



## SATURATED FAT HEART DISEASE AND STROKE

### FACTS

- Heart disease and stroke are leading causes of death in Canada, responsible for 27.3% of all deaths.<sup>1</sup>
  - Up to 80% of early heart disease and stroke can be prevented by adopting healthy behaviours including eating a healthy diet.<sup>2</sup>
  - A healthy balanced diet includes a variety of vegetables and fruit, whole grains or alternatives and proteins from various sources. These protein sources can include beans, lentils, nuts, lower fat dairy or dairy alternatives (i.e. fortified soy milk, etc.), lean meats, poultry, and fish. A healthy balanced diet does not include highly processed and highly refined foods, confectionaries, sugary drinks, processed meats and snack foods.
  - Dietary fats and oils provide energy to the body as well as essential fats that are needed to prevent a nutrient deficiency, and also help your body absorb fat soluble vitamins such as A, D, E and K. You need fat in your diet for normal body function.<sup>3</sup>
  - There are different types of fats including poly- and mono-unsaturated fats; saturated fats; and trans fatty acids. The type of fat consumed is more important for health than the total amount of fat consumed.
  - Saturated fats (or saturated fatty acids) occur naturally in animal products like meats, eggs and dairy products as well as some plant-based and vegetable oils such as coconut, palm and palm kernel oil. These fats can be used during production of baked goods, fried and highly processed food products.
  - Saturated fat increases LDL-cholesterol levels in the blood. High LDL-cholesterol is a risk factor for heart disease and stroke. Replacing saturated fats with mono- and poly-unsaturated fats decreases LDL-cholesterol.<sup>4-6</sup>
- There are different dietary saturated fatty acids including lauric acid, myristic acid, palmitic acid and stearic acid. There is emerging evidence to suggest that the health effects of saturated fats could vary depending on the food sources in which they are found.<sup>7</sup>
  - It is estimated that Canadians consume approximately 10% of their total calorie intake from saturated fats.<sup>8</sup> Highly processed foods are a major source of saturated fat in the Canadian diet.<sup>9</sup> These highly processed foods are also high in calories, sodium and free sugars\*, and can be high in other types of unhealthy fats like trans fatty acids (trans fats).
  - Between 1938 and 2011 the dietary pattern of Canadians has substantially changed. During this time, Canadians' share of household expenditures for natural/whole or minimally processed foods fell from 34.3% to 25.6% while expenditures for more processed products rose from 28.7% to 61.7%.<sup>9</sup>
  - Various national and international organizations including the US Department of Agriculture (USDA) and the Department of Health and Human Services (HHS),<sup>10</sup> the American Heart Association,<sup>11</sup> the World Health Organization,<sup>2</sup> and the European Society of Cardiology<sup>12</sup> have issued dietary recommendations for saturated fats. Although the recommended consumption thresholds may vary, the basic recommendations are aligned around encouraging a diet low in saturated fat, and higher in mono- and poly-unsaturated fats.



\* Free sugars include all sugars that are not bound directly to/not found naturally in foods such as vegetables, fruit, milk, grains and other plant-based foods. Free sugars also include all sugars that are added to food and beverages.



## RECOMMENDATIONS

The science of nutrition is ever-evolving with new evidence emerging all the time. It is becoming increasingly clear that what has the most impact on health is the overall quality of one's diet, combined with the types and quantity of food consumed. The following recommendations do not include a threshold or limit for saturated fat and instead focus on a healthy balanced dietary pattern, which can help Canadians reduce consumption of saturated fats.

The Heart and Stroke Foundation recommends that:

### CANADIANS

1. Eat a healthy balanced diet.
  - Consume a variety of natural/whole and minimally processed foods at every meal.
  - Eat more vegetables and fruit. Fill half your plate with vegetables and fruit at every meal. Buy fresh or frozen unsweetened fruit, or fruit canned in water without added/free sugars or artificial/non-caloric sweeteners. Buy fresh or frozen vegetables without added sauce, or canned vegetables with no added salt.
  - Choose whole grains.
  - Include a variety of proteins from various sources. These protein sources can include beans, lentils, legumes, nuts, lower fat dairy or dairy alternatives (without added/free sugars or artificial/non-caloric sweeteners), lean meats, poultry and fish.
  - Eat fewer highly processed foods which include highly refined foods, confectionaries, sugary drinks, processed meats, and snack foods.
  - Plan healthy snacks. Include foods from at least 2 food groups with 1-2 servings of vegetables or fruit at every snack.
  - Drink water to satisfy thirst. Avoid consumption of sugary drinks including soft drinks, sports drinks, fruit drinks, 100 per cent fruit juices, and ready-to-drink sweetened coffees and teas.
  - Learn what a recommended serving size looks like and choose healthy portions for meals and snacks. Visit [heartandstroke.ca](http://heartandstroke.ca) to learn more.
2. Prepare meals at home using natural/whole and minimally processed foods.
  - Develop and share skills in food preparation and cooking.
  - Buy foods in shops and markets that offer a variety of natural/whole and minimally processed foods. Avoid those that sell mainly highly processed products, especially when there is no nutrition information for making healthy food choices.
  - Reduce the amount of sugar, salt and solid fats used during preparation of food and in recipes.
  - If eating out, choose restaurants that serve freshly made dishes using natural/whole and minimally processed foods and that provide nutrition information to make a healthy choice.
3. Promote and encourage adoption of food policies that create healthier environments in places we live, work and gather such as schools, workplaces, sports environments, faith centres, and community organizations.

