

Government Sanctioned Health Claims, Regulations and Economic Policies: Strategies to Increase Consumption of Healthy Functional Foods in Canada

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Non-communicable diseases are chronic diseases that have significant economic and social burdens worldwide. Increased public awareness about the interaction between diet and health, a desire to improve well-being, and government efforts to reduce rising public healthcare costs have been major drivers of substantial growth in the healthy functional foods industry. This paper examines economic policies and regulations that could increase the consumption of healthy functional foods in Canada. It assesses the effectiveness of current public policies and regulations on consumer preferences/demand and considers alternative policies and regulations that could increase the development and growth of the healthy functional food industry, individual wellbeing, reduce health care costs, and stimulate an overall increase in social welfare. It is shown that the use of health claims and educational efforts alone are not enough to increase demand to the socially optimal level. The government needs to use stronger economic and public policies such as tax credits to consumers or subsidies on costs of production that provide consumers with additional incentives to consume healthier foods at the socially optimal level.

Keywords: Functional/Health Foods, Market Failures, Health Claims, Economic Policies and Regulations

Introduction

Non-communicable diseases (NCDs) also known as chronic illnesses have significant economic and social burdens. The economic impacts of chronic illness include both direct costs, such as hospital and drug expenditures, as well as indirect costs, such as lost productivity in the labour market (Public Health Agency of Canada 2014, WHO 2023b). There are also social costs that cannot be measured such as physical and emotional pain caused by illness and a decreased quality of life. In 2023, 80% of deaths globally were attributed to chronic or non-communicable diseases (WHO 2023a). Cardiovascular diseases (CVDs), cancers, chronic respiratory illnesses, and diabetes, are the top four causes of NCD deaths (WHO 2023a). In 2023, CVD accounted for 44% of NCD deaths and cancer accounted for 23% (WHO 2023a).

In Canada, cancer and heart disease were responsible for 49.6% of all deaths in 2011 (Statistics Canada 2015). In 2008, it was estimated that the largest portion of

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direct costs associated with illness and injury in Canada was due to CVD, which accounted for 6.8% of total healthcare costs (Public Health Agency of Canada 2014). Other chronic illnesses such as diabetes also accounted for significant portions of direct healthcare costs (Public Health Agency of Canada 2014).

Similarly, heart disease and cancer were responsible for 46% of all deaths in the U.S. in 2014 (CDC 2017a). In addition to heart disease and cancer, five other chronic diseases made it into the top ten causes of death in 2014 (CDC 2017a). It is estimated that treatment of these chronic illnesses is responsible for 85% of the total healthcare expenditures in the U.S. (Dietz, Douglas and Brownson 2016). In 2012, the direct and indirect costs of CVD and stroke alone were estimated to cost 15% of total healthcare expenditures in the United States (Mozafarian et al. on behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee 2016).

Research has shown that the risk for many of these chronic diseases, such as heart disease and cancer, can be significantly reduced through the adoption of a healthy diet and balanced lifestyle (Dietz, Douglas and Brownson 2016; WHO 2003; American Heart Association 2017a; CDC, 2017; WHO 2023a; WHO 2023b). Knowledge about the link between diet and health has led to increased interest from both consumers and health authorities in the adoption of a healthy diet as a means of improving well-being. Approximately 86% of Americans indicated they were interested in learning more about health foods (IFIC 2013) and recognized organizations such as the WHO, the American Heart Association, and the CDC now recommend adopting a healthy diet as part of a preventative care strategy (WHO 2003; American Heart Association 2017a; CDC 2017; WHO 2023a; WHO 2023b).

Increased public awareness about the interaction between diet and health, a desire to improve well-being, and efforts by public health authorities to reduce rising public healthcare costs have been major drivers of substantial growth in the functional foods industry (e.g., Milner, 1999; Ohama, Ikedo, and Moriyama 2006; Thompson and Moughan 2008; Moors, 2012; Malla et al., 2013a, Malla, Hobbs, and Sogah 2013b; Hobbs et al., 2014; Hobbs, Malla, and Yeung 2021).

