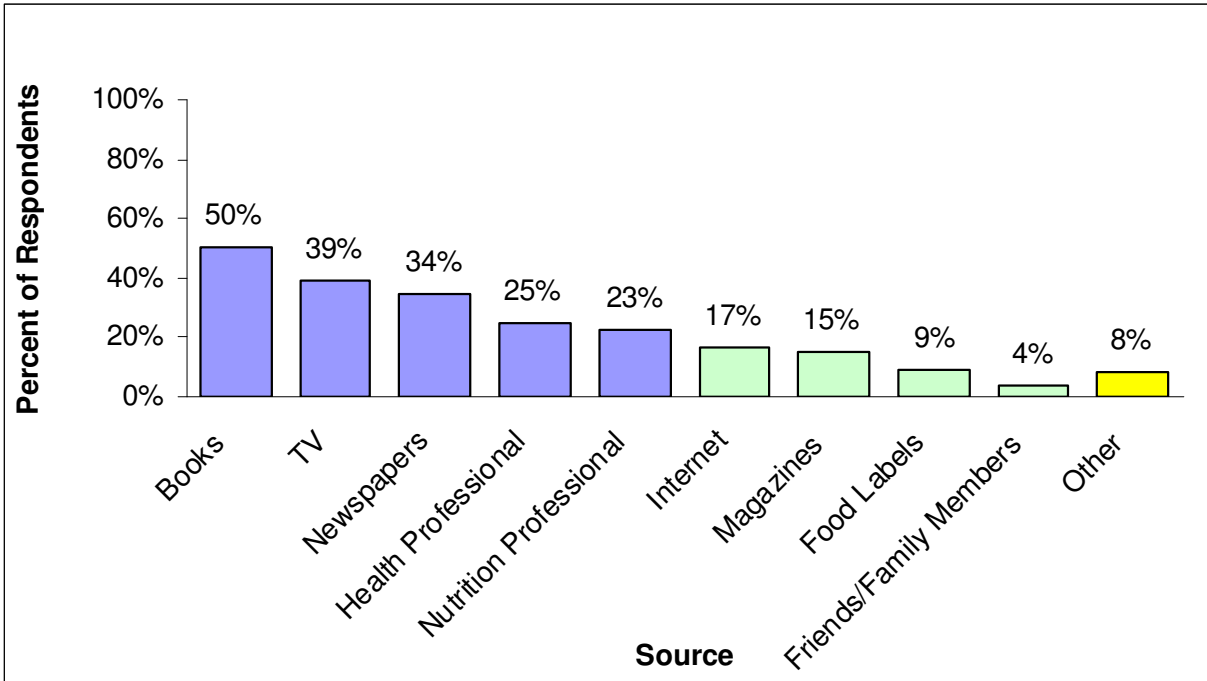
The majority (58%) of respondents reported shopping for their household, one fifth (22%) stated they shared the grocery shopping duties with another member of their household, and one fifth (18%) of respondents reported shopping for themselves. Only five shoppers (2%) reported rarely shopping and these participants were excluded from analysis on the shopping habits of participants due to the small group size. The household size of participants ranged from 1 to 7, with the mean household size being 2.47 (SD =1.23).

5.2 Interest in Nutrition and Sources of Information

Almost the entire sample (96%) reported being either interested or somewhat interested in nutrition. Participants were also asked about sources of nutrition information and they were able to select as many sources as they used. Books (50%) were the most frequently stated source of nutrition information. Television and radio were second (39%), followed by newspapers (34%). Almost one quarter (23%) of respondents stated they use nutrition professionals for nutrition information. (In this study, 'health professionals' were defined as doctors/nurses, and 'nutrition professionals' were defined as dietitians/nutritionists.) The most commonly stated

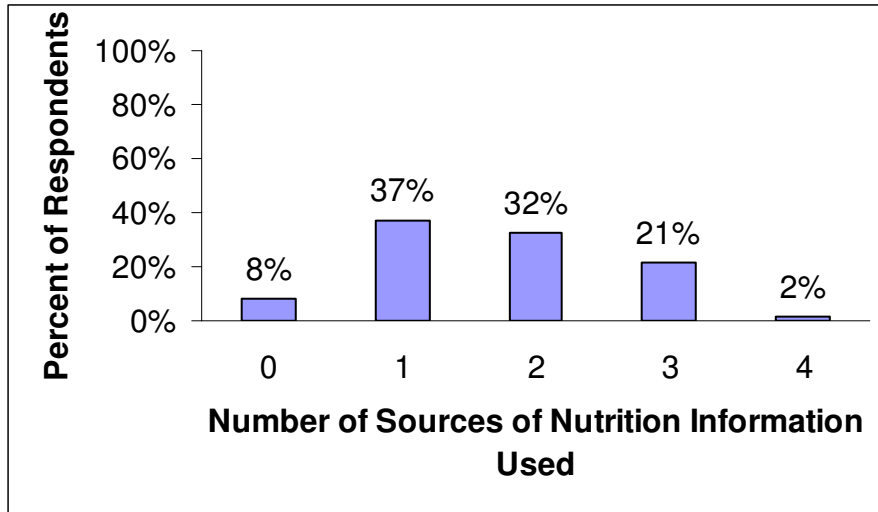
items in the 'other' category were internet, magazines, food labels, and friends and family members (Figure 4).

Figure 4: Sources of Nutrition Information



Sources of nutrition information were grouped by categories to determine the number of categories used by participants. Categories developed were: print media, electronic media, professionals, other people, and food labels. Most participants used multiple categories for nutrition information (mean=1.72, SD=0.94). Over half (55%) of participants reported using three or more categories of information (Figure 5).

Figure 5: Number of Nutrition Information Categories Used

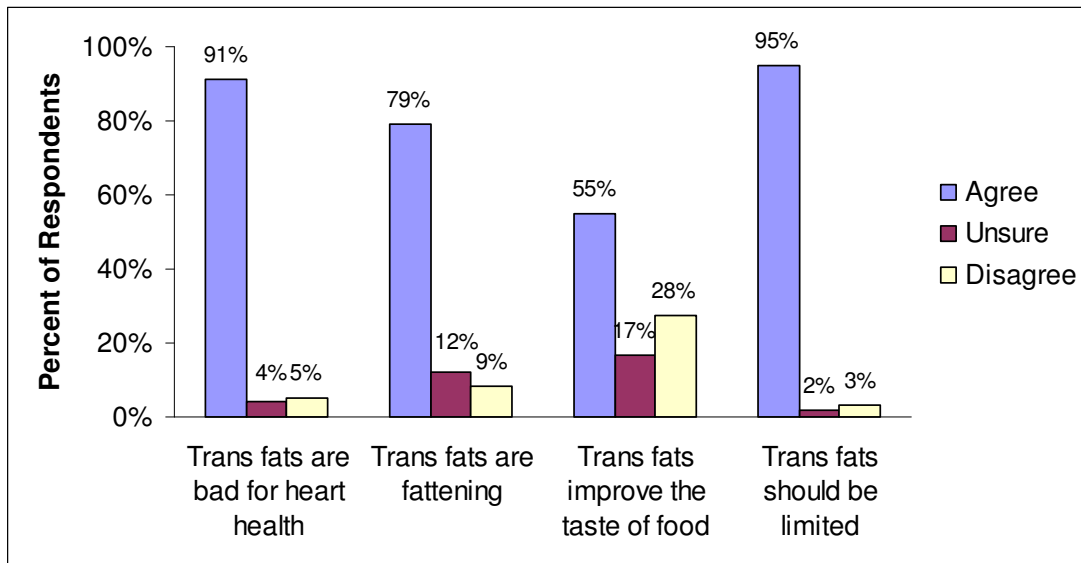


5.3 Perceptions of Trans Fats

Almost all participants (98%) had heard of trans fat before. Most of the participants who had not heard of trans fat were male (83%) and all were over age 40 (83% 40 to 59 years, 17% over 60). Those who were not previously aware of trans fat were excluded from statistical analysis (other than demographic variables).

Of participants who had heard of trans fat before, a large majority (91%) agreed with the statement “trans fats are bad for heart health”. Three quarters (79%) felt that trans fat was fattening and nine in 10 (95%) felt that trans fats should be limited. Although approximately half (55%) of consumers felt that trans fat improved the taste of food, this was the question with the most disagreement (28% disagreed and 17% were unsure) (Figure 6). The only perception of trans fats that differed significantly by any demographic variable was the belief that trans fats are fattening. Eight out of 10 women (82%) agreed with this statement compared to 69% of men (p=0.04).

Figure 6: Perception of Trans Fats



5.4 Trans Fat Attitude Score

The trans fat attitude score measured participants' attitude towards trans fat, with a higher score indicating a more negative attitude towards this fatty acid (Table 1). Overall, participants had a negative view of trans fats with an average score of 2.9 (SD=0.8) out of 4 (Table 4). This score did not differ significantly by any demographic variables or by source of nutrition information.

Table 4: Trans Fat Attitude Scoring

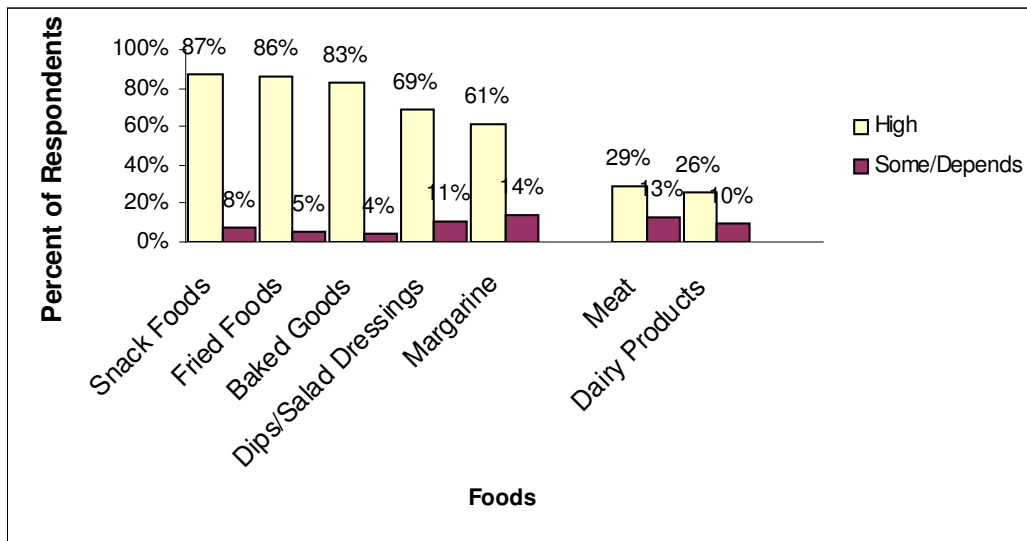
	Agree	Unsure	Disagree
Trans fats are bad for heart health	91%	4%	5%
Trans fats are fattening	79%	12%	9%
Trans fats improve the taste of food	55%	17%	28%
Trans fats should be limited	95%	2%	3%

Bold indicates the scoring response

5.5 Foods Perceived as High in Trans Fat

The foods most often selected as high in trans fat were snack foods (87%), fried foods (86%), and baked goods (83%). Meat (29%) and dairy products (26%) were least frequently selected as high in trans fat. Many participants also stated that ‘some’ foods in the category may be high in trans fats (e.g., margarine) or that the trans fat content ‘depends’ on other factors (e.g., type of oil used). Some participants also indicated that high fat meat/dairy would be high in trans fat (Figure 7).