### FEDERAL GOVERNMENT

1. Conduct a national nutrition survey every three to five years to collect nutritional information of various population groups in Canada. Use reliable and up-to-date nutrient and food composition databases or tables to inform the development and monitor the impact of national dietary guidelines and programs.
2. Support well-funded and evaluated social marketing campaigns to raise awareness about healthy eating.
3. Introduce a mandatory point-of-purchase nutrition labeling information program for retail food products to help Canadians make healthier choices.
4. Update Canada's Food Guide to provide more emphasis on consuming meals prepared with natural/whole and minimally processed foods and reducing consumption of highly processed foods. Educate Canadians on the importance of eating natural/whole and minimally processed foods with an emphasis on vegetables and fruit.
5. Support food literacy among Canadians by implementing programs to improve the knowledge and skills required to make informed eating decisions and prepare nutritious meals.



6. Develop agricultural policies and subsidies that provide incentives for the production and distribution of healthy foods (particularly vegetables and fruit) in order to improve accessibility and affordability.
7. Provide financial, research and policy support to foster growth of local food procurement initiatives and the improvement of food distribution networks that increase access to healthy food. This is especially important for First Nations, Inuit, and Métis populations, as well as others living in northern, remote and rural communities.
8. Restrict the marketing of all foods and beverages to children.

### **PROVINCIAL/TERRITORIAL GOVERNMENTS**

1. Ensure that accurate nutrition information of foods sold in food service and restaurant outlets is readily available to customers at point-of-purchase, specifically:
  - Free sugars, sodium, trans fat, saturated fat, and calories on table menus in restaurants, and
  - Sodium and calories on overhead menu boards of food service outlets.
2. Restrict the marketing of all foods and beverages to children.
3. Support food literacy among Canadians by implementing programs to improve knowledge and skills required to make informed eating decisions and prepare nutritious meals.

4. Support community programs and initiatives that can potentially improve access to healthy food including community gardens, community kitchens, local food distribution networks, community supported agriculture, school meal programs, etc.
5. Develop, implement and monitor school food policies that increase access to affordable healthy food and beverages while decreasing access to unhealthy choices. For example:

- Implement and enforce nutrition standards for food and beverages provided at school venues including cafeterias and vending machines that limit processed foods and provide healthy options.
- Offer guidance to parents and students on healthy bag lunch and snack options.
- Make healthy food (particularly vegetables and fruit) readily available. This can be accomplished, for example, through supporting and participating in programs that help bring healthy food to schools (e.g., Farm to Cafeteria Canada's Farm to School program, or FoodShare) and the establishment of school community gardens.
- Establish standards that encourage the use of healthy foods and beverages or non-food alternatives for school fundraising efforts.

### **MUNICIPAL GOVERNMENTS, REGIONAL HEALTH AUTHORITIES, WORKPLACES AND SCHOOL BOARDS**

1. Enable the establishment of food policy councils and food charters that promote and develop local policies, programs and strategies related to access of healthy natural/whole and minimally processed foods.
2. Establish policies and zoning by-laws designed to promote the establishment of grocery stores and other venues (e.g., farmers' markets, community gardens, community kitchens, convenience stores, etc.) that provide affordable access to healthy food, particularly in areas of low availability, and restrict accessibility of fast food outlets and convenience stores near schools.





3. Support community programs and initiatives that can potentially improve access to healthy food including community gardens, community kitchens, local food distribution networks, community supported agriculture, school meal programs, daycare meal programs, etc.
4. Support food literacy among Canadians by implementing programs to improve the knowledge and skills required to make informed eating decisions and prepare nutritious meals with natural/whole and minimally processed foods.
5. Develop, implement and monitor school food policies that increase access to affordable healthy food and beverages while decreasing access to unhealthy choices. For example:
  - Implement and enforce nutrition standards for food and beverages provided at school venues including cafeterias and vending machines that limit processed foods and provide healthy options.
  - Offer guidance to parents and students on healthy bag lunch and snack options.
  - Make healthy food (particularly vegetables and fruit) readily available. This can be accomplished, for example, through supporting and participating in programs that help bring healthy food to schools (e.g., Farm to Cafeteria Canada's Farm to Schools program and FoodShare) and the establishment of school community gardens.
  - Use healthy foods and beverages or non-food alternatives for school fundraising efforts.

### **FOOD AND BEVERAGE INDUSTRY, MANUFACTURERS, RETAILERS**

1. Stop the practice of marketing of foods and beverages to children.
2. Reduce saturated fats in foods through a variety of approaches such as:
  - Reformulating processed foods to contain less saturated fat. Do not use saturated fat as an alternative to trans fat in reformulation efforts.
  - Reducing portion sizes of energy dense, nutrient poor foods and beverages.
  - Diversifying to develop products that are healthy alternatives that are low in saturated and trans fats, free sugars and sodium.

- Improving availability of vegetables and fruit in ready-to-eat and convenience formats.
3. Improve the nutritional quality of foods that are available in school environments and remove highly processed foods from school vending machines and cafeterias and replace with healthy alternatives.
  4. Ensure food labeling and packaging meet high standards and provide accurate depictions of content.
  5. Use all available strategies to support public health efforts to create healthier food systems. This includes monitoring progress towards a healthier food system by sharing relevant data with governments and assessment institutions.
  6. Ensure that healthy foods and beverages are affordable and accessible.