Functional foods are defined as foods enhanced with bioactive ingredients, which have demonstrated health benefits beyond basic nutrition: they are foods with extra health benefits (Hobbs, Malla, and Sogah 2014). Functional foods may voluntarily carry various types of government-sanctioned health claims. Health claims are defined as any statement on labels or in advertising that directly or indirectly indicates a relationship between the consumption of food and health (Hobbs, Malla, and Sogah 2014). Another closely related product is 'natural health products' (NHPs), which are concentrated food products with health benefits that are sold in dosage form (AAFC 2017a).

Market estimates of the size of the health food industry cover a broad range due to a lack of consensus regarding the definitions of functional foods and natural health products (Stein and Rodriguez-Cerezo 2008). In 2010, Euromonitor estimated the global market for functional foods to be worth USD 168 billion (Vicentini, Liberatore, and Mastrocola 2016). By 2013, growth in the international functional foods and health products industry exceeded the conventional processed food market by estimated rates of 8% to 14% annually (AAFC 2014). According to

Grand View Research (2023) “The global functional foods market size was estimated at USD 280.7 billion in 2021 and is expected to expand at a compound annual growth rate (CAGR) of 8.5% from 2022 to 2030.”

In Canada, revenues for the Canadian functional foods and natural health product sector generated approximately CAD 16.4 billion in 2011 (Khamphoune 2013). According to an EMR (2023) report entitled Canada Functional Foods and Natural Health Products Market Outlook, the Canadian functional foods and natural health products market value was USD 28.6 billion in 2022. IndustryARC, (2023) stated that “Functional Foods & Natural Health Products market size is forecast to reach \$19.2 billion by 2026, growing at a CAGR of 6.3% during the forecast period 2021-2026.” Consequently, the healthy functional food industry has great potential for producers, consumers, and society.

This study will assist in broadening our understanding of markets for healthy functional foods. The overall goal is to examine economic policies and regulations that could increase the consumption of healthy functional foods in Canada. The objective of this paper is to develop a graphical framework that would assist policy makers and communication experts to understand the effectiveness of current public policies and regulations on consumer preferences/demand, and to analyze alternative policies and regulations that could increase the development and growth of the healthy functional food industry. This could lead to improvements in individual wellbeing, reduce health care costs, and increase overall social welfare.

Specifically, this study will analyze how the implementation of government policies and regulations could increase healthy functional food consumption, which in turn would help to reduce chronic illness incidence, thereby resulting in a reduction of healthcare expenditures.

Functional Foods and Health Claims

In Canada, functional foods are defined as “foods enhanced with bioactive ingredients and which have demonstrated health benefits” (AAFC 2015, website). These are products that naturally contain high levels of bioactive ingredients or are fortified, enriched, or genetically modified (AAFC 2016; AAFC 2014) by adding important amino acids, vitamins, or minerals (CFIA 2016b).

Another product related to functional foods is natural health products (NHPs)¹. NHPs are defined in Canada as naturally sourced supplements sold in dosage form and used for improving or maintaining good health, reducing the risk of disease, and restoring body function (AAFC 2017a). NHPs are created by extracting, purifying, grinding, or drying naturally occurring substances found in a variety of plant, animal, microorganism, and marine sources (Health Canada 2016a; AAFC 2017b). They are sold in dosage form and come in tablets, creams, ointments, drops and include vitamin and mineral supplements (Health Canada 2016b).

In Canada, different types of nutritional and health information are permitted on foods and NHPs (CFIA 2022). Most prepackaged foods must display a nutrition

¹Natural health products were known as nutraceuticals in Canada until 2001.

facts table (NFT)² that provides consumers with information on serving sizes, calories, and the percentage of daily values of 13 required nutrients plus any additional optional nutrients (Government of Canada 2015). Percentage daily values indicate the amount of nutrients that are consumed in one serving of the food as a percentage of the recommended daily intake.