Figure 7: Perception of Foods High in Trans Fat



5.6 Knowledge of Sources of Trans Fat Score

A score was developed to assess how well participants were able to identify foods that would be high sources of trans fat (Table 2). Overall participants were fairly knowledgeable about sources of trans fat and scored an average 3.8 (SD=1.01) out of 5 (Table 5). This score did not differ significantly by any demographic variables or by source of nutrition information.

Table 5: Knowledge of Sources of Trans Fat Score

	Not High	Some/ Depends	High
Meat	57%	13%	29%
Fried Foods	6%	6%	88%
Baked Goods	11%	4%	85%
Snack Foods	3%	8%	89%
Dairy Products	63%	10%	27%

Bold indicates the scoring response

5.7 Awareness of Trans Fat Information on Food Packages

Almost all respondents (95%) had noticed some trans fat information on food packages, although fewer were aware of the information in the Nutrition Facts panel (63%) compared to the '0 trans fat' claim (75%) (Table 6).

Table 6: Awareness of Trans Fat Information by Gender and Age Group

	Total	Men	Women	19-39	40-59	60+
Noticed trans fat information on food packages before	95%	91%	96%	94%	94%	95%
In nutrient content claim, such as '0 Trans Fat'	75%	70%	76%	81%	76%	66%
In nutrition facts panels (a)	63%	56%	65%	46%	66%	75%

a indicates significant difference by age group

Awareness of some type of trans fat information on food packages did not differ significantly by age or gender variables. However, younger consumers were less likely to be aware of trans fat information in Nutrition Facts Panels (p-value=0.002) than older consumers (Table 6). Shoppers at the Joseph Howe Superstore (p-value=0.01) and those from larger households (p-value=0.03) were also significantly more likely to be aware of the '0 trans fat' claim on food packages (Figures 8-9).

Figure 8: Awareness of '0 Trans Fat' Claim by Store

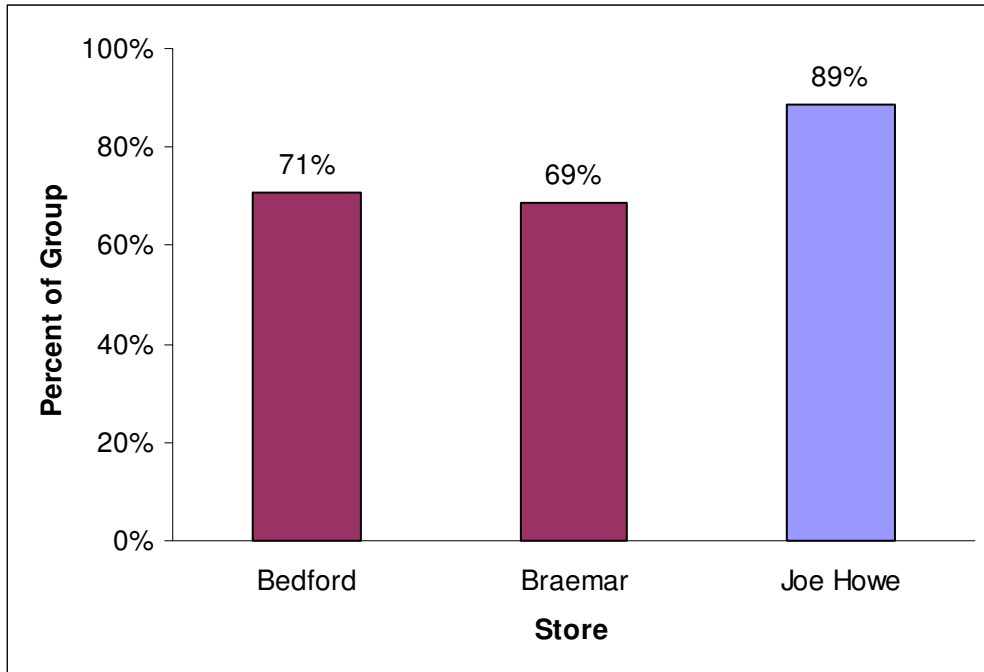
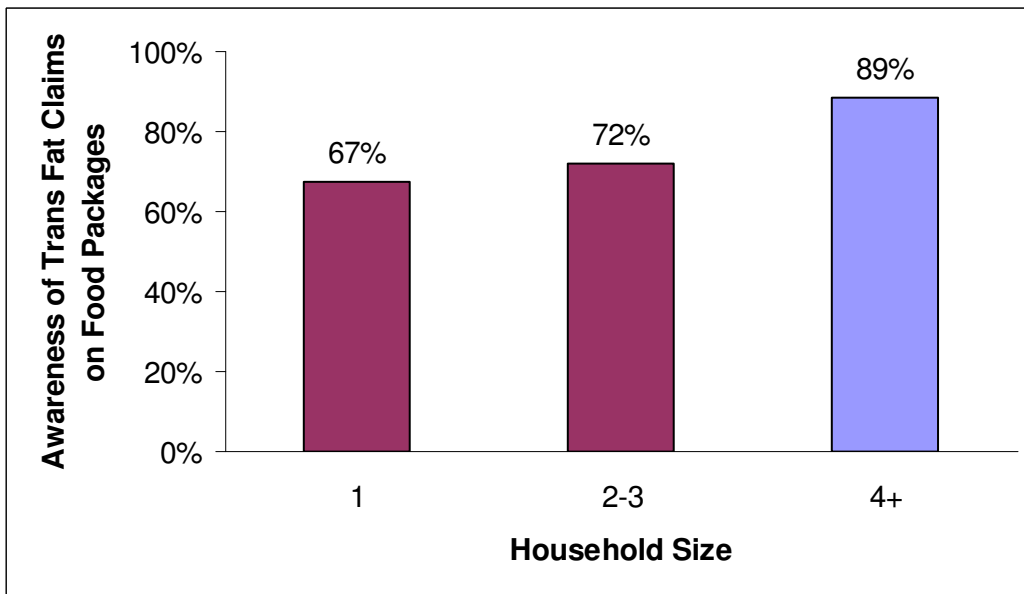


Figure 9: Awareness of '0 Trans Fat' Claim by Household Size



Those using newspapers were more likely to be aware of information on food packages compared to those who did not use this source (p-value= 6.7×10^{-3}). Those who consulted nutrition professionals were also more likely to be aware of the '0 trans fat' claim (p-value=0.03) and trans fat information in the Nutrition Facts panel (p-value=0.04) than those who did not use this source for nutrition information.

5.8 Use of Trans Fat Information on Food Packages to Reduce Intake

Eight out of 10 (81%) respondents reported trying to reduce their trans fat intake. Women (p-value=0.01), shoppers at the Bedford store (p-value=0.01), those who used more sources for nutrition information (p-value= 2.2×10^{-4}) and those who used newspapers for their nutrition information (p-value= 4.3×10^{-4}) were more likely to be trying to limit their trans fat intake.

Although more consumers were aware of nutrient content claims, the most common method used to reduce trans fat intake was reading Nutrition Facts panels (60%), followed by choosing foods with a '0 trans fat' claim (51%). Almost one half (47%) of respondents reported reducing their intake of high fat foods and one quarter (29%) reported reading ingredients lists (Table 7). Other responses given by participants was to reduce their intake of processed foods or baked goods, to switch from one product to another, to change cooking methods or to choose more organic foods. Some participants who were not trying to reduce their trans fat intake stated this was because they had always followed a healthy diet.

Methods used to reduce trans fat differed significantly by demographic variables. More women than men reported reading Nutrition Facts panels (p-value=0.01), choosing foods with a '0 trans fat' claim (p-value=0.046), and reading ingredients lists (p-value= 7.89×10^{-4}). The

number of respondents using the Nutrition Facts panel to reduce their trans fat intake also varied by age group ($p\text{-value}=2.41 \times 10^{-4}$), with use of the panel increasing with age (Table 7).

Table 7: Strategies Used to Reduce Intake of Trans Fat by Gender and Age Group

	Total	Men	Women	19-39	40-59	60+
Have you changed your food purchases to reduce your trans fat intake (g) – Yes Response	81%	70%	85%	73%	85%	86%
Purchased foods labeled "0 trans fats" (g)	51%	39%	54%	48%	54%	48%
Read Nutrition Facts panels to choose foods with a low trans fat content (a,g)	60%	41%	66%	41%	65%	73%
Reduced intake of high fat foods	47%	39%	49%	41%	52%	45%
Read ingredients lists to select foods with no partially hydrogenated fats (g)	29%	11%	35%	20%	34%	31%

g indicates that results are significantly different by gender

a indicates that results are significantly different by age group

5.9 Purchasing Practices Score

A score was developed to summarize participants purchasing practices with regard to trans fats (Table 3). This score was tested for internal validity. Overall, participants scored an average of 1.9 (SD=1.44). This indicates that most people were using approximately two strategies to reduce their trans fat intake (Table 12).

Table12: Purchasing Practices Score Question Responses

	Percent of Respondents	
	Yes	No
Purchased foods labeled "0 trans fats"	51%	49%
Read Nutrition Facts panels to choose foods with a low trans fat content	60%	40%
Reduced intake of high fat foods	47%	53%
Read ingredients lists to select foods with no partially hydrogenated fats	29%	70%

Bold indicates scoring response

This score varied by demographic variables. Women ($F(1,236)=11.78, p<0.05$), consumers over age 40 ($F(2,235)=3.54, p<0.05$), and Bedford shoppers ($F(2,235)=7.38, p<0.05$) were more likely to score higher (Figures 10-12). Source of nutrition information was also related to participant's score on this index. People who used newspapers ($F(1,236)=5.01, p<0.05$), books ($F(1,236)=7.13, p<0.05$), and nutrition professionals ($F(1,236)=4.15, p<0.05$) were more likely to score higher than those not using these sources. Trans Fat Purchasing Practices Score also increased slightly with the number of categories of nutrition information used ($F(4,233)=2.84, p<0.05$). In particular, consumers who used four sources of information were more likely to score higher (Figure 13). Attitude towards trans fat was not significantly related to the purchasing practices score.