### **RESEARCHERS**

1. Conduct research to quantify the saturated fat content of food sources in the Canadian food supply and measure consumption of saturated fat among Canadians of various age groups and populations segments including those who are marginalized or at high risk for cardiovascular disease.
2. Undertake research on behaviour change and policy approaches to decrease the consumption of highly processed foods and increase the consumption of vegetables and fruit. Consider and evaluate interventions aimed to increase access to healthy foods and skills for food preparation.

### **HEALTH PROFESSIONALS**

1. Educate and support patients/clients with advice and tools to maintain an overall healthy diet and reduce consumption of highly processed foods.
2. Advocate for improvements in the food supply and for a Canadian focus on natural/whole and minimally processed foods as a priority for healthy eating.

### **HEALTH-RELATED EDUCATIONAL INSTITUTIONS**

1. Educate health professionals about the health risks of highly processed foods and how to counsel their patients/clients to make food-based choices that are consistent with healthy dietary patterns that reduce the risk of heart disease and stroke.



## **BACKGROUND**

### **WHAT IS FAT?**

Dietary fats and oils provide energy to the body and supply the body with essential fats that prevent a nutrient deficiency and also help absorb fat soluble vitamins such as A, D, E, and K. There are different types of dietary fats including saturated fats; poly- and mono-unsaturated fats; and trans fats (or trans fatty acids).

### **SATURATED FATS**

Saturated fats (or saturated fatty acids) are found in packaged and highly processed food products, animal products like meats, eggs, cheese and butter and some vegetables and plant-based oils (such as palm, palm kernel and coconut oils).<sup>13</sup>

Highly processed foods are a major source of saturated fats in the Canadian diet. These highly processed foods are also high in calories, sodium and free sugars and contain little to no nutritional value. Highly processed foods include processed meats (burgers, hot dogs and deli meats); chips; French fries; cookies; candies (sweets); some breakfast cereals, bread and cereal products; soft drinks; and a vast array of packaged and snack products along with pre-prepared dishes such as pizzas, rice and pasta side dishes.<sup>9</sup> In the US, the top sources of saturated fat are: regular cheese; pizza; grain-based desserts (like cakes, cookies or donuts); and dairy desserts (like ice cream).<sup>14</sup>

### **SATURATED FAT CONSUMPTION IN CANADA**

Based on the 2004 Canadian Community Health Survey (CCHS), the average total energy intake from saturated fats is approximately 10 per cent among Canadian adults.<sup>8</sup>

Natural/whole and minimally processed foods include fresh, chilled, frozen, or vacuum packed vegetables, fruits and grains; unsalted nuts; frozen or fresh meats, poultry or fish; and fresh, frozen or dried beans and legumes. Between 1938 and 2011, Canadians' share of household expenditures for these food products fell from 34.3 per cent to 25.6 per cent. During this same time period, the share of household expenditures on more processed products rose from 28.7 per cent to 61.7 per cent. The reduced expenditure on natural/whole or minimally processed foods combined

with the increased expenditure on more processed foods indicates that the dietary pattern of Canadians has substantially changed since 1938.<sup>9</sup>

While Canada lacks data for saturated fat intake among various population segments, research from other countries shows that those in lower socioeconomic status groups often consume greater amounts of highly processed foods, and therefore have higher intakes of saturated fats contributing to increased risk for cardiovascular disease.

### **HEALTH EFFECTS OF SATURATED FATS**

Research over several decades clearly indicates that saturated fats raise low density lipoprotein cholesterol (LDL-cholesterol) in the blood.<sup>4,10,11,15</sup> Research also indicates that elevated LDL-cholesterol is a risk factor for heart disease and stroke, and that lowering LDL-cholesterol decreases cardiovascular morbidity and mortality. However, epidemiological studies provide a mixed picture of the association between saturated fatty acids and cardiovascular disease (heart disease and stroke).<sup>15-22</sup> Early studies found an association between cardiovascular disease and saturated fat<sup>23,24</sup> while more recent studies have found no such association.<sup>18,21</sup> These mixed findings have been the focus of recent scientific debate, and underscore that the health effects of saturated fats are complex.

Studies investigating the effects of replacing saturated (animal) fats with plant oils and unsaturated spreads (mono- and poly-unsaturated fats) have found that this dietary change results in improved cholesterol levels and reduced risk of cardiovascular disease.<sup>5,25,26</sup> Research further indicates that modifying the type of fat we eat seems to protect us better if we adhere to the changes for at least two years.<sup>25</sup>

Dietary recommendations to reduce overall fat intake have also included recommendations to replace saturated fats with carbohydrates. In retrospect, this advice may have played a role in increased calorie consumption and contributed to increased rates of obesity and metabolic syndrome.<sup>19</sup>

Studies that have looked at the individual fatty acids (i.e. lauric, stearic, myristic and palmitic acids) have found that individual saturated fatty acids may have different effects on blood cholesterol levels.<sup>4,15</sup> The food source from which the saturated fat is derived may have different effects on cardiovascular risk.<sup>20,22</sup> Additional studies are required to



determine whether cardiovascular risks are influenced by the nutrients used to replace saturated fats (i.e. carbohydrates, monounsaturated fatty acids or polyunsaturated fatty acids),<sup>21</sup> the types of saturated fat<sup>26</sup> and/or the foods in which they are consumed.