In addition to the mandatory NFT, foods may voluntarily carry various types of claims. In Canada, claims that can be made on foods are categorized under two broad categories: either health claims or nutrient content claims. Health claims are defined as any statement on labels or in advertising that directly or indirectly indicates a relationship between the consumption of a food and improved health (CFIA 2016c), for example, *“a diet low in saturated and trans fat may reduce the risk of heart disease”* (Health Canada 2016c). Nutrient content claims are statements that indicate the quantity or presence of a nutrient, or the amount of energy provided by a food (e.g., *“excellent source of calcium”* or *“zero Calories”*) (CFIA 2016d).

Health Canada further defines five subcategories of health claims that are permitted on foods: 1) general health claims; 2) implied health claims; 3) function claims; 4) therapeutic claims; and 5) disease risk reduction claims (AAFC 2012; CFIA 2016c, CFIA 2019a, CFIA 2019, CFIA 2022). General health claims provide broad dietary guidance in line with Canada’s Food Guide recommendations and do not reference health effects. An example of a general health claim is: *“part of a healthy diet”* (CFIA 2016c, CFIA 2019). Implied health claims can consist of logos, symbols or words (e.g., prebiotic, probiotic, antioxidant) that contribute to the overall impression about the food product and are evaluated on a case-by-case basis (CFIA 2019). Functional claims describe how consuming a specific food or food constituent can have positive effects on normal body functions. For example, the *“consumption of 1 cup of green tea helps to protect blood lipids from oxidation”* is an acceptable functional claim in Canada (AAFC 2012). Therapeutic claims indicate the treatment of a disease or a body function through the consumption of a food or food constituent (CFIA 2016c, CFIA 2019), such as *“ground (whole) flaxseed helps lower cholesterol”* (Health Canada 2014). Disease risk reduction claims, such as *“a diet low in saturated and trans fat may reduce the risk of heart disease”* explain how consumption of a specific food reduces the risk of a specific diet-related illness (CFIA 2016c, CFIA 2019).

In addition, there are two further subcategories of function claims: nutrient function claims and probiotic function claims (CFIA 2016c, CFIA 2019). Nutrient function claims explain the specific effects of nutrients on the normal development, growth and functioning of the body (CFIA 2016c, CFIA 2019). For example, products containing sufficient levels of iron may use the nutrient function claim, *“factor in red blood cell formation”* and *“helps build red blood cells”* (CFIA 2016c). Foods permitted to use nutrient function claims may also use a type of nutrient function claim called “general nutrient function claims”. General nutrient function claims are broad claims that indicate certain nutrients maintain “good health” or “normal growth and development” (CFIA 2016c). For example, a product containing the required levels of iron may also use the general nutrient function claim *“iron is*

²A few prepackaged products are exempt from carrying a nutrition facts table, such as individually sold one-bite confectionaries, milk sold in reusable glass containers, fresh produce, and raw meats.

a factor in the maintenance of good health” or “iron is a factor in normal growth and development” (CFIA 2016c).

The second subcategory of function claims, probiotic function claims, describe the health benefits of the consumption of microorganisms (CFIA 2016c, CFIA 2019). There are two types of probiotic claims in Canada: non-strain-specific and strain-specific. Non-strain-specific probiotic claims are claims that indicate the general effects of probiotics on body function without reference to a specific strain of bacterial species. For example, “*contains probiotics that contributes to healthy gut flora*” (CFIA 2016c). Strain-specific probiotic claims refer to the health benefits of a specific strain of bacterial species. Health Canada does not currently have an example of a strain-specific probiotic claim as none have been approved thus far (CFIA 2016c).