Figure 10: Average Trans Fat Purchasing Practices Score by Gender

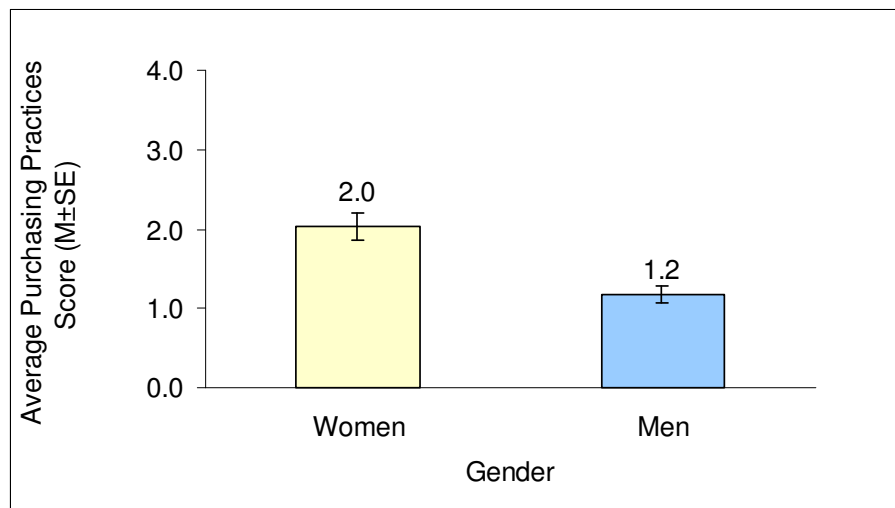


Figure 11: Average Trans Fat Purchasing Practices Score by Age Group

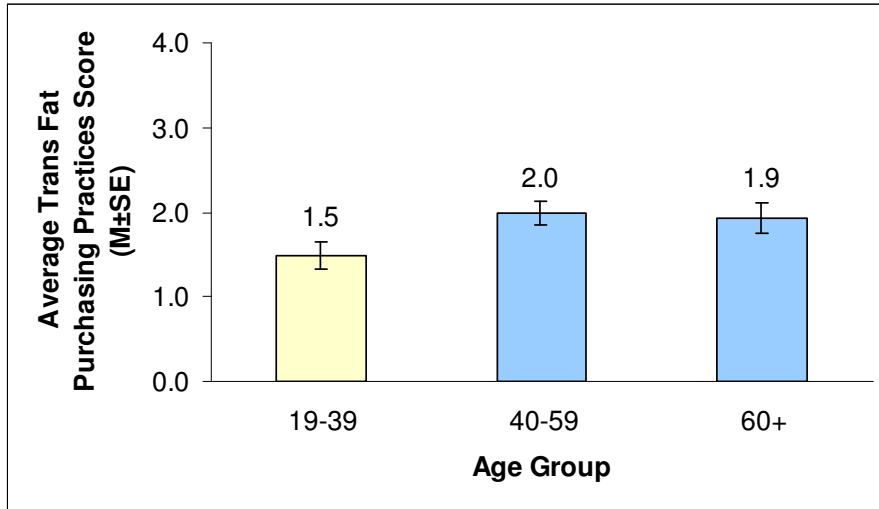


Figure 12: Average Trans Fat Purchasing Practices Score by Store

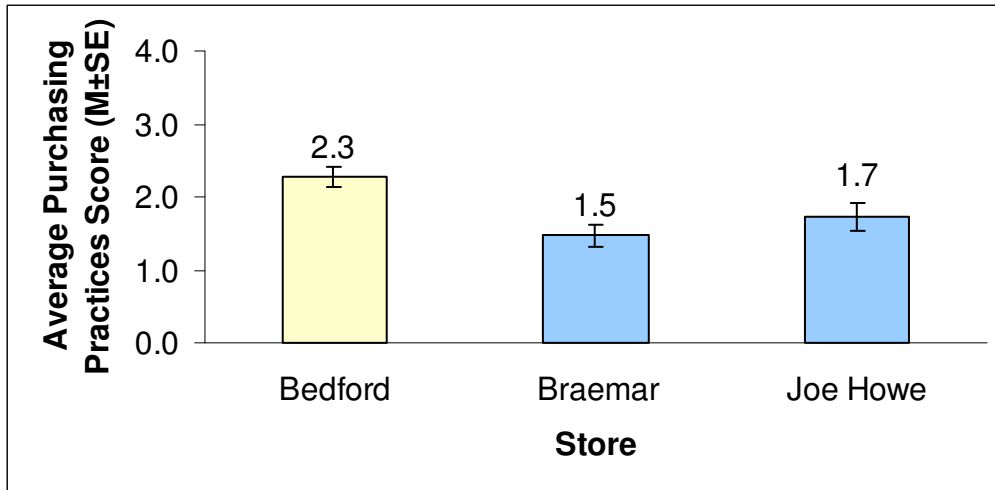
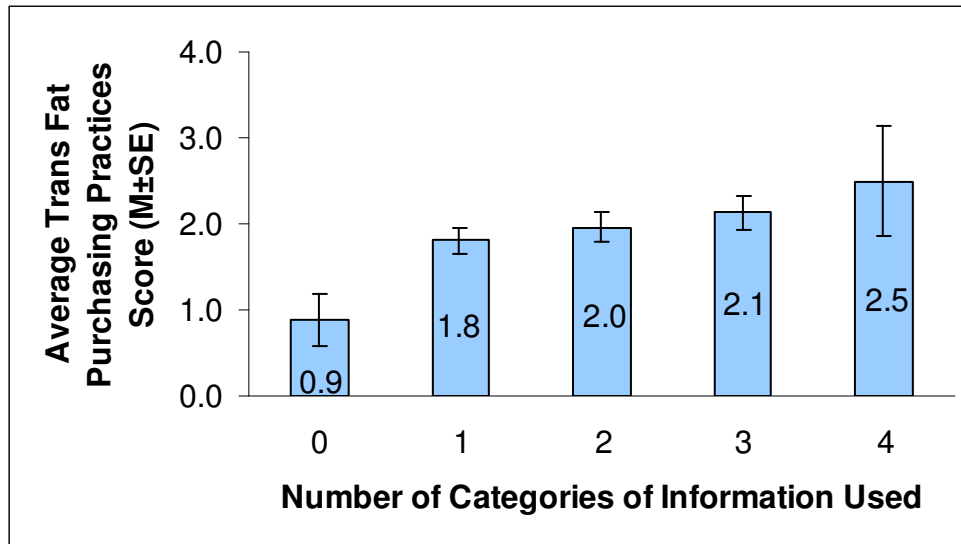
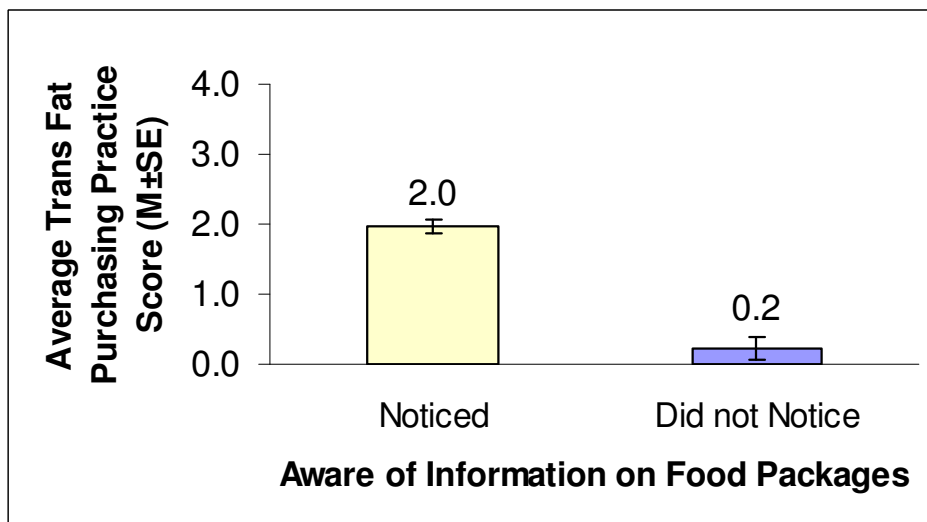


Figure 13: Average Trans Fat Purchasing Score by Number of Sources of Nutrition Information Used



Participants in this study who were aware of trans fat information on food packages scored much higher on the Purchasing Practices Score than participants who were not aware of this information ($F(1,236)=19.34, p<0.05$) (Figure 14).

Figure 14: Average Purchasing Practices Score by Awareness of Trans Fat Information on Food Packages



5.10 Interpretation of '0 Trans Fat' Claim

Most respondents (77%) interpreted the '0 Trans Fat' claim on food labels correctly as the product was low in a certain type of fat. A majority (64%) also viewed products with this claim as a healthy/healthier choice. Some also believed that products with this claim were low in fat (19%) or low in calories (16%). Although most people viewed this claim positively, almost one in five people (20%) are at least somewhat skeptical of products with this claim and approximately one in ten people (13%) view products with this claim as not tasting the same as the products without this claim. One in 10 (10%) respondents gave an answer in the 'other' category. Most of the other interpretations of the '0 trans fat' claim given were positive (e.g., low in saturated-type fat, low in cholesterol, or less processed). However, some respondents felt that products with this claim must be high in something else (e.g., other fats or sugar). Some respondents also stated that they would look for further information on products with this claim, such as the Nutrition Facts panel (Figure 15).

Interpretation of the '0 trans fat' claim varied only slightly by demographic variables (Table 8). Women were more likely to trust the '0 trans fat claim' than men (p-value=0.04). Shoppers at the Braemar Superstore were more likely to correctly interpret the '0 trans fat' claim (p-value=0.02) and those at the Joe Howe Superstore were less likely to trust the claim (p-value= 3.7×10^{-5}).

Figure 15: Interpretation of the '0 Trans Fat' Claim

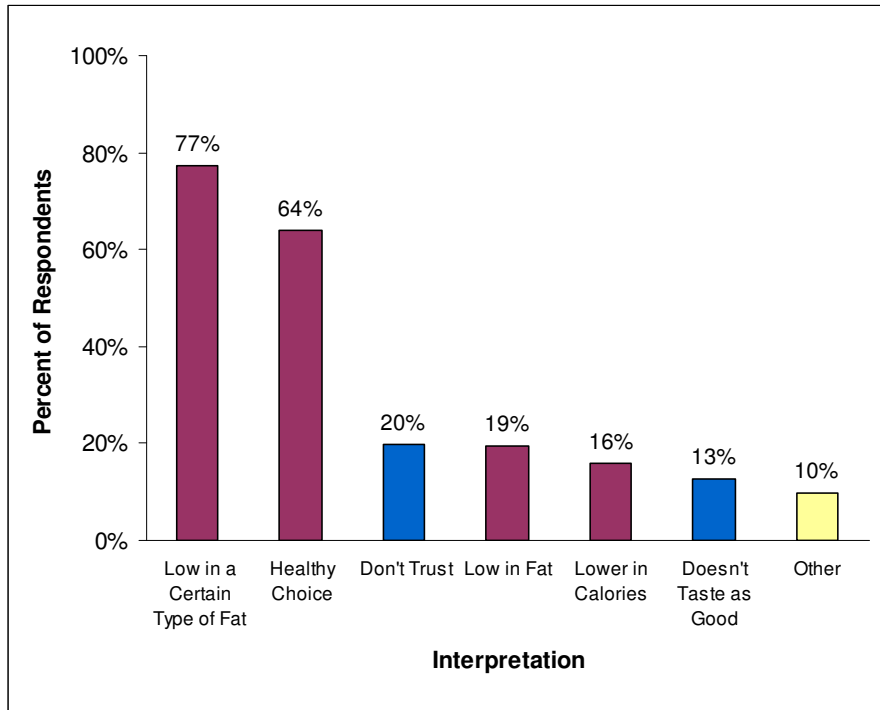


Table 8: Interpretation of '0 Trans Fat' Claim by Demographic Variables

	The product is low in a certain type of fat	The product is a healthy choice	I don't trust this claim	The product is low in fat	The product is lower in calories	The products doesn't taste as good
Gender						
Male	69%	65%	30%*	19%	11%	11%
Female	80%	64%	17%*	20%	17%	13%
Age Group						
19-39	75%	58%	16%	19%	16%	12%
40-59	77%	70%	19%	18%	15%	13%
over 60	80%	61%	25%	22%	17%	13%
Grocery Shopping Habits						
Shop for Household	77%	66%	14%	19%	15%	12%
Share Shopping Duties	74%	58%	28%	19%	15%	6%
Shop for Self	79%	63%	23%	19%	19%	21%
Rarely Shop	100%	80%	60%	40%	40%	20%
Household Size						
1	76%	59%	20%	18%	17%	20%
2-3	76%	66%	22%	21%	15%	9%
4+	83%	62%	13%	17%	15%	15%
Store						
Bedford	72%*	61%	16%*	24%	20%	14%
Braemar	88%*	68%	9%*	14%	8%	9%
Joseph Howe	73%*	65%	39%*	18%	19%	14%