The field of nutrition science is ever-evolving and the health effects of saturated fats are a topic of continued debate. While science continues to evolve, it is important to note that the overall quality of one's diet, combined with the types, qualities and quantities of foods, have more impact on health than any single nutrient such as saturated fat. Consuming a healthy balanced diet that includes plenty of vegetables and fruit, whole grains or alternatives, and proteins from various sources (for example beans, lentils, nuts, seeds, dairy and alternatives, lean meats, poultry, and fish), contributes to a decreased risk of heart disease, stroke and other chronic diseases.

## **CURRENT DIETARY RECOMMENDATIONS**

Various national and international organizations including the US Department of Agriculture (USDA) and the Department of Health and Human Services (HHS),<sup>10</sup> the American Heart Association,<sup>11</sup> the World Health Organization,<sup>4</sup> and the European Society of Cardiology<sup>12</sup> have issued recommendations for saturated fats. While the threshold for saturated fat consumption may vary between the organizations, the basic recommendations encourage a diet that is low in saturated fatty acids and high in mono- and poly-unsaturated fatty acids found in nuts, seeds, fish and liquid vegetable oils.

## **PAST DIETARY RECOMMENDATIONS**

In the 1980s dietary guidance focused on reducing total fat as a strategy to reduce saturated fat in the diet. This resulted in individuals replacing fats in their diet with carbohydrates, particularly refined carbohydrates, which is likely to have played a role in the current elevated rates of obesity and metabolic syndrome (resulting from increased calorie intake).<sup>19</sup> In addition, a number of processed 'low fat' food products were introduced to market by the food industry. However, these products were not necessarily healthier choices. To create these 'low fat' products, the food industry replaced animal fats in processed foods with: 1) poly- and mono-unsaturated oils, which when heated to

high temperatures resulted in partially hydrogenated oils and ultimately higher levels of trans fats; and 2) refined carbohydrates including added sugars. The food industry also added sugar and sodium to products to improve taste.

The low fat message also resulted in the introduction of low fat nutrient content claims on food packages. Nutrient claims describing the amount of fat in a product include 'light/lite', 'low in fat', 'reduced in fat' and 'lower fat'. A growing body of evidence suggests that these nutrient claims are misleading and often misinterpreted by consumers as healthy choices.<sup>27,28</sup> A product that is labeled 'low fat' does not mean that the product offers actual nutritional quality or value. For example, one study found that individuals offered 'low fat' and 'regular' versions of a food product, consume on average nearly 30 per cent more of the 'low fat' version.<sup>29</sup> Guided by nutrient claims, consumers may be choosing and over-consuming products that are less healthy.

## **A BALANCED HEALTHY EATING PATTERN**

A large body of evidence suggests that dietary patterns that include highly processed foods that often contain high levels of saturated fatty acids, trans fatty acids, and sodium, and are low in plant-based foods and dietary fibre, play a significant role in the development of atherosclerosis, risk factors for heart disease and stroke and cardiovascular morbidity and mortality. On the other hand, dietary patterns that include plenty of vegetables and fruit, whole grains, fish, legumes and nuts, and are lower in highly processed foods, refined grains, and sugar-sweetened foods and beverages are health protective and health promoting in nature.<sup>30</sup>

Dietary patterns that support health can vary in the recommended range of fat, carbohydrate and protein intakes. However, healthy dietary patterns also share some common features. These features include consumption of less highly processed foods, plenty of vegetables and fruit, and inclusion of other plant-based foods such as legumes, whole grains, nuts and non-tropical plant oils. Many healthy dietary patterns also include fish, poultry, lean meats and dairy products.<sup>30</sup>

An unhealthy eating pattern (including low intake of vegetables and fruit) is a modifiable risk factor for heart disease and stroke and accounts for as much as 90 per cent of heart attack risk<sup>31</sup> and 90 per cent of stroke risk.<sup>32</sup> Studies have shown an overall reduction of heart attack



or stroke risk by as much as 11 per cent for each serving of vegetables and fruit added per day.<sup>33,34</sup> While scientific evidence may be emerging to describe the precise pathway by which vegetables and fruit reduce the risk of developing heart disease or stroke, it is clear that the more vegetables and fruit an individual consumes, the lower the risk of heart disease or stroke. Canadians are advised to fill half their plate with vegetables and fruit, a quarter with whole grain products and the final quarter with lean meat or alternatives, along with water to drink and a serving of milk or alternative on the side.<sup>35,36</sup>

## **SATURATED FAT REDUCTION INTERVENTIONS**

Highly processed foods are major sources of saturated fats in the Canadian diet. Interventions to reduce the consumption of unhealthy processed foods will not only help reduce saturated fat intake but by substitution, may also increase the consumption of healthier foods. Food policies, regulations and guidelines that address the market environment (such as access to and affordability of healthy foods) and the marketing of food and beverages to children, as well as information policies (such as public education and awareness to influence consumer behaviours) have been demonstrated to support healthy eating.<sup>37,38</sup>