In Canada, the regulations and definitions for functional foods, NHPs, health claims, and nutrient content claims are governed by the *Food and Drugs Act* (Health Canada 1998). The *Food and Drugs Act* legislates safety, quality, and labeling standards for food and drugs sold in Canada (AAFC 2012). Under the *Food and Drugs Act*, functional foods are regulated as foods and NHPs are regulated as a subset of drugs under the Natural Health Products Regulations (Health Canada 2016b). The *Food and Drugs Act* regulations are jointly governed by Health Canada, the Canadian Food Inspection Agency (CFIA) and Agriculture and Agri-Food Canada (AAFC) (AAFC 2012). Health Canada develops health and safety regulations, the CFIA enforces those regulations as well as develops non-health and safety-related labelling policies, and AAFC helps the industry to understand and navigate the various rules and policies.

Under the *Food and Drugs Act*, health claims and nutrient content claims made on foods are both voluntary and generic (Health Canada 2010). Generic claims are claims that, once approved, may be used on any product provided the product satisfies the criteria to carry the claim. Health claims are also permitted on NHPs, but, in contrast, health claims made on NHPs are product-specific and mandatory to inform consumers how to appropriately use the products (NHPD 2006; Health Canada 2016b). Product-specific claims are claims that are reviewed on a case-by-case basis and approved for use on specific products only. Health claims on NHPs must link the product to a health condition or disease except for those diseases referred to in Schedule A of the *Food and Drugs Act* (NHPD 2006). Nutrient content claims do not apply to NHPs.

While all health and nutrient content claims for use on foods are generic once approved, there are some differences in the approval processes for each type of claim. General health claims do not follow explicit regulations but, like all types of claims in Canada, are subject to Subsection 5(1) of the *Food and Drugs Act* (Health Canada 2016c; L’Abbe et al. 2008). Subsection 5(1) indicates that all claims must be factual, accurate, and not misleading. In addition, general health claims must give broad dietary guidance that corresponds with the Canada Food Guide recommendations (CFIA 2016c). Health Canada does not review or approve new general health claims and manufacturers do not need pre-market authorization to use general health claims (CFIA 2016c).

As for function claims, Health Canada requires pre-market review and approval of new function claims (CFIA 2016c). For new function claims to be approved, the

claims must meet the acceptable standards of evidence outlined by Health Canada. First, the target consumer must be able to consume the amounts of the food necessary to achieve the beneficial effect as part of a typical diet (CFIA 2016c). Second, the claims must clearly indicate a specific physiological effect. Last, function claims must not indicate the prevention or treatment of a disease or illness or their symptoms (CFIA 2016c). Once approved, function claims become generic and may be used without premarket authorization. There are currently 4 function claims that have been reviewed and approved by Health Canada (CFIA 2016c; Health Canada 2016d, CFIA 2019).

The approval process for new nutrient function claims and probiotic claims is similar to the approval process for function claims. New nutrient function claims are evaluated and approved if the scientific evidence in support of the claim is accepted by an authoritative scientific agency, such as the Institute of National Academies of Science, and reflects agreement among the scientific community about the health benefits (CFIA 2016c). Once approved, new nutrient function claims become generic and are added to the Table of Acceptable Nutrient Function Claims. Currently, there are 28 accepted nutrients recognized in Canada to have beneficial effects on the body (CFIA 2016c, CFIA 2019). In addition, Health Canada permits the use of general nutrient function claims on foods containing any of the 28 accepted nutrients³. Manufacturers do not need pre-market authorization to use any of the approved nutrient function claims or general nutrient function claims.

Similarly, Health Canada also approves new probiotic function claims based on sufficient evidence in support of the claim (CFIA 2016c). Once approved, these generic claims are either added to the list of acceptable strain-specific claims or non-strain-specific claims depending on the type of claim. Producers do not need pre-market authorization to use any approved generic probiotic function claims. Currently, there are 16 approved non-strain-specific claims and no approved strain-specific claims (CFIA 2016c, Health Canada 2017, CFIA 2019).