Shoppers who rarely shop were excluded from the analysis due to the small group number (N=5)

* indicates statistically significant differences

CHAPTER 6.0: DISCUSSION

Cardiovascular disease (CVD) is the leading cause of death in Canada (31). Atlantic Canadians are at a particularly high risk of this disease (32). Trans fats have been identified as one of the major factors contributing to a high risk of CVD (20-24). Although consumption has decreased in recent years (7), the trans fat intake of Canadians remains one of the highest in the world (23). The Trans Fat Task Force has identified nutrition labelling as a key step to help reduce the trans fat consumption of Canadians (7).

New labelling regulations in Canada now require the trans fat content to be listed in the Nutrition Facts panel (13). With this change, and the negative attention trans fats have received in the media, many food manufacturers have reduced or eliminated the amount of trans fat in their products. As a result of this, many foods on the shelves of Canadian grocery stores now bear a '0 trans fat' claim. However, questions remain as to how aware consumers are of this information and if they are using it to reduce their trans fat intake. This study examined consumers' attitudes, knowledge, and awareness of trans fats. As well, use of trans fat information on food packages and the interpretation of the '0 trans fat' claim was explored.

The Economics of Information model can be applied to understand how people search for information on food packages (Figure 14). This model suggests that people will continue to search for information as long as the cost does not exceed the benefit (60). The main cost of searching for information on food packages is time and the benefit is better food choices, which can lead to a healthier diet and reduced risk of disease (53, 56). In this study, a number of demographic variables were found to impact on consumers' efforts to reduce their trans fat intake (Figure 16).

Consistent with recent studies that have examined consumers' knowledge of trans fats (18,39), most shoppers had at least a basic knowledge of trans fats. Most participants had a

negative view of trans fats and were aware of the impact of trans fat on heart disease. There was no difference between gender or age group in concern or knowledge about trans fat. Other studies on consumer knowledge of trans fat have found that women and older consumers are more knowledgeable about trans fats (8,10). As the questions about trans fats in this questionnaire were fairly basic, it is to be expected that most consumers would correctly answer the questions. Consumers' knowledge about trans fats may also have increased recently due to continued media coverage of trans fat and the addition of trans fat information to the Nutrition Facts panel.

Although most consumers were aware of trans fats, a small segment of the population remains unaware and confused. A small group of consumers, mostly men over age 40, had never heard of trans fats before and others reported confusion if trans fats were "good" or "bad". Research on consumer understanding of dietary fats has found that consumers are confused about the difference between saturated and unsaturated fats (44,45) and they tend to perceive animal fats as "bad" (58). This could explain why some consumers felt that meat and dairy products, particularly red meat and high fat dairy, would be high in trans fat. Although meat and dairy contain small amounts of naturally-occurring trans fat, the type of trans fat found in these products does not appear to have the negative effects of industrially-produced trans fats (15-17). It is important for consumers to be aware of this, as nutrition labelling does not distinguish between industrially-produced and naturally-occurring trans fats.

Most consumers correctly identified snack foods, fried foods, and baked goods as high in trans fats. The Trans Fat Task Force has found that although many trans fat free foods are now available, many snack foods, such as snack puddings and popcorn, and processed baked goods remain high in trans fats (28). Fried food, particularly from restaurants, still remains high in

trans fat (30). As nutrition labelling is not mandatory for restaurants and in-store bakery products, it is important for consumers to recognize these foods as a potential high source of trans fat.

Similar to other studies on trans fat, most consumers felt that trans fats should be limited and most were aware of the negative relationship between trans fats and cardiovascular health (8,39,59). Previous research has found that women and older Canadians are more likely to be concerned about trans fats (8,39). This study found no difference in demographics and trans fat attitude score. Again, more consumers may be aware of the negative effects of trans fats due to the level of media coverage and the addition of information to food packages.

As consumers become more aware of trans fat information on food packages, they are more likely to use this information to reduce their trans fat intake. Some consumers were not aware that trans fat information had been added to the Nutrition Facts panels. Increasing consumer awareness of information available is the first step to increasing use of the information. Increasing consumer awareness of information available on food labels decreases the amount of time required to search for the information. This increases the likelihood that consumers will search for information, as the perceived cost of searching for information is reduced (56,61).

Older consumers were more likely to be aware of and to use information in Nutrition Facts panels to reduce their trans fat intake. Shoppers are required to search for the Nutrition Facts panel, whereas the '0 trans fat' claim is highly visible on packages. This finding contrasts with the expectation that older shoppers (over age 60) would have difficulty processing the information in food labels and therefore would not be as likely as middle-age shoppers to read food labels. As trans fat information becomes more accessible on food labels, consumers may be

better able to process this information and the perceived cost of reading food labels for trans fat information may be decreased. Older consumers may also be motivated to search for this information because they, or a family member, may have been diagnosed with a diet-related disease, and therefore they perceive a greater benefit of making healthier foods choices. Although most older consumers were aware of trans fats and were taking steps to reduce trans fats in their diets, the majority of consumers who were not aware of trans fats were men over the age of 40. Older consumers are at a higher risk of heart disease and therefore it is important that they take steps to reduce their risk through diet. Nutrition professionals should be aware that this some people in this group may not be as interested in nutrition and may therefore be the last group to receive nutrition messages.

Shoppers aged 19 to 39 years used a fewer number of strategies to reduce their trans fat intake. Using a fewer number of strategies to reduce trans fat intake is likely not as effective as using multiple strategies. Previous research has shown that younger consumers are less likely to read food labels (41). Shoppers in the 19 to 39 year old age group may have similar knowledge levels about the effects of trans fats as older consumers; however, they may not be as concerned about their risk of CVD. Younger consumers may not perceive as great a benefit of making healthy food choices to reduce their risk of disease, as they do not feel they are at risk of disease. For this reason, they may not take the time to search for trans fat information on food packages and to make dietary changes. Further research is needed to determine the attitudes and practices of this age group in order to better target nutrition messages towards this group.

Shoppers from larger household were more likely to be aware of nutrient content claims on food packages. Consumers tend to use nutrient content claims more when they are in a hurry (58). Shoppers from larger households may be more rushed when shopping as they may have

more children with them and are required to shop for more people. Therefore, they may need to rely more on information that is easily available to them.

Most consumers reported using the Nutrition Facts panel to reduce their intake of trans fats. Although more consumers were aware of the '0 trans fat' claim, they tended to rely more on the Nutrition Facts panels. This may be because although consumers want simplified information (49), they tend to trust more complex information, such as the Nutrition Facts panels (48). One fifth of consumers in this study reported skepticism towards the '0 trans fat' claim and many viewed it as advertising for the product. Consumers were particularly skeptical when foods, which never had contained trans fats, reported that they were now "trans fat free". Men were also less likely to trust the claim. Skepticism towards nutrient content claims may be related to understanding of nutrition. People who do not fully understand claims are not able to fully evaluate the claims and thus they may be more skeptical (60). This could also affect the perceived cost of reading labels, as consumers who do not understand the information would take longer to process it (56). As males are typically less knowledgeable about trans fat than women (8,10), this may explain the variation between genders.

One interesting finding of this study, is that although shoppers at the Joseph Howe store were most likely to be aware of '0 trans fat' claims, they were almost twice as likely to not trust this claim. More respondents from the Joseph Howe store were in the 19 to 39 year old age range, which may have affected results as younger consumers were more likely to be aware of nutrient content claims (although the result was not statistically significant). Age was not related to skepticism towards the claims. A lack of understanding of the nutrient content claim may also explain the difference between stores. Further research is needed to better understand this relationship.

Consumers were more likely to use simple methods to reduce their trans fat intake, such as nutrient content claims and Nutrition Facts panels, rather than more complex tasks such as reading ingredients lists. This contrasts with Tracking Nutrition Trends VI, which found that consumers most often read the ingredients list, followed closely by the Nutrition Facts panel. A fewer number of consumers read nutrient content claims (47). More consumers may read Nutrition Facts panels and nutrient content claims to reduce their trans fat intake due to the availability of trans fat information in these two formats. Consumers do not have to read ingredients lists to determine if a product contains trans fat as this information can easily be located in the Nutrition Facts panel. Reading Nutrition Facts panels and searching for nutrient content claims requires less time than reading ingredients lists. Therefore, considering the Economics of Information model, it is more likely consumers would use Nutrition Facts panels and nutrient content claims (53,56).

With the increased number of trans fat free products, it is becoming easier for consumers to reduce their trans fat intake by choosing foods with a '0 trans fat' claim without changing their dietary habits or searching for information in the ingredients list. Trans fats have been eliminated from many of the products shoppers normally purchase. Consumers indicated that they would choose a trans fat free food over one that did not bear this claim. Some consumers also reported switching from one product to another to reduce their trans fat intake. It is interesting to note that some consumers reported switching from margarine to butter to reduce their trans fat intake. Consumers may be focusing only on trans fat, rather than also considering saturated fat intake.

Women were more likely to be attempting to limit their trans fat intake and to use more strategies to do this. Similar studies have found that women are more likely to read labels

(9,35,41) and more likely to search for reduced fat foods (39). When men do read food labels, they tend to search for information related to specific diet-disease relationships (41). Women are more likely to perceive nutrition as important (37,52,53) and to better understand the role of trans fats (8,10). Therefore they are more likely to take the time to search for trans fat information on food labels and make healthy food choices (53).

Shoppers at the Bedford store were also significantly more likely to be attempting to reduce their trans fat intake and to use more strategies to do this. Bedford respondents did not differ significantly by demographic variables or use of nutrition professionals compared to the other stores. Shoppers who are more interested in nutrition are more likely to perceive a benefit from making healthy food choices (53,56), such as reducing trans fat intake. It is possible that shoppers at the Bedford store were more interested in nutrition and this could explain the findings.

