

Determinants of Healthy Eating in Canada

An Overview and Synthesis

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ABSTRACT

This article uses a population health perspective to examine the complex set of interactions among the determinants of healthy eating. An overview of current knowledge on determinants of healthy eating was organized as follows: 1) individual determinants of personal food choices and 2) collective determinants, including a) environmental determinants as the context for eating behaviours and b) public policies as creating supportive environments for healthy eating. A conceptual synthesis of the literature revealed that individual determinants of personal food choice (physiological state, food preferences, nutritional knowledge, perceptions of healthy eating and psychological factors) are necessary, but not sufficient, to explain eating behaviour, which is highly contextual. Collective determinants of eating behaviour include a wide range of contextual factors, such as the interpersonal environment created by family and peers, the physical environment, which determines food availability and accessibility, the economic environment, in which food is a commodity to be marketed for profit, and the social environment, in which social status (income, education and gender) and cultural milieu are determinants of healthy eating that may be working “invisibly” to structure food choice. Policy is a powerful means of mediating multiple environments. There are gaps in our understanding of the process of intervening in macro-level environments and the impact of such interventions on the promotion of healthy eating. Collective determinants of food choice and policy contexts for promoting healthy eating, therefore, require investment in research. Applying a population health promotion lens to understanding the multiple contexts influencing healthy eating provides insight into prioritizing research and action strategies for the promotion of healthy eating.

MeSH terms: Nutrition; health promotion; public health; social environment; population policy

The promotion of healthy eating in Canada has significant implications for improving the health of populations, locally and globally. For example, the current epidemic of obesity, in Canada and worldwide, is associated with changing eating (and activity) patterns and has significant public health implications.¹ Promoting and supporting healthy eating among Canadians, however, requires a comprehensive understanding of the multiple influences on eating behaviour and the interactions among these determinants.

This paper will provide 1) an overview of determinants of healthy eating by synthesizing the current state of knowledge highlighted in the six individual articles on the determinants of healthy eating in this supplement, and 2) recommendations for research to promote healthy eating based upon identified gaps in knowledge. The synthesis and recommendations will be placed within the context of population health promotion (PHP). “The PHP model draws on a **population health** approach by showing that, in order to improve the health of the people, action must be taken on the full range of health determinants. The model draws on **health promotion** by showing that comprehensive action strategies are needed to influence the underlying factors and conditions that determine health.”²

A population health perspective examines the complex set of interactions among the range of individual (biological, behavioural) and collective (social, cultural, physical, economic and political) determinants of health. Applying a population health promotion lens to understanding the multiple contexts influencing healthy eating provides insight into potential means of promoting healthy eating through a wide variety of action strategies that focus on entire populations. Population health promotion is consistent with ecological approaches for multilevel public health strategies to promote healthy lifestyles.^{3,4} Ecological approaches can help to organize strategies that work both to help individuals adopt healthy lifestyles and to influence policy in order to create opportunities for social and cultural change. Strategies can be categorized by their predominant focus at the following ecological levels: individual or intrapersonal (individual knowledge, attitudes and behaviour); interpersonal (family and peers); institutional (schools, worksites); community

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(interagency and intersectoral) and public policy.³ Ecological levels are not discrete but are interconnected.

For the purpose of this overview, determinants of healthy eating and their implications for health promotion action strategies will be organized as follows: 1) individual determinants of personal food choices and 2) collective determinants, including a) environmental determinants as the context for eating behaviours, and b) public policies as promoting environments for healthy eating. This organizing strategy is not meant to artificially separate those determinants of healthy eating that are intimately connected but, rather, to assist the reader in understanding the current state of knowledge of determinants of healthy eating and to assist in prioritizing action strategies for the promotion of healthy eating, as well as to identify gaps for further research.