New therapeutic and disease risk reduction claims must undergo an in-depth evaluation and approval process by Health Canada to ensure their validity prior to being made available in the market (Health Canada 2016c). Approval of new therapeutic and disease risk reduction claims is granted if the scientific substantiation to support the claim is found to be comprehensive, well-established, systematic, and transparent (Health Canada 2009). Submissions of new claims also must show that the food or food constituent needed for the beneficial effect can be consumed as part of a normal diet. If the health claim relates to a Schedule A disease, then an amendment to the *Food and Drugs Regulations* must be made prior to approval. Once approved, disease risk reduction and therapeutic claims are generic, and producers do not need pre-market authorization to use any of the approved claims (Health Canada 2016c). However, manufacturers must comply with specific wording, formatting, and language requirements for the health claims. There are currently 16 approved disease risk reduction/therapeutic claims available for use on foods in Canada (Health Canada 2016b, Health Canada 2017). A list of the approved disease risk reduction and therapeutic claims can be found in Appendix 1.

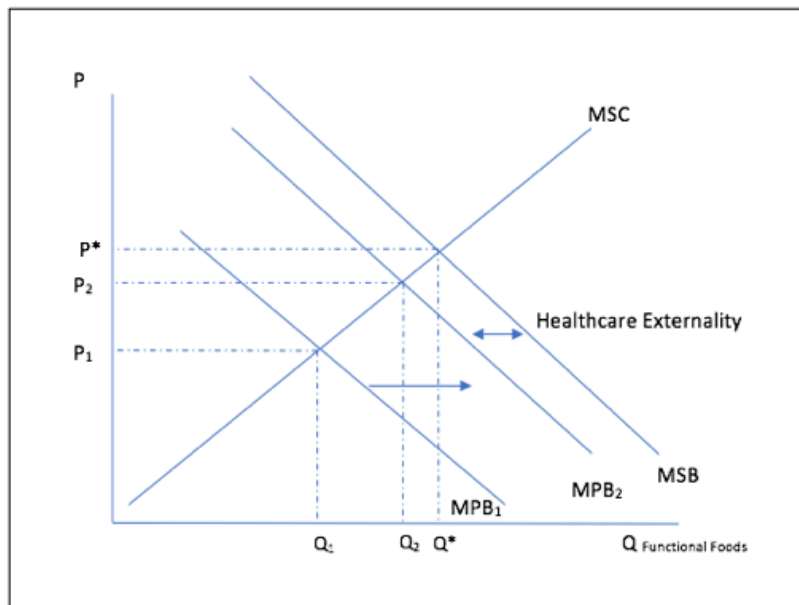
³General nutrient function claims indicate the approved nutrient is either 1) “a factor in the maintenance of good health” or 2) “a factor in normal growth and development”.

Health Canada currently has defined 13 categories of nutrient content claims (CFIA 2016d). Each of the 13 categories has several types of generic nutrient content claims that can be used on foods. New nutrient content claims are approved at the discretion of Health Canada. Manufacturers can use any of the approved generic nutrient content claims without pre-market authorization. However, nutrient content claims must also follow prescribed wording requirements determined by Health Canada (CFIA 2016d).

Correcting Market Failure in the Functional Foods Industry

Market failure in the functional food industry could occur due to imperfect information and healthcare externalities (Hobbs, Malla and Sogah 2014, Hobbs, et al 2014, Malla, Klein, and Presseau 2020, Malla, Klein, Presseau 2022). Market failure occurs when the private market equilibrium does not equal the socially optimal equilibrium and there is a loss of welfare due to an inefficient use of resources (Watts and Segal 2009). In the absence of health claims on foods, consumers have imperfect information about the health benefits of functional foods. Consumers might not understand the implications of their dietary choices on their health or, due to the credence nature of functional foods, might not recognize which foods provide extra health benefits (Veeman 2002; Herath et al. 2006). As a result, they might under-consume healthy foods and over-consume unhealthy foods. In addition, market failure in the functional foods industry occurs if consumers do not bear the full costs associated with poor dietary choices in a public healthcare system that operates in Canada (Hobbs, Malla and Sogah 2014).