### **ACCESS TO HEALTHY FOODS**

Homes, workplaces, schools and communities have a significant impact on health. Food policies that create healthier environments enable individuals to make and maintain healthy choices. School food policies that increase access to affordable healthy food and beverages while decreasing access to unhealthy choices can help foster healthy habits early in life. Policies that address the nutrition standards of food and beverages provided at school venues, in school cafeterias and in vending machines are important contributors to healthy eating. Such policies exist in the US, UK, throughout Europe and Canada. Research has demonstrated that these policies when implemented are associated with increased fruit and vegetable consumption, decreased calorie and fat intake and in some cases, weight loss among students.<sup>38,39</sup>

Schools can also offer guidance to parents and students regarding healthy bag lunches and snacks. Making healthy food (particularly vegetables and fruit) readily available

through programs that bring healthy food to schools (e.g., Farm to Cafeteria Canada's Farm to Schools program and FoodShare) and the establishment of school community gardens have been shown to improve access to healthy food.<sup>40-42</sup> Using healthy foods and beverages or non-food alternatives for school fundraising efforts are additional ways to limit availability of highly processed and packaged foods.

Promotion and adoption of healthy food policies not only in schools, but in all places we live, work and gather such as workplaces, sports environments, faith centres, and community organizations can enable individuals to consume a healthy balanced diet for life. Research shows that proximity to fast food outlets and access to fresh food markets are determinants of dietary habits and obesity.<sup>43-47</sup> Policies and zoning by-laws designed to promote the establishment of grocery stores and other venues (e.g., farmers' markets, community gardens, community kitchens, community supported agriculture, etc.) can provide affordable access to healthy food, particularly in areas of low availability. Local food procurement initiatives and the improvement of food distribution networks are especially important for First Nations, Inuit, and Métis populations, as well as others living in Northern, remote and rural communities.

### **AFFORDABILITY OF HEALTHY FOODS**

Increased access to affordable healthy foods is important for health. In Canada, 12.2 per cent of Canadian households experience food insecurity.<sup>48</sup> Development of agricultural policies and subsidies that provide incentives for the production and distribution of healthy foods (particularly vegetables and fruit) will help to improve affordability. Economic policies such as taxation of foods high in saturated fat coupled with subsidization of foods low in saturated fat such as vegetables and fruit could potentially help reduce saturated fat intake, as well as improve consumption of healthy foods. However, a direct tax on foods high in saturated fats could be complex because saturated fat is found in many foods that have nutritional benefits. A better approach might be to tax foods that are considered generally unhealthy, such as highly processed foods. Taxing unhealthy foods and beverages as a means to steer consumption patterns has been implemented in various jurisdictions including Mexico, Hungary, France, Finland, French Polynesia, and Berkeley California. The Navajo Nation in the US is the first jurisdiction to couple



taxation of unhealthy foods with a corresponding decreased price on vegetables and fruit as well as direct subsidization of nutrition interventions including greenhouses, food processing and storage facilities, food preparation classes, farmers markets and community gardens. A systematic review of economic interventions (i.e. taxes and subsidies) found such measures to be effective in improving dietary consumption patterns.<sup>49</sup>

### MARKETING TO CHILDREN

Commercial marketing of foods and beverages to children is associated with consumption of less nutritious foods and obesity.<sup>3,43,50,51</sup> These foods often provide little, if any, nutritional value and replace healthier foods in the diet. While advertising and marketing of foods and beverages influences both children and adult consumer's choices, children are particularly vulnerable to advertising and marketing messages. Restrictions on commercial marketing of foods and beverages to children have been cited as the most cost effective approach to reduce childhood obesity.<sup>52,53</sup>

### FOOD INDUSTRY POLICIES

Reformulating food products to reduce free sugars, sodium and unhealthy fat content and bringing to market new products which support the goal of improving the healthfulness of foods and beverages are important strategies for the food industry to pursue. Food companies can diversify to develop healthier products that are lower in saturated and trans fats, free sugars and sodium. The food industry is also encouraged to increase access to natural/whole and minimally processed foods in ready-to-eat and convenience formats, allowing consumers to choose healthy options when they are unable to cook at home. As seen in the Public Health Responsibility Deal in the UK, industry can reduce portion sizes of foods high in fat and change marketing strategies to incentivize healthy options and steer consumers away from highly processed foods.<sup>54</sup>

### EDUCATION AND AWARENESS

Adequate food preparation skills are needed to prepare healthy meals. Individuals who lack basic food selection and preparation skills may be more likely to rely on ready-to-eat, convenience and fast foods. Of particular importance are food skills related to selection and preparation of vegetables and fruit. Studies indicate that a lack of confidence and poor cooking skills contribute to lower vegetable and fruit intake among low socioeconomic groups.<sup>55</sup>

Hands-on cooking education is related to increased consumption of vegetables and fruit.<sup>56-59</sup> When youth assist in food preparation they are more likely to eat nutrient-rich foods including increased intake of vegetables and fruit.<sup>60</sup> Preparation of foods at home allows individuals to control the ingredients, including the amount of fat, sugar, and salt added to meals. Research shows that initiatives aimed to increase food literacy including understanding, knowledge and skills are often successful in improving healthy eating and cooking habits.<sup>61</sup>

Clear and comprehensive nutrition labeling on the Nutrition Facts table of all packaged foods, including the identification of saturated fats, is necessary to help fully inform individuals. Food and beverage industries, and food retailers should ensure food labeling, packaging, and health claims meet high standards and provide accurate and honest depictions of content. Consumers are often confused by contradictory or misleading product claims such as 'fat free'. Consumers







should be cautious about health claims. The presence of a claim does not ensure nutritional value if the claim is used at the expense of other ingredients (e.g. removing and/or decreasing saturated and trans fats, but increasing free sugars and sodium).