Although consumers have an understanding of the role of trans fats in the diet, there is some confusion about the meaning of the '0 trans fat' claim. Most consumers correctly interpreted this claim to mean the product is lower in a certain type of fat; however, many people also viewed products with this claim as lower in total fat and/or calories. Previous research has shown that consumers are confused about the role of various dietary fats in their diets. For example, over half of respondents to Tracking Nutrition Trends VI believed that soft, non-hydrogenated margarines would be lower in fat than hard, stick margarines (47).

Consistent with other studies on health claims (60), many shoppers felt that products with a '0 trans fat' claim were healthy/healthier. Consumers report difficulty knowing how to determine if a product is a healthy choice (39). With the recent media coverage of trans fats and the prominence of '0 trans fat' claims, these claims may be exerting a "halo effect" on foods (60)

and consumers may not be examining other information in the Nutrition Facts panel. Although trans fats should be limited, this is only one component of a healthy diet.

Braemar shoppers were more likely to correctly interpret this claim. The reason for this relationship is unclear. Braemar shoppers had a slightly more negative view of trans fats and were slightly more likely to believe trans fats should be limited, although these relationships were not statistically significant. Correct interpretation of this claim may also be related to a higher knowledge of trans fats.

Over half of consumers surveyed felt that trans fats would improve the taste of foods and some viewed foods with the '0 trans fat' claim as not tasting as good as regular products. Taste is the number one factor affecting food selection (42,47) and health messages may affect only one third of purchases (37). Manufacturers must continue efforts to focus on maintaining taste when reformulating products. If consumers do not view trans fat free products as tasting as good as the original product, they will be less likely to purchase these items, even if they are perceived as healthier.

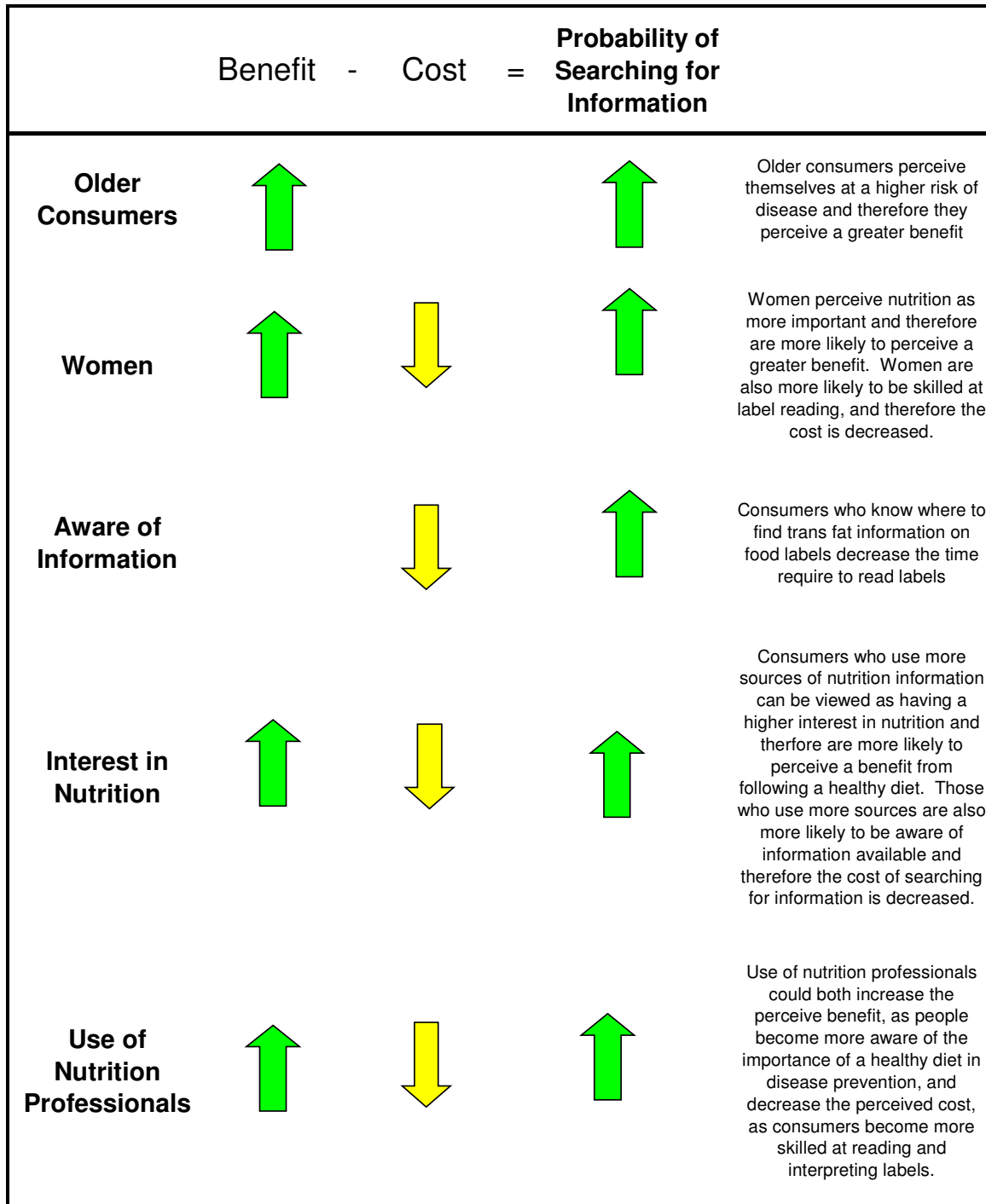
Source of nutrition information was related to some variables studied. Participants who read newspapers were more likely to be aware of information on food packages and more likely to be attempting to reduce their trans fat intake than those who did not use this source. There has been a great deal of media coverage of trans fats about the negative effects of trans fats and participants may have learned through newspapers about '0 trans fat' claims and the addition of trans fat content to the Nutrition Facts panel. One study found that as newspaper coverage of diet-disease relationships increased, more consumers became aware of this relationship. Newspapers appear to educate the public and motivate consumers to make healthier food choices (64). Participants reading books were also more likely to use more strategies to limit their trans

fat consumption than those not using books for nutrition information. Books on nutrition often discuss how to make healthy food choices and ingredients to avoid. Through reading books, consumers may have become more aware of what to look for when reading labels and thus they are more likely to use multiple strategies. These types of media also require active search from participants. People who use these sources must choose to read articles or books on nutrition. Therefore, people who use these sources may feel more compelled to act on the information.

Consumers who consulted nutrition professionals were also more likely to be reducing their intake of trans fats and to be using more strategies to do this. Nutrition professionals often educate consumers about practical ways to reduce their trans fat intake, such as label reading. They also teach clients about the importance of choosing healthy foods to reduce risk of disease. Educating consumers about label reading decreases the amount of time required to find and process information on labels, this reduces the perceived cost of reading labels. Consumers who are more aware of the diet-disease relationship between trans fat and cardiovascular disease are also more likely to perceive a greater benefit from choosing foods low in trans fat. These two factors can increase the probability that consumers will read food labels to purchase foods low in trans fat (53,56).

The average purchasing practices score was also related to the number of categories of information sources used by participants. Participants who used more categories of nutrition information are likely more interested in nutrition and therefore more likely to perceive a healthy diet as important (53,56). These consumers are more likely to use a variety of sources to reduce their trans fat intake. Consulting a greater number of nutrition sources can also reduce the cost of searching for information because the sources will help teach people how to interpret and process information on food labels.

Figure 16: Conceptual Model of Economics of Information



CHAPTER 7.0: LIMITATIONS OF THE STUDY

This study was limited by the data collection method. A self-selected convenience sample was used. This method of data collection was used to result in a higher response rate and to reduce the burden on shoppers at the grocery stores (i.e., shoppers were not approached, but rather researchers waited for shoppers to approach the table before asking if they were interested in being part of the sample). The limitation of this type of data collection is that the sample may not be representative of all shoppers, as those who choose to approach the booth and participate in the study may differ on a number of variables.

Using a questionnaire for data collection also presented some limitations, as respondents were required to report their behaviour. Respondents may have reported what they believed the researcher wanted to hear. The questionnaire was also kept short and no personal questions were asked to reduce the burden on participants and the invasive nature of the questionnaire. No questions about income or education level were asked due to the invasive nature of these questions. Data from the postal code area of the store were used to determine the profile of potential shoppers; however, only limited conclusions can be drawn from income and education analysis as income and education level of respondents is not known. Questions were also kept basic to maximize the understanding of the questionnaire for shoppers. However, a questionnaire was chosen as the data collection tool as it allowed data to be collected from a larger number of participants over a short period of time.

Most of the participants (96%) responding to the questionnaire were interested or somewhat interested in nutrition. This is higher than in the general population and therefore the sample chosen may be more aware of trans fats and have a greater knowledge of this fatty acid. As well, consumers who participated in this sample are not representative of the general population due to their demographic distribution. Three-quarters (76%) of the participants who

completed the questionnaire were female and a large majority of the sample (72%) was over age 40. These participants may differ from the general population in their interest in trans fat awareness and use of information on food packages.

CHAPTER 8.0: RECOMMENDATIONS AND CONCLUSION

8.1 Recommendations

In a positive light, consumers who consulted nutrition professionals were more likely to be aware of trans fat information on food packages and to be using more strategies to do reduce their trans fat intake. However, it is not always easy for people to visit nutrition professionals. Although in-store nutrition programs increase the public's access to dietitians, nutrition professionals should also focus on conveying nutrition messages through means that are accessible to everyone, such as media and books. In this study, books, television, and newspapers were the most frequently used sources of nutrition information. Nutrition is currently a topic of interest and there is a great deal of information available, but this information is not always from credible sources. Nutrition professionals should help to ensure that credible messages are available to the general public in easily accessible forms.

Canadian men aged 18 to 34 have the highest trans fat intake in Canada (28). Men and in this study were less likely to be attempting to reduce their trans fat intake and younger consumers were less likely to use a variety of strategies to reduce their trans fat intake. Consumers in this age bracket are knowledgeable about trans fats, but they may not feel it is as important for them to make changes to their diet. Nutrition messages aimed at this group need to emphasize the importance of developing healthy eating habits at a younger age to prevent disease later in life. Further research is needed to understand the attitudes and practices of consumers under the age of 25, as only a small number was included in this sample.

Nutrition professionals should work to increase awareness of trans fat information on food packages, as this appears to increase use. As consumers are somewhat confused about the '0 trans fat' claim, nutrition educators should also continue to educate the public on the meaning

of this claim, as well as other information to consider when reading labels. Consumers are unsure how to consider all the information on food labels and there may be a “halo effect” with nutrition claims, particularly trans fat claims as they are so prominent.

Food manufacturers are also key to reducing trans fat intake among Canadians. For consumers to reduce their trans fat intake, products must be available that are either trans fat free or reduced. Currently, many trans fat free products are available; however, some products such as commercial baked goods, fried foods, and some snack foods remain high in trans fats (28). Almost all participants in this study felt that trans fats should be limited. Participants reported using Nutrition Facts panels and Nutrient Content Claims to reduce their intake of trans fat. Many consumers also reported looking for foods with a ‘0 trans fat’ claim. Although, this claim is generally viewed positively, some consumers feel these products may not “taste as good” as regular products. Food manufacturers should continue efforts to develop and reformulate products that can be marketed and labeled as trans fat free. They should also focus on maintaining taste when reformulating products.