A graphical analysis of the impacts of health claim regulations in the functional foods industry is provided in Figure 1. The socially optimal equilibrium occurs where the marginal social benefit (MSB) of consuming functional foods equals the marginal social cost (MSC) of producing them. The social benefits include all private benefits, for example, improved health and well-being, plus external benefits to society such as reduced public healthcare costs. The social costs include all direct and indirect costs associated with producing functional foods, including private costs such as labour and external costs such as pollution. At the social equilibrium, P^* and Q^* , net social welfare from the consumption of functional foods is maximized.

Figure 1. *Impact of Health Claim Regulations on Consumption of Healthier Foods*

Source: Authors

In the absence of health claims, the marginal private benefit (MPB) of consuming functional foods is lower than the MSB. The initial private equilibrium occurs where MPB_1 is equal to the MSC and the private optimal price and quantity are at P_1 and Q_1 . Health claims can increase the consumption of healthy foods by providing information to consumers of the improved health and well-being they might receive from consuming these products. If consumers place greater value on the consumption of functional foods, MPB_1 will shift to MPB_2 , and the new private equilibrium occurs at P_2 and Q_2 . However, since consumers do not bear the full costs of an unhealthy diet, MPB_1 does not shift all the way to MSB. Instead, the distance between MPB_2 and MSB represents the healthcare externality.

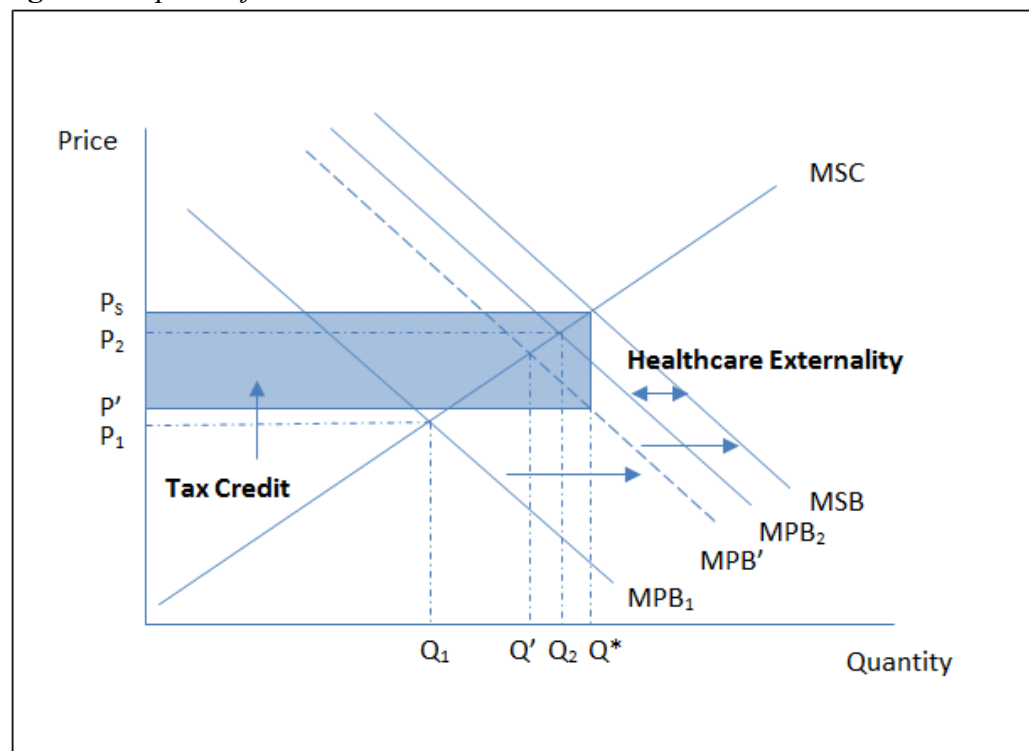
The first, and potentially most cost-effective, policy recommendation to move MPB to the right (and get it closer to the MSB) is for public health authorities to increase communication of health information to consumers. This could take the form of articles in popular media, radio advertisements, social media, and planned social events that get people directly involved in raising awareness (Wansink and Cheney 2005). In addition, public health authorities might collaborate with grocery stores to post educational posters in the stores. These forms of communication can facilitate healthy eating by raising awareness and understanding or, in the case of in-store education campaigns, can help to increase the impact of health information on consumers as they are influenced directly at the point of purchase. Revised educational curricula in the public education system would teach children how to make healthy decisions for themselves.