Ensuring nutritional information is readily available at restaurants and food service outlets can help inform customers about the nutritional value of the foods they consume. A 2015 review of the Public Health Responsibility Deal food pledges in the UK examined a number of saturated fat reduction measures. Interventions at various food outlets found that providing consumers with information and offering healthier options at point of purchase locations influenced purchase decisions and reduced saturated fat intake.<sup>54</sup> Providing the sodium and calorie counts of all foods on overhead menu boards in the food service sector and the free sugars, sodium, trans fats, saturated fats, and calorie counts on table menus in restaurants, can help improve consumer understanding and decision making when eating out.

## CONCLUSIONS

The field of nutrition science is an ever-evolving area and saturated fat is a topic of much discussion. Research related to saturated fat continues to demonstrate that saturated fat increases LDL-cholesterol levels. At the same time, there is emerging evidence to suggest that the health effects of saturated fat could vary depending on the food sources.<sup>7,22</sup> The coverage of the saturated fat debate by some in the research community and the media is causing confusion

among the public and healthcare providers alike. While the discussions and dialogue continue, it is important to note that the overall quality of one's diet, combined with the types and quantity of food, have more impact on health than any single nutrient such as saturated fat.

Highly processed foods are a major source of saturated fat in the Canadian diet. These foods also tend to be high in trans fats, sodium, and free sugars. Consuming a healthy balanced diet that includes plenty of vegetables and fruit, whole grains or alternatives, and proteins from various sources (for example beans, lentils, nuts, seeds, dairy products and alternatives, lean meats, poultry, and fish), contributes to a decreased risk of heart disease, stroke and other chronic diseases. Rather than focus on a low fat diet, Canadians are advised to consume a healthy balanced dietary pattern, avoid highly processed foods, sugary drinks and fast foods, consume more vegetables and fruit and cook at home using natural/whole and minimally processed foods.

Evidence shows that policy interventions that create healthy supportive environments are the most cost effective option to improve nutrition, including reduction of highly processed foods and increased fruit and vegetable consumption, because they are population based, have the greatest impact in terms of sustainable behaviour change and require smaller resource allocations. In addition, health promotion and health education initiatives are required to disseminate healthy living information, and raise public awareness. Ultimately, this multi-pronged package of nutrition initiatives will help make the healthy choices the easy choices for Canadians.