Personal food choices: Individual determinants of eating behaviour

At first blush, what determines one's eating behaviour, healthy or otherwise, appears to be purely a matter of personal choice. After all, for the majority of the free-living population, the act of putting food into one's mouth is an individual act. Yet, personal food choices are structured by a variety of individual and collective determinants of behaviour. This section focusses on individual determinants, ranging from one's physiological state, food preferences, nutritional knowledge, perceptions of healthy eating and psychological factors.

Physiological Influences

At both ends of life, physiological development⁵ or deterioration with aging⁶ influence eating behaviour. Throughout childhood, dietary quality appears to decrease with age. This is perhaps a function of emotional and social development that provides children with more control over food choice and thus is influenced by other individual determinants, such as food preferences and nutritional knowledge.⁵ With aging, health status and functional abilities influence food-related behaviours.⁷⁻⁹ Yet, changes to physiological health status are not beyond intervention, as community resources that provide assistance can enhance seniors' abilities to procure and prepare an adequate diet.¹⁰⁻¹²

Food Preferences

Although food preferences are highly individual and may indeed have physiological origins (such as innate preferences for sweet and aversions for bitter tastes), social and cultural norms also determine ranges of food preferences. For example, Aboriginal peoples report preferences for traditional foods.¹⁴⁻²⁰ In children, food preferences are more likely guided by taste alone,¹³ whereas external factors (such as environmental cues) contribute more to adult preferences. From a health perspective, preferences for sweet foods are common in children but diminish with age, and preferences for high-fat foods endure.¹³ The physiological "anorexia of aging"^{21,22} is associated with impaired taste and smell as well as metabolic changes accompanying aging.

Nutritional Knowledge

Children and adolescents have been shown to demonstrate a general understanding of the connections between food choice and health.^{23,24} However, Taylor's review of the research does not consistently show that knowledge influences food choices in these age groups.⁵ Among seniors, high awareness of nutrition and health is associated with better food and nutrient intakes.²⁵⁻²⁹ In the adult population, nutritional knowledge is intertwined with perceptions of healthy eating.

Perceptions of Healthy Eating

"Perceptions of healthy eating" are defined by Paquette³⁰ as the "public's ... meanings, understandings, views, attitudes and beliefs about healthy eating, eating for health, and healthy foods." (pg. S15) Theoretical models suggest that key determinants of food choice are individuals' ideals and their assumptions about food,^{31,32} which would include perceptions of healthy eating.

The public's perceptions of healthy eating include consumption of vegetables, fruits and meat; limitations of sugar, fat and salt; and variety and moderation.³⁰ These elements seem to be influenced by current dietary guidance aimed to improve nutritional knowledge and eating habits. However, other important elements of dietary guidance not generally included in people's perceptions of healthy eating include consumption of grain products and milk products. Non-nutritional ele-

ments that seem central to people's perceptions of healthy eating include the importance of freshness, unprocessed and home-made foods, and the concept of balance.³⁰

Perceptions of healthy eating are embedded within cultural meanings of food and health. For example, Willows' review³³ reveals that "food choices based on Aboriginal cultural values may not be congruent with Western scientific constructs regarding the nutritional value of food." (pg. S34) If traditional food is necessary for survival, it is by its very nature health-promoting. The concept that any food, including "store food", may not contribute to health is, therefore, culturally foreign and difficult to grasp.³³

Psychological Factors

Polivy and Herman's review³⁴ highlights that "individual psychological factors that affect eating include personality traits such as self-esteem, body image and restrained eating (chronic dieting), as well as mood and focus of attention." (pg. S44) The authors appropriately point out that there is a bi-directional relation between eating and psychological states, in that not only do psychological factors affect our food choices, but our food choices affect our psychological well-being.³⁴

Despite a significant level of research into psychosocial influences on healthy eating for both children and adults over the past decade, the ability of various models of psychosocial variables (e.g., the Theory of Planned Behaviour, Social Cognitive Theory, Transtheoretical Model) to predict individual dietary intake remains low.³⁵ Increasingly, these models are being refined and expanded to capture aspects of environmental influences on behaviour, including healthy eating.