In addition to making greater education and information available, governments could institute certain types of economic incentives to encourage greater consumption of these healthier foods. For example, the government could provide tax credits to consumers of functional foods. A tax credit could increase the consumption of foods where the use of health claims has not been as successful, for example, the “Fruits

and Vegetables and Cancer” health claim. In this case, government could provide consumers with an annual monetary incentive to increase their consumption of fruits and vegetables. In the presence of health claims and other educational campaigns, MPB_1 shifts to MPB_2 . If the government provided an appropriate amount of a tax credit, then consumers would have additional benefits from the consumption of functional foods and the MPB_2 would shift right to align more closely with the MSB in Figure 1. The new equilibrium consumption would occur at (or closer to) the socially optimal Q^* .

However, if health claims are not completely successful, MPB_1 will shift only to MPB' as shown in Figure 2. An appropriate amount of tax credit to consumers of functional foods could be used to increase the benefit of consuming functional foods from MPB' to MSB . The optimal price and quantities after the incentive of the tax credit are at P_3 and Q^* . The government would pay the difference between the new price, P_3 , and the price consumers are willing to pay for Q^* units on the original MPB' curve, P' , per unit of consumption in the form of a tax credit. The total cost of the tax credit is indicated by the shaded area.

Figure 2. *Impacts of a Tax Credit in the Functional Food Market*

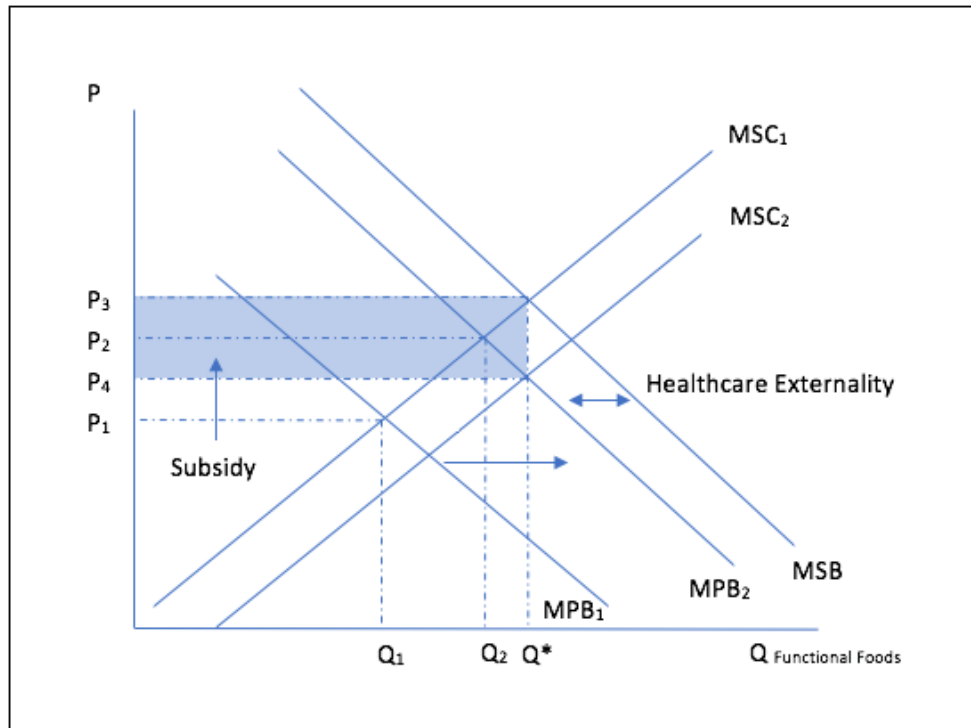


Source: Author's

Another economic policy option would be a subsidy on the costs of inputs to producers of functional foods. As shown in Figure 3, in the presence of health claims, the initial quantity of consumption prior to the use of a subsidy occurs at Q_2 where MPB_2 equals MSC_1 . An appropriate amount of a subsidy on the cost of inputs would decrease the marginal cost of production and MSC_1 would shift right to MSC_2 . The price paid by consumers would decrease from P_2 to P_4 , resulting in an

increase in the quantity demanded from Q_2 to Q^* . The new equilibrium price and quantity would occur at P_4 and Q^* . The cost of the subsidy paid by the government would be the difference between the cost of producing Q^* units on the original MSC_1 curve and the new MSC_2 curve. The total cost of the subsidy is represented by the shaded area.

Figure 3. *Health Claims and Subsidies on Functional Food Consumption*



Source: Authors