## REFERENCES

1. Statistics Canada. Table 102-0529 0- Deaths, by cause, Chapter IZ: disease of the circulatory system (I00 to I99), age group and sex, Canada, annual (number), CANSIM (database). Released January 28, 2014. <http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1020529&pattern=102-0521..102-0538&tqabMode=dataTable&srchLan=-1&p1=-1&p2=31>
2. World Health Organization. Preventing chronic disease: a priority for global health: A World Health Organization Global Report. Geneva 2005.
3. Institute of Medicine of the National Academies. Dietary Reference Intakes: The essential guide to nutrient requirements. The National Academies Press, Washington DC, 2006.
4. Food and Agriculture Organization of the United Nations (FAO). Fats and fatty acids in human nutrition: Report of an expert consultation 2008. Rome, Italy: 2010.
5. Mozaffarian D et al. Effects on coronary heart disease of increasing polyunsaturated fat in place of saturated fat: a systematic review and meta-analysis of randomized controlled trials. *PLoS Med* 2010;23:7(3):e1000252.
6. Ramsden CE et al. Use of dietary linoleic acid for secondary prevention of coronary heart disease and death, evaluation of recovered data from the Sydney Diet Heart Study and updated meta-analysis. *BMJ* 2013;346:e8707.
7. de Oliveira Otto MC, Mozaffarian D, Kromhout D, et al. Dietary intake of saturated fat by food source and incident cardiovascular disease: the Multi-Ethnic Study of Atherosclerosis. *Am J Clin Nutr* 2012;96:397-404.
8. Health Canada. Do Canadian adult meet their nutrient requirements through food intake alone? Health Canada, Ottawa 2012. Retrieved from <http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/art-nutr-adult-eng.php>
9. Moubarac JC, Batal M, Bortoletto Marins AP, Claro R, Bertazzi Levy R, et al. Processed and ultra-processed food products: Consumption trends in Canada from 1938 to 2011. *Can J Diet Pract Res* 2014;75(1):15-21.
10. Department of Health and Human Services, US Department of Agriculture. Dietary Guidelines for Americans 2010. <http://www.health.gov/dietaryguidelines/2010.asp>. Updated 2012.
11. American Heart Association Nutrition Committee. Lichtenstein AH, Appel LJ, et al. Diet and lifestyle recommendations revision 2006. A scientific statement from the American Heart Association nutrition committee. *Circulation* 2006;114:82-96.
12. The Fifth Joint Task Force of the European Society of Cardiology and Other Societies on Cardiovascular Disease Prevention in Clinical Practice (constituted by representatives of nine societies and by invited experts). European guidelines on cardiovascular disease prevention in clinical practice (version 2012). *European Heart Journal* 2012;33:1635-1701.
13. Vannice G, Rasmussen H. Position of the academy of nutrition and dietetics: dietary fatty acids for healthy adults. *J Acad Nutr Diet* 2014;114(1):136-153.
14. National Cancer Institute. Risk factor monitoring and methods: Table 1. Top food sources of saturated fats among the US population, 2005-2006. NHANES.
15. Micha R, Khatibzadeh S, Shi P, Fahimi S, Lim S, Andrews KG, et al. Global, regional and national consumption levels of dietary fats and oils in 1990 and 2010: a systematic analysis including 266 country-specific nutrition surveys. *BMJ* 2014;348:e2272.
16. Mensink RP, Zock PL, Kester AD, Katan MB. Effects of dietary fatty acids and carbohydrates on the ratio of serum total to HDL cholesterol and on serum lipids and apolipoproteins: a meta-analysis of 60 controlled trials. *Am J Clin Nutr* 2003;77:1146-1155.
17. Mentze A, et al. A systematic review of the evidence supporting a causal link between dietary factors and coronary heart disease. *Arch Intern Med* 2009;169(7):659-669.
18. Chowdhury R, Warnakula S, Kunutsor S, Crowe F, Ward HA, Johnson L, et al. Association of dietary, circulating and supplement fatty acids with coronary risk: A systematic review and meta-analysis. *Ann Internal Medicine* 2014;160:398-406.
19. Ravnskov U, DiNicolantonio JJ, Harcombe Z, Kummerow FA, Okuyama H, Worm N. The questionable benefits of exchanging saturated fat with polyunsaturated fat. *Mayo Clinic Proceedings* 2014;89(4):451-53.
20. O'Sullivan TA, et al. Food sources of saturated fat and the association with mortality: a meta-analysis. *Am J Public Health* 2013;103:e31-42.
21. Sri-Tarino PW, Sun Q, Hu FB, Krauss RM. Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease. *Am J Clin Nutr* 2010;91(3):535-546.
22. de Oliveira Otto MC, Nettleton JA, Lemaitre RN, et al. Biomarkers of dairy fatty acids and risk of cardiovascular disease in the Multi-Ethnic Study of Atherosclerosis. *J Am Heart Assoc* 2013;2:e000092.
23. Hu FB, Stampfer MJ, Manson JE, et al. Dietary fats and the risk of coronary heart disease in women. *New England Journal of Medicine* 1997;337:1491-1499.
24. McGee DL, Reed DM, Yano K, Kagan A, Tillotson J. Ten-year incidence coronary heart disease in the Honolulu Heart Program. Relationship to nutrient intake. *Am J Intern Med* 2014;160:398-406.
25. Hooper L, Summerbell CD, Thompson R, Sillis D, Roberts FG, Moore HJ, et al. Reduced or modified dietary fat for preventing cardiovascular disease. *Cochrane database of systematic reviews*. 2012 issue 5.