Although this study provides an initial examination of trans fat attitudes, knowledge and purchasing practices, more in-depth research is needed. Research focusing on younger adults, particularly males, is necessary to better understand how to target nutrition messages towards them in a meaningful way. Further research is also needed to better understand the differences between stores in the interpretation of the ‘0 trans fat’ claims. Information on income and education was not included in this research, but these factors may affect consumers’ use and interpretation of trans fat information on food labels.

8.2 Conclusion

In an effort to help Canadians reduce their intakes of trans fat, the trans fat content of foods has been added to the Nutrition Facts panel. Trans fats significantly increase the risk of CVD and it is estimated that new food labels could reduce health care costs by \$5 billion dollars of the next 20 years. However, although nutrition labelling is an important step to improving the health of Canadians, it is only the first step. For labelling to effectively reduce trans fat intake among Canadians, consumers must understand the role of trans fats, be aware of new labelling regulations, and use this information to choose foods with a lower trans fat content.

This study found that consumers had at least a basic understanding of the role of trans fats and most were aware of which foods were high in trans fats. Consumers were concerned about trans fats and many felt they should be limited. Consumers were indeed taking steps to reduce trans fats in their diets. Many consumers reported reading Nutrition Facts panels or nutrient content claims to select foods with no trans fat. These practices were most common among women and older consumers.

Young males (18-34 years old) have the highest trans fat intake among Canadians (28). In this study, younger people were less likely to use a variety of strategies to limit their trans fat intake. People in this age group may not feel they are at risk of diet-related disease and thus they may not feel it is as important for them to follow a healthy diet. Nutrition professionals should focus on targeting messages emphasizing the importance of healthy eating now to prevent disease later in life.

As well, there was some confusion about the '0 trans fat' claim. Although most consumers correctly interpreted this claim as "low in a certain type of fat" there were some who felt that products with this claim would be lower in total fat and/or calories. It is important for

nutrition professionals to make the distinction between trans fats and other nutrients and to continue to educate the public on label reading.

Food manufacturers should continue their efforts to reduce or eliminate trans fat from their products as consumers are searching for these products. With new labelling regulations, the Nutrition Facts panel is now mandatory on almost all packaged foods and information is readily available to the consumer.

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APPENDIX A: TRANS FATS QUESTIONNAIRE

1. Are you interested in nutrition information?

- Yes Somewhat No

2. What sources do you use for nutrition information? (Choose as many that apply)

- Television/Radio Newspapers Books
- Health Professionals (such as doctors, nurses) Nutrition Professionals (such as dietitians)
- Other: _____

3. Have you heard about Trans Fats before?

- Yes No

(If the answer is no, skip to question #9.)

4. How do you feel about the following statements?

- | | | | |
|--------------------------------------|--------------------------------|---------------------------------|-----------------------------------|
| Trans fats are bad for heart health | <input type="checkbox"/> Agree | <input type="checkbox"/> Unsure | <input type="checkbox"/> Disagree |
| Trans fats are fattening | <input type="checkbox"/> Agree | <input type="checkbox"/> Unsure | <input type="checkbox"/> Disagree |
| Trans fats improve the taste of food | <input type="checkbox"/> Agree | <input type="checkbox"/> Unsure | <input type="checkbox"/> Disagree |
| Trans fats should be limited | <input type="checkbox"/> Agree | <input type="checkbox"/> Unsure | <input type="checkbox"/> Disagree |

5. Which of the following foods do you think might contain high amounts of trans fats? (Choose as many that apply)

- Margarines Meat Fried Foods Dips/Salad Dressings
- Baked Goods Snack Foods Dairy Products
- Other: _____



6. Have you noticed trans fat information on food labels?

- Yes No **(If the answer is no, skip question #8)**

If yes, where have you noticed this information? (Choose as many that apply)

- Nutrient Content Claims, such as '0 trans fat' Nutrition Facts panels

7. Have you changed your food purchases to reduce your trans fat intake?

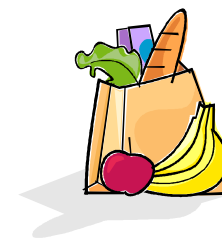
- Yes No

If yes, what strategies do you use? (Choose as many that apply)

- Purchased foods labelled '0 trans fats'
- Read Nutrition Facts panels to choose foods with a low trans fat content
- Reduced intake of high fat foods
- Read ingredient lists to select foods with no partially hydrogenated fats
- Other: _____

8. When you see a product labelled '0 trans fat', what does this mean to you? (Choose as many that apply)

- | | |
|---|--|
| <input type="checkbox"/> The product is lower in fat | <input type="checkbox"/> The product doesn't taste as good |
| <input type="checkbox"/> The food product is low in a certain type of fat | <input type="checkbox"/> The product is lower in calories |
| <input type="checkbox"/> I don't trust this claim | <input type="checkbox"/> The product is a healthy choice |
- Other: _____



9. How would you describe your grocery shopping habits?

- | | |
|--|--|
| <input type="checkbox"/> I shop for my household | <input type="checkbox"/> I share the grocery shopping duties with another person |
| <input type="checkbox"/> I shop for myself | <input type="checkbox"/> I rarely shop |

10. How many people are in your household? _____

11. Please indicate your age range:

19 – 24 24 – 39 40 – 59 over 60

12. Gender:

Male Female

APPENDIX B: DEMOGRAPHIC DATA BY POSTAL CODE AREA

BEDFORD STORE

2001 Census of Population (46 Large Urban Centres, Census Tracts (neighbourhoods)) Halifax - Census Tracts containing Postal Code B4A*									
Area Name:	Total population 15 years and over - 100% Data	College, population 20 years and over by highest level of schooling	University, population 20 years and over by highest level of schooling	% College	% University	% College or University	Average income \$ in 2000, population 15 years and over	Median income \$ in 2000, population 15 years and over	Standard error of average income \$ in 2000, population 15 years and over
0002.00	4,450	600	1,125	13%	25%	39%	27,091	18,387	941
0023.00	3,580	650	755	18%	21%	39%	21,796	17,720	618
0025.02	4,910	800	2,125	16%	43%	60%	30,563	20,600	1,012
0026.01	6,640	1,255	2,870	19%	43%	62%	36,446	29,209	2,972
0104.01	1,895	465	435	25%	23%	47%	26,876	25,635	925
0108.00	3,500	655	1,470	19%	42%	61%	34,633	29,350	1,103
0110.00	1,505	285	340	19%	23%	42%	19,018	14,788	912
0111.00	2,885	675	580	23%	20%	44%	22,580	19,206	650
0113.00	590	135	95	23%	16%	39%	23,434	20,518	1,591
0122.03	2,575	615	535	24%	21%	45%	32,946	25,641	2,245
0123.02	3,385	580	1,430	17%	42%	59%	43,712	31,534	1,851
0123.04	3,760	885	1,510	24%	40%	64%	39,288	30,574	1,444
0123.05	2,665	455	1,095	17%	41%	58%	34,207	27,139	1,334
0123.06	2,385	520	1,125	22%	47%	69%	47,056	30,620	2,856
0132.02	7,500	1,700	2,385	23%	32%	54%	36,656	31,383	735
0132.04	3,100	620	480	20%	15%	35%	27,775	23,314	828
0124.00	6,110	1,445	1,395	24%	23%	46%	29,705	27,219	595
0150.02	4,240	1,135	825	27%	19%	46%	31,084	28,008	859
0151.00	4,115	775	625	19%	15%	34%	24,763	22,051	651

Source: Statistics Canada.

BRAEMAR STORE

2001 Census of Population (46 Large Urban Centres, Census Tracts (neighbourhoods))

Halifax - Census Tracts containing Postal Code B2Y*

Area Name:	Total population 15 years and over - 100% Data	College, population 20 years and over by highest level of schooling	University, population 20 years and over by highest level of schooling	% College	% University	% College or University	Average income \$ in 2000, population 15 years and over	Median income \$ in 2000, population 15 years and over	Standard error of average income \$ in 2000, population 15 years and over
0100.00	2,580	440	295	17%	11%	28%	21,340	17,513	743
0101.00	3,060	740	730	24%	24%	48%	23,347	18,661	695
0102.00	3,390	780	1,090	23%	32%	55%	28,283	21,312	1,003
0103.00	3,435	665	1,135	19%	33%	52%	29,700	21,990	993
0104.01	1,895	465	435	25%	23%	47%	26,876	25,635	925
0108.00	3,500	655	1,470	19%	42%	61%	34,633	29,350	1,103
0109.00	2,930	575	885	20%	30%	50%	27,333	20,946	996
0110.00	1,505	285	340	19%	23%	42%	19,018	14,788	912
0114.00	5,950	1,655	945	28%	16%	44%	21,107	18,309	451
0122.03	2,575	615	535	24%	21%	45%	32,946	25,641	2,245
0123.02	3,385	580	1,430	17%	42%	59%	43,712	31,534	1,851
0123.04	3,760	885	1,510	24%	40%	64%	39,288	30,574	1,444
0123.05	2,665	455	1,095	17%	41%	58%	34,207	27,139	1,334
0123.06	2,385	520	1,125	22%	47%	69%	47,056	30,620	2,856
0153.00	5,140	920	715	18%	14%	32%	22,549	16,615	592
0154.00	3,250	365	240	11%	7%	19%	20,255	14,830	694

Source: Statistics Canada.

JOSEPH HOWE STORE

2001 Census of Population (46 Large Urban Centres, Census Tracts (neighbourhoods))
 Halifax - Census Tracts containing Postal Code B3L*

Area Name:	Total population 15 years and over - 100% Data	College, population 20 years and over by highest level of schooling	University, population 20 years and over by highest level of schooling	% College	% University	% College or University	Average income \$ in 2000, population 15 years and over	Median income \$ in 2000, population 15 years and over	Standard error of average income \$ in 2000, population 15 years and over
0011.00	5,360	745	2,910	14%	54%	68%	26,446	20,782	716
0012.00	2,250	320	1,460	14%	65%	79%	35,291	23,942	1,767
0013.00	2,245	260	1,360	12%	61%	72%	45,010	28,881	2,560
0017.00	1,755	270	945	15%	54%	69%	41,778	29,331	3,017
0018.00	3,300	615	1,405	19%	43%	61%	31,157	22,934	1,151
0019.00	3,915	720	1,600	18%	41%	59%	30,034	22,563	916
0022.00	4,770	940	1,330	20%	28%	48%	27,644	22,599	691
0023.00	3,580	650	755	18%	21%	39%	21,796	17,720	618
0024.00	4,920	975	1,010	20%	21%	40%	23,908	20,330	556
0107.00	2,715	715	490	26%	18%	44%	27,156	22,980	1,126
0131.02	3,895	775	650	20%	17%	37%	25,146	21,697	684
0131.05	3,220	685	775	21%	24%	45%	29,641	25,024	889

Source: Statistics Canada.