Both economic policy options, a tax credit to consumers and/or a subsidy to producers on the cost of inputs, could help increase consumption of healthy foods to the socially optimal level. However, the efficacy of these policies is dependent upon several factors, including how responsive consumers and producers are to changes in price and whether the food products have close substitutes. Also, other government policies or programs might affect consumption patterns as might conflicting health or product information (IISD n.d.), thus affecting the efficacy of these policies.

Conclusion

This graphical analysis has shown that government issued health claims on specific foods can be effective at improving dietary patterns and improving social welfare. It is recommended that public health officials continue to regulate health claims as this provides consumers with credible, accurate, and reliable health information. To increase the success and effectiveness of health claim policies, it is

recommended that public health officials increase other methods of communicating health information, such as media coverage, in-store educational campaigns, social media, and planned fundraising and awareness events, as this is likely to reach a larger proportion of consumers. Further, educational programs that begin teaching children in school at an early age about nutrition and continue to secondary school should be included in the public education curriculum.

Last, the use of health claims and educational efforts alone likely are not enough to increase demand to the socially optimal level. Governments need to use stronger economic policies to provide consumers with an additional incentive to consume healthier foods at the social optimum. The use of tax credits to consumers or subsidies for producers could significantly improve the consumption of functional foods, thereby leading to improved health and a reduction in public healthcare costs.

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Appendix 1. *Canada Approved Disease Risk Reduction or Therapeutic Health Claims*

- Sodium and Hypertension (2000).
- Dietary Fat, Saturated Fat, Cholesterol, Trans Fatty Acids and Coronary Heart Disease (2000).
- Fruits, Vegetables and Cancer (2000).
- Calcium and Osteoporosis (2000).
- Plant Sterols (Phytosterols) (2010).
- Oat Products and Blood Cholesterol Lowering (2010).
- Psyllium Products and Blood Cholesterol Lowering (2011).
- Unsaturated Fat and Blood Cholesterol Lowering (2012).
- Barley Products and Blood Cholesterol Lowering (2012).
- Sugar-Free Chewing Gum and Dental Caries Risk Reduction (2014).
- Ground Whole Flaxseed and Blood Cholesterol Lowering (2014).
- Soy Protein and Cholesterol Lowering (2015).
- Vegetables and Fruit and Heart Disease (2016).
- Polysaccharide Complex (Glucomannan, Xanthan Gum, Sodium Alginate) and Cholesterol Lowering (2016).
- Eicosapentaenoic Acid, Docosahexaenoic Acid and Triglyceride Lowering (2016).
- Polysaccharide Complex (Glucomannan, Xanthan Gum, Sodium Alginate) and a Reduction of the Post-Prandial Blood Glucose Response (2016).

Source: Health Canada 2017.