Summary of Individual Determinants of Healthy Eating

Personal food choices are structured by a variety of individual determinants of behaviour, ranging from one's physiological state, food preferences, nutritional knowledge, perceptions of healthy eating and psychological factors. However, individual determinants are necessary, but not sufficient, to explain eating behaviour. Healthy eating is much more complicated than personal choice, as eating behaviour is highly contextual.

Collective determinants, Part 1: Environmental determinants of healthy eating as context for individual behaviour

The term “environment” will be used here to describe a wide range of contextual factors influencing eating behaviour. Environment may be intimate and local, such as the interpersonal environment created by family and peers. Alternately, environment may be further removed from one’s immediate awareness and control, such as the physical environment that determines food availability and accessibility; the economic environment, in which food is a commodity to be marketed for profit; and the social environment, in which social status and cultural milieu are determinants of healthy eating that may be working “invisibly” to structure food choice. This section will attempt to make more visible what is known about environmental determinants of healthy eating and the interactions among these environments.

Interpersonal Influences on Healthy Eating

Family provides an important context for children’s food choices, as family provides the first and immediate social environment in which children learn and practise dietary patterns.^{36,37} Family can have both positive and negative effects on eating patterns for all ages of family members. For example, Polivy and Herman’s review³⁴ revealed that “family...contributes to disturbed eating behaviours and eating disorders, increased consumption in overweight children, and amounts of fruit and vegetables consumed.” (pg. S45) Family food provisioning, or how the available food is distributed within a family, is often influenced by gender, with mothers sacrificing their own food intake to protect their children from hunger when food supplies are scarce.³⁸ As children age, familial effects take less precedence as social encounters outside the family increase.³⁹ Throughout life, the effect of peers and others on eating behaviour, particularly the presence of others during an eating episode, may function through an influence on perceived consumption norms.³⁴ In seniors, social isolation appears to have a negative impact on food intake, particularly among men.⁶ Family food provisioning strategies, gender differences in

eating patterns in response to social isolation, and influences of social contacts outside of the family are indications of families’ embeddedness in the broader social environment. This will be explored in more detail in a subsequent section.

Physical Environment as a Determinant of Healthy Eating

The physical environment refers to that which determines what food is available for consumption and access to that food. Obviously, if healthy food is neither available nor accessible, the potential for healthy eating is compromised. Although the Canadian food supply is plentiful, as evidenced by ecological food disappearance data,⁴⁰ the nutritional quality of the available food supply is unknown. Do the foods in Canada, in the quantities available, constitute a national food “basket” that is consistent with dietary guidance and nutritional recommendations? The ways in which food is produced, transported, distributed (to markets or through charitable organizations), procured from the land or markets, and purchased from food service locations in communities, worksites and schools vary significantly in a country as geographically and culturally diverse as Canada.

The role of the physical environment is most profound and evident in remote or northern communities, primarily occupied by Aboriginal peoples. As Willows reviews,³³ changes in the physical environment associated with technological development (e.g., hydroelectric dams, deforestation), including environmental contamination, have reduced the availability of traditional foods. Substitution of market foods has not necessarily enhanced the availability of nutritious foods, as high transport cost and spoilage have often led to ready availability of less nutritious, non-perishable foods (e.g., soda, potato chips). The interconnection of the physical environment with the economic environment is evident, since store managers’ stock management practices may be determinants of food availability.³³

The role of the physical environment in determining healthy eating is less immediately apparent in urban populations. However, the role of the built physical environment becomes more obvious if one considers that the supermarkets offering

inexpensive healthy foods may be less accessible in low-income communities³⁸ and near seniors’ housing.⁶ Most large supermarkets are located near major transportation routes that assume automobile access. Also, food service operations offering less healthy alternatives are ubiquitous in most urban areas, with particularly high accessibility in