APPENDIX C: MSVU ETHICS REVIEW APPLICATION



MSVU Ethics Review Application Form

Directions: All proposals submitted for review must have this cover sheet. You must include all relevant supporting documentation in final form (e.g. surveys, interview questions, informed consent forms). To facilitate the referencing of reviewers' comments on the submission, please ensure that the pages are appropriately numbered and that changes made to the proposal are clearly indicated when re-submission is required. Please forward the required number of copies to the Chair, University Review Ethics Board, located in the Research and International Office (RIO).

Note: If you are not sure that your research project requires ethics review, please consult with the Chair of the UREB **before** submitting an application.

The Number of Copies required:

- **One copy** – if the proposal is an Honours Thesis, Directed/Independent Study, or Class Project that has received departmental REB approval and does not exceed minimum risk.
- **Three** copies – for all other proposals that do not exceed minimum risk.
- **Eight** copies – for all proposals that exceed minimum risk.

General Information

Date: August 2, 2006

Name of person(s) submitting application: Sonya Ellis

Title of project: Consumer use and interpretation of trans fat information on food labels

Department(s): Applied Human Nutrition

E-mail addresses: sonya.ellis@msvu.ca

Student: Sonya Ellis

Supervisor: Dr. Theresa Glanville

Category of Researcher:

- Faculty
- Graduate Student (MSc Thesis)
- Graduate Student (MEd Project)
- Graduate Student (Independent Study)
- Honours Student
- Other (please specify): _____

Category of Research:

- Minimal Risk - Expedited Review
- Exceeds Minimal Risk

Re-review – changes have been made to Section G: Free and Informed Consent and the Informed Consent sheet (highlighted sections)

This project is currently under review by: _____

Or

This project has **already** been reviewed by (attach relevant documentation):

External agency / specify:

MSVU Committee on Research and Publications

Thesis Committee

Departmental Research Ethics Board

Third party: (e.g., school board, hospital, etc.) Specify **and** attach copy of Approval: x

Has this project received funding (internal or external): Yes or No

If yes, please indicate the source of funding:

Agreement: I/we have read the MSVU University Research Ethics Board (UREB) Instructions for Completion and Submission of Ethics Protocol Review, the MSVU Senate Policy on Ethical Conduct for Research Involving Humans, and the Tri-Council Policy Statement on the Conduct of Research Involving Humans and agree to comply with the policies and procedures outlined therein. In the case of student research, as Faculty Supervisor, my signature indicates that I have read and approved the application and proposal, deem the project valid and worthwhile, and agree to provide continuing and thorough supervision of the student(s). I/we have read and will make every effort to meet the requirements of the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans.

Signatures:

For Faculty/Staff Research Projects:

Signature(s) of investigator(s):

Date:

For Students or Thesis Research Projects:

Sonya Ellis, MSc Candidate, Department of Applied Human Nutrition

Signature(s) of student investigator(s):

Date:

Theresa Glanville, Ph.D., Professor of Applied Human Nutrition

Signature(s) of Faculty Supervisor(s)

Date:

.....

A. Summary of Proposed Research

1. Describe the purpose of the research (**maximum 500 words**). Include enough background information to enable the UREB to understand the rationale for the study. This should be an overview of the proposed research and the purpose of the research: what are you doing and why?

In 2003, the Government of Canada introduced new labelling regulations. These regulations included a standardized Nutrition Facts panel and consistent guidelines for the use of nutrient content claims and health claims. One unique feature of the food label is that it will now include the trans fatty acid (trans fat) content of the food. As of December 12, 2006 (2007 for small businesses), almost all pre-packaged food products are required to list the trans fat content per serving on their Nutrition Facts panel (1).

Trans fats are formed during partial hydrogenation, a process used to make fats more stable and to extend the shelf-life of products. The highest quantities of trans fats are found in processed foods, due to the use of partially hydrogenated vegetable oils (2,3). Trans fats increase the risk of cardiovascular disease by reducing high density lipoprotein cholesterol (HDL-C) levels and increasing low density lipoprotein cholesterol (LDL-C) levels. Even a small reduction in intake of trans fats can lead to a large reduction in risk of cardiovascular disease (4-6). Recent research suggests that although Canadians have reduced their total fat intake over the past 20 years, intakes of trans fat still remain high. One recommendation of the Trans Fat Task Force to reduce trans fat consumption among Canadians is to increase use of food labels when making food-purchasing decisions (7).

Approximately 79% of Canadians are aware of trans fat (8). As well, we know nutrition labels are the primary source of nutrition information for many people. Approximately 61 to 75% of Canadians use food labels at least sometimes while

shopping (9). With the addition of trans fat information to food labels, more consumers are using this information to make purchasing decisions. The Tracking Nutrition Trends V survey found that 56% of Canadians consider the trans fat content of a food when making food selections (10).

Due to recent media messages regarding the negative impact of trans fats, more consumers are asking for trans fat free products (7) and many companies have responded by eliminating the trans fat from their products. Some examples include Voortman® cookies and Frito-Lay® potato chips. These foods now bear a nutrient content claim stating they are 'trans fat free' or contain '0 trans fat'.

Although we know that more consumers are considering trans fat information, it is less clear how well consumers comprehend and interpret trans fat information on food labels.

This study will examine consumer use and understanding of trans fat information on food labels using a questionnaire that will be administered in three Atlantic Superstore locations. It will provide useful information for food manufacturers who have, or are planning to, reduce or eliminate trans fats from their products. As well, this study will benefit nutrition professionals educating clients regarding improved purchasing decisions.

References:

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10. National Institute of Nutrition & Canadian Food Information Council. Tracking Nutrition Trends V. May 2004 [cited February 2006]. Available from www.ccfm.ca/pdfs/TNTV-FINAL.pdf.

B. Special Considerations

1. If the context of the research is "non-traditional" or specialized in any way (e.g., research in another culture, research with hard-to-access groups), describe the information that the UREB needs to keep in mind when reviewing this application.
2. If the research project is but one component of a larger non-research study (e.g., international development project), describe briefly the larger context of the project.

There are no special considerations for this research project.

C. Research Approach or Method

1. Describe your research method. How will you collect the data?
2. Describe/identify your participants-
3. Describe the procedure(s) for recruiting participants.
4. Outline any particular incentives you are using for participation (e.g., payment).
5. Debriefing (if applicable) - Describe debriefing procedures

The sample will be drawn from visitors to three grocery stores in the Halifax Regional Municipality. Grocery stores are the ideal location to collect data as they allow access to people where they make the majority of their purchasing decisions.

Three Atlantic Superstores from different areas of the Halifax Regional Municipality have been selected. The stores selected are:

1. Braemar Superstore, Dartmouth
2. Joseph Howe Superstore, Halifax

3. Bedford Superstore, Bedford

Data collection will take place over one week per each Atlantic Superstore location. At each store, the questionnaire will be administered during four time frames corresponding to one morning, one afternoon, one evening, and one Saturday (morning or afternoon). Each data collection period will last for three hours. The time intervals were selected to allow for maximum representation of shopping patterns and to provide access to an adequate number of shoppers.

Using an in-store booth manned by the researcher and one to two assistants, shoppers will be recruited to respond to the questionnaire. The research assistants will be undergraduate students in the nutrition department at Mount Saint Vincent University. The in-store booth will be similar to those used in-store for sampling and will be located in a high-traffic area so that it will be easily visible to customers. Samples of trans fat free crackers will be available at the booth to attract consumers. Samples will be peanut-free and will not be provided to children under 12, unless an adult accompanies the child.

The researcher team will dress in business casual clothing and the researcher will also wear a white lab coat. Members of the research team will avoid wearing excessive make-up or jewellery. As well, the research team will wear plain name tags that will not include a university or store logo.

As shoppers approach the booth, they will be asked if they are interested in participating in a study on consumer understanding and use of trans fat information on food labels. Only consumers age 19 and over will be invited to participate in the study. To ensure participants are 19 or over, the researcher will ask interested shoppers, who appear young, if they are over this age before attempting to recruit them. If shoppers do

agree to participate, researchers will administer the questionnaire to them and record answers on the questionnaire form. The questionnaire will be administered a short distance from the research booth so that other shoppers will not hear the participant's responses.

As a benefit of participating in the study, participants will be offered a copy of Canada's Food Guide and a trans fat information sheet developed by Atlantic Superstore.

The research team will track the number of shoppers invited to participate in the study and the number who decline. The goal sample size will be 100 to 150 participants per store. This will result in an overall sample size of 300 to 450 participants.

D. Third Party Permission

1. If you are using data provided by outside agencies, explain how you will establish agency consent.
2. If data will be collected offsite (e.g., school boards, community agencies, etc.), describe how you will establish consent of third parties. Final approval is contingent upon the researcher's formal confirmation that third party permission has been granted.

Data will be collected at three Atlantic Superstore locations within the Halifax Regional Municipality. Permission has been granted by the Manager of Nutrition Services to conduct this research within the stores. The researcher will forward the names of the stores, the dates of the research, and the names of all members of the research team to the Manager of Nutrition Services who will then contact individual stores to arrange the details.

E. Research Surveys, Questionnaires, Instruments, Etc.

1. Append of all documents in final form.
2. Indicate the sources of questions (e.g. public domain; developed by the researcher; etc.) and the relationship to the purpose of the study.
3. For instruments ~~are~~ under copyright, the onus is on researcher(s) to obtain permission for use.

A questionnaire will be used to collect data. The questionnaire will include eleven questions and will take approximately five minutes to complete. Questions will attempt to determine participants' awareness and knowledge of trans fats, steps they take to reduce trans fats in their diet, their interpretation of the 'zero trans fat' claim found on food labels and some simple demographic information. Researchers will also record pertinent data, such as the store, time, date, weather, and interviewer on the questionnaire form.

The questionnaire was developed by the researcher. Members of the thesis committee, a statistician and two other registered professional dietitians (Pdt) reviewed the questionnaire for face-validity. A pre-test of the questionnaire in the Mount Saint Vincent Sacateria is planned to test for readability. During the pre-test, the researcher will administer the questionnaire to interested people in the same manner as it will be administered in the grocery stores. The size of the pre-test will be approximately 10 people.

F. Risks

Minimal risk is defined as: "if potential subjects can reasonably be expected to regard the probability and magnitude of possible harms implied by participation to be no greater than those encountered in everyday life."

1. Specify and describe any potential risks to participants, making special note of situations that exceed minimal risk.
2. If there is the potential to incur risk, outline the safeguards that you will put in place to protect participants.
3. Please pay special attention to situations in which the researcher may have dual relationships with participants (e.g., professors using their own students as participants; counsellors whose clients may also be their research participants).

Participants will incur minimal risk by responding to the questionnaire. To minimize risk, no sensitive or personal questions will be included in the questionnaire. The research team will wait for shoppers to approach the booth, rather than approaching them during their shopping experience. The questionnaire will take only

a short time to complete (5 minutes) and it will be administered to participants to reduce any literacy concerns.