26. Jakobsen MU, O'Reilly EJ, Heitmann BL, et al. Major types of dietary fat and risk of coronary heart disease: a pooled analysis of 11 cohort studies. *Am J Clin Nutr* 2009;89:1425-1432.
27. Dixon H, Scully M, Wakefield M, Kelly B, Chapman K, Donovan R. Parent's responses to nutrient claims and sports celebrity endorsements on energy-dense and nutrient-poor foods: an experimental study. *Public Health Nutrition* 2011;14(6):1071-1079.
28. Sylvetsky AC and Dietz WH. Nutrient-Content Claims – Guidance or cause for confusion. *New England Journal of Medicine* 2014;371:195-198.
29. Wansink B, Chandon P. Can 'low-fat' nutrition labels lead to obesity? *Journal of Marketing Research* 2006;43:605-617.
30. Department of Health and Human Services, US Department of Agriculture. Scientific Report of the 2015 Dietary Guidelines Advisory Committee. First Print February 2015. <http://www.health.gov/dietaryguidelines/2015-scientific-report/PDFs/Scientific-Report-of-the-2015-Dietary-Guidelines-Advisory-Committee.pdf>
31. Yusuf S, Hawken S, Ounpuu S, Dans T, Avenzum A, Lanas F, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case control study. *The Lancet* 2004;364(9438):937-952.
32. O'Donnell MJ, Xavier D, Liu L, Zhang H, Chin SL, Rao-Melacini P, et al. Risk factors for ischaemic and intracerebral haemorrhagic stroke in 22 countries (the INTERSTROKE study): a case-control study. *The Lancet* 2010;375(9735):112-123.
33. Hung HC, Joshipura KJ, Jiang R, et al. Fruit and vegetable intake and risk of major chronic disease. *Journal of the National Cancer Institute* 2004;96:1577-1584.
34. Dauchet L, Amouyel P, Hereberg S, Dallongeville J. Fruit and vegetable consumption and risk of coronary heart disease: a meta-analysis of cohort studies. *The Lancet* 2006;136(10):2588-2593.
35. Health Canada. Eating Well with Canada's Food Guide. A resource for educators and communicators. Health Canada. Ottawa, 2007.
36. Heart and Stroke Foundation of Canada. Vegetable & fruit consumption and heart disease and stroke: Position Statement of the Heart and Stroke Foundation. August 2013.
37. Brambila-Macias J, Shankar B, Capacci S, Mazzocchi M, Perez-Cueto FJ, Verbeke W, et al. Policy interventions to promote healthy eating: a review of what works, what does not, and what is promising. *Food Nutrition Bulletin* 2011;32(4):365-75.
38. Jaime PC, Lock K. Do school based food and nutrition policies improve diet and reduce obesity? *Preventive Medicine* 2009;48(1):45-53.
39. Nanney MS, MacLehose R, Kubick MY, Davey CS, Coombes B, Nelson TF. Recommended school policies are associated with student sugary drink and fruit and vegetable intake. *Preventive Medicine* 2014;62:179-181.
40. Robinson-O'Brien R, Story M, Heim S. Impact of garden-based youth nutrition intervention programs: a review. *J Am Diet Assoc*. 2009;109(2):273-280.
41. Heim S, Stang J, Ireland M. A garden pilot project enhances fruit and vegetable consumption among children. *J Am Diet Assoc*. 2009;109(7):1220-1226.
42. Parmer SM, Salisbury-Glennon J, Shannon D, Struempfer B. School gardens: an experiential learning approach for a nutrition education program to increase fruit and vegetable knowledge, preference, and consumption among second-grade students. *J Nutr Educ Behav* 2009;41(3):212-217.
43. Raine K, Lobstein T, Landon J, Kent M, Pellerin S, Caulfield T, et al. Restricting marketing to children: Consensus on policy interventions to address obesity. *Journal of Public Health Policy* 2013;34:239-253.
44. Fietchner LG, Block JP, Melly SJ, Sharifi M, Marshall R, Taveras EM. Proximity to supermarkets modifies intervention effects on diet and body mass index changes in an obesity randomized trial. Paediatric Academic Societies annual meeting: May 3, 2014.
45. Veugelers PJ, Sithole F, Zhang S, Muhajarine N. Neighborhood characteristics in relation to diet, physical activity and overweight of Canadian children. *International Journal of Pediatric Obesity* 2008;3(3):152-159.
46. Larson NI, Perry CL, Story M, Neumark-Sztainer D. Food preparation by young adults is associated with better diet quality. *J Am Diet Assoc* 2006;106(12):2001-2007.
47. Powell LM, Chiqui JF, Khan T, Wada R, Chaloupka FJ. Assessing the potential effectiveness of food and beverage taxes and subsidies for improving public health: A systematic review of prices, demand and body weight outcomes. *Obesity Reviews* 2013;14:110-128.
48. PROOF (2013). Research to identify policy options to reduce food insecurity. Unpublished analysis of 2011 Canadian Community Health Survey Data. Accessed June 8, 2015. Retrieved from: <http://nutritionalsciences.lamp.utoronto.ca/food-insecurity>.
49. Thow AM, Downs S, Jan S. A systematic review of the effectiveness of food taxes and subsidies to improve diets: Understanding the recent evidence. *Nutrition Review* 2014;72(9):551-565.
50. Dietz W. New strategies to improve food marketing to children. *Health Affairs* 2013;32(9):1652-1658.
51. Dhar T, Baylis K. Fast food consumption and the ban on advertising targeting children: *The Quebec Experience*. *Journal of Marketing Research* 2011;98:799-813.



52. Magnus A, Haby MM, Carter R, Swinburn B. The cost-effectiveness of removing television advertising of high-fat and or high sugar food beverages to Australian children. *International Journal of Obesity* 2009;33:1094-1102.
53. Haby MM, Vos T, Carter R, Moodie M, Markwick A, Magnus A, et al. A new approach to assessing the health benefit from obesity interventions in children and adolescents: the assessing cost-effectiveness in obesity project. *International Journal of Obesity* 2006;30:1463-1475.
54. Knai C, Petticrew M, Durand MA, Eastmure E, James L, Mehrotra A, et al. Has public-private partnership resulted in action on healthier diets in England? An analysis of the Public Health Responsibility Deal pledges. *Food Policy* 2015;54:1-10.
55. Winkler E, Turrell G. Confidence to cook vegetables and the buying habits of Australian households. *J Am Diet Assoc* 2009;109:1759-1768.
56. Crawford D, Ball K, Mishra G, Salmon J, Timperio A. Which food-related behaviours are associated with healthier intakes of fruits and vegetables among women? *Public Health Nutr* 2007;10(3):256-265.
57. Larson NI, Story M, Eisenberg ME, Neumark-Sztainer D. Food preparation and purchasing roles among adolescents: associations with sociodemographic characteristics and diet quality. *J Am Diet Assoc* 2006;106(2):211-218.
58. Meehan M, Yeh M, Spark A. Impact of exposure to local food sources and food preparation skills on nutritional attitudes and food choices among urban minority youth. *J Hunger Environ Nutr* 2008;3(4):456-471.
59. Shankar S, Klassen A. Influences on fruit and vegetable procurement and consumption among urban African-American public housing residents, and potential strategies for interventions. *Fam Econ Nutr Rev* 2001;13(2):34-46.
60. Thomas HMC, Irwin JD. Cook it up! A community based cooking program for at-risk youth: overview of a food literacy intervention. *BMC Research Notes* 2011; 4(495):1-7.
61. Howard A, Edge J. Enough for all: Household food security in Canada. Conference Board of Canada. August 2013.

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