G. Free and Informed Consent

1. Informed Consent Forms must be placed on departmental letterhead and must address the points below.
2. Written informed consent is normally expected. If you believe written consent is impossible or unwarranted, explain why.
3. These items need to be explicit in the Informed Consent Form. These are:
 - a. The identity of the researcher(s) and contact information, and supervisor information (if applicable);
 - b. An invitation to participate;
 - c. A statement of the research purpose;
 - d. A description of the tasks to be performed and the expected time commitment;
 - e. A description of foreseeable harm and benefits, including limitations to confidentiality
 - f. Confirmation that prospective participants may decline participation or withdraw at any time without penalty;
 - g. An arm's length contact in case of questions about the conduct of the research: "If you have questions about how this study is being conducted and wish to speak with someone who is not directly involved in the study, you may contact the Chair of the University Research Ethics Board (UREB) c/o MSVU Research and International Office, at 457-6350 or via e-mail at research@msvu.ca."
4. Please note that the consent of the participants shall not be conditional upon or include any statement to the effect that, by consenting, participants waive any legal rights.
5. If participants are a captive/vulnerable population, participants must be assured that non-participation will not affect their primary care in any way. For example, students must be assured that refusing to respond to a survey will not affect them academically. When it is not clear that potential participants have the capacity to provide informed consent, or if the research participants are from a population recognized as having diminished capacity to provide informed consent (e.g. children, adults with mental disabilities), informed consent must be obtained from an individual who bears responsibility for decisions concerning the well-being of the participant (e.g. parent, guardian, care-giver). When the participant is able to provide assent for the research (i.e. express their willingness to participate at the time of conducting the research), this should also be sought.
6. If participants are being photographed; videotaped and/or voice recorded, separate letters of consent must be attached to the Informed Consent Form.
7. Researcher(s) should provide a description of the criteria that they will use to judge assent/dissent of a participant in the protocol that they submit for review.
8. Parental consent is required for persons under the age of majority.
 - a. Consent of both the child and the parent(s) are required in research studies where children are minors but are 7 years or older.

- b. With children under 7, consent of the parent(s) only is necessary for the child's participation in research.
9. Attach the Informed Consent Form(s).

Checklist :

- | | |
|---|--|
| <input checked="" type="checkbox"/> Informed Consent (On Letterhead) | <input checked="" type="checkbox"/> Invitation |
| <input checked="" type="checkbox"/> Introduction | <input checked="" type="checkbox"/> Research Purpose |
| <input checked="" type="checkbox"/> Researcher Identity | <input type="checkbox"/> Special Population |
| <input checked="" type="checkbox"/> Tasks Outlined | <input checked="" type="checkbox"/> Obtaining Consent |
| <input checked="" type="checkbox"/> Time Commitment | <input type="checkbox"/> Signature area |
| <input checked="" type="checkbox"/> Harms/Benefits | <input type="checkbox"/> Special Consent for Photographs, Video or Audio |
| <input checked="" type="checkbox"/> Decline Participation | <input type="checkbox"/> Other _____ |
| <input checked="" type="checkbox"/> Withdrawal Anytime | |
| <input checked="" type="checkbox"/> Arm's Length Contact (UREB Chair) | |

Please note that if you provide the above information in a separate information letter or introduction letter, it must be repeated exactly the same in the Informed Consent Form.

Describe how you will obtain Informed Consent:

Although having participants sign consent forms is not practical for this study, participants will be provided with all the pertinent ethical information in a verbal format. As participants approach the booth, they will be asked if they are interested in participating in a research study on consumer use and interpretation of trans fat information on food labels. Research assistants will read the following statement to interested participants:

“We are conducting a questionnaire on consumers awareness and interpretation of trans fat information on food labels. This research is being conducted as part of a masters degree thesis by a student in the Applied Human Nutrition department at Mount Saint Vincent University. The researcher is not working with Atlantic Superstore on this study. Atlantic Superstore will not have access to the data collected and only the final report will be shared with the Superstore.

We would like you to complete a short questionnaire that will require about 5 minutes of your time. The questionnaire will gather information on your thoughts about trans fats. No personal or identifying information will be collected and all information will be kept confidential. This is a voluntary questionnaire and you may decline to participate or withdraw your participation at any time.

After you have completed the questionnaire, we would like to offer you a copy of Canada's Food Guide and an information sheet on trans fats. Would you like to participate in the study?"

Participants who agree to participate in the study, after listening to the above information, will be considered to have given informed consent.

Participants will also be given a sheet with contact information of the researcher, supervisor, and an arm's length contact (the University Research Ethics Board) should they have any questions. This form will be printed on Department letterhead and will be given to all interested participants (Appendix C).

H. Privacy, Confidentiality, Anonymity

1. How will anonymity and/or confidentiality be maintained?
 - a. while collecting data (please identify situations in which confidentiality cannot be guaranteed (e.g. abuse; self-harm; etc);
 - b. after data collection (i.e. storage, disposal of raw data);
 - c. on resulting publications.
2. If you are utilizing secondary data, state its original source and confirm that the data does not allow for identification of participants.

To ensure anonymity, no personal or identifying information will be collected through the questionnaire. Researchers will conduct the questionnaire a few paces away from the booth to maintain confidentiality. After data collection is complete, questionnaires will be stored in a locked draw and only the researcher will have access to them. Results will be compiled and then raw data will be destroyed.

I. Dissemination of Results

1. Describe how participants will be informed of the results of the study.

When participants complete the questionnaire they will be given a sheet with the contact information of the researcher. Interested participants will be able to contact the researcher to obtain the results of the study. This information will be printed on the sheet given to participants at the time of the study.

APPENDIX D: PARTICIPANT INFORMATION SHEET



Excellence • Innovation • Discovery

*Department of Applied Human
Nutrition*

Consumer Use and Interpretation of Trans Fat Information on Food Labels

I am a graduate student in the Department of Applied Human Nutrition at Mount Saint Vincent University. As part of my masters degree thesis, I am conducting research under the supervision of Dr. Theresa Glanville. This study will be on consumer use and interpretation of trans fat information on food labels. This will provide useful information to food manufacturers and nutrition professionals.

As part of this study, I would like you to respond to a questionnaire that will require approximately 5 minutes to complete. For participating, you will be provided with a copy of Canada's Food Guide to Healthy Eating and a trans fat information sheet.

The questionnaire will gather information on your thoughts about trans fats. No identifying or personal information will be collected. Only members of the research team will have access to completed questionnaires. Questionnaires will be kept in a locked drawer until results are compiled, after which, questionnaires will be destroyed.

Your participation in this study is completely voluntary. You are free to decline to participate or to withdraw your participation at any time.

If you have any questions about this study, please contact:

Sonya Ellis, MSc candidate
Department of Applied Human Nutrition
Phone: 457-6555 ext. 1056
sonya.ellis@msvu.ca

Dr. Theresa Glanville, Professor
Department of Applied Human Nutrition
Phone: 457-6248
theresa.glanville@msvu.ca

This research activity has met the ethical standards of the University Research Ethics Board at Mount Saint Vincent University. If you have any questions or concerns about this study, and wish to speak with someone who is not directly involved with this study, you may contact the University Research Ethics Board, by phone at 902-457-6350 or by e-mail at research@msvu.ca.

Although the Superstore is not collaborating in this research project, if you wish to speak with a representative of Atlantic Superstore, you may contact Jill White, Manager of Nutrition Services by phone at [REDACTED] or by e-mail at [REDACTED]

If you are interested in the results of this research, please contact Sonya Ellis to have the results sent to you when available.

Halifax Nova Scotia B3M 2J6 Canada
Tel 902-457-6321 • Fax 902-457-6134
www.msvu.ca

APPENDIX E: SUMMARY QUESTIONNAIRE

1. Are you interested in nutrition information?

- Yes 219 (89%) Somewhat 16 (7%) No 11 (5%)

2. What sources do you use for nutrition information? (Choose as many that apply)

- Television/Radio 95 (39%) Newspapers 84 (34%) Books 123 (50%)
 Health Professionals (such as doctors, nurses) 61 (25%)
 Nutrition Professionals (such as dietitians) 55 (23%)
 Other: Internet 41 (17%), Magazines 36 (15%), Food Labels 22(9%),
Friends/Family Members 10(4%), Other 30 (8%)

3. Have you heard about Trans Fats before?

- Yes 238 (98%) No 6 (3%)

(If the answer is no, skip to question #9.)

4. How do you feel about the following statements?

- Trans fats are bad for heart health
 Agree 216 (91%) Unsure 10 (4%) Disagree 12 (5%)
- Trans fats are fattening
 Agree 188 (79%) Unsure 29 (12%) Disagree 21 (9%)
- Trans fats improve the taste of food
 Agree 130 (55%) Unsure 41 (17%) Disagree 67 (28%)
- Trans fats should be limited
 Agree 225 (95%) Unsure 5 (2%) Disagree 8 (3%)



5. Which of the following foods do you think might contain high amounts of trans fats? (Choose as many that apply)

- Margarines 150 (63%) Meat 70 (29%)
 Fried Foods 210 (88%) Dips/Salad Dressings 168 (71%)
 Baked Goods 203 (85%) Snack Foods 212 (89%)
 Dairy Products 64 (27%) Other: 15 (6%)

6. Have you noticed trans fat information on food labels?

- Yes 225 (95%) No 13 (6%) (If the answer is no, skip question #8)

If yes, where have you noticed this information? (Choose as many that apply)

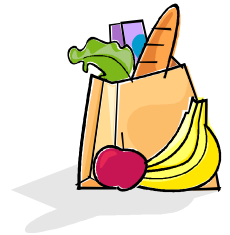
- Nutrient Content Claims, such as '0 trans fat' 178 (75%)
 Nutrition Facts panels 149 (63%)

7. Have you changed your food purchases to reduce your trans fat intake?

- Yes 193 (81%) No 43 (18%)

If yes, what strategies do you use? (Choose as many that apply)

- Purchased foods labelled '0 trans fats' 121 (51%)
 Read Nutrition Facts panels to choose foods with a low trans fat content 143 (60%)
 Reduced intake of high fat foods 112 (47%)
 Read ingredient lists to select foods with no partially hydrogenated fats 70 (29%)
 Other: Reduced Intake of Processed Foods 12 (5%), Other 32 (13%)



8. When you see a product labelled '0 trans fat', what does this mean to you? (Choose as many that apply)

- The product is lower in fat 46 (19%)
- The product doesn't taste as good 30 (13%)
- The food product is low in a certain type of fat 184 (77%)
- The product is lower in calories 38 (16%)
- I don't trust this claim 47 (20%)
- The product is a healthy choice 152 (64%)
- Other: 23 (9.8%)

9. How would you describe your grocery shopping habits?

- I shop for my household 141(57.8%)
- I share the grocery shopping duties with another person 53 (21.7%)
- I shop for myself 45 (18.4%)
- I rarely shop 25(5.0%)

10. How many people are in your household? Min. 1, Max. 7, Mean 2.47

11. Please indicate your age range:

- 19 – 24 7 (2.9%)
- 24 – 39 62 (25.4%)
- 40 – 59 109 (44.4%)
- over 60 66(27.2%)

12. Gender:

- Male 59 (24.2%)
- Female 185 (75.8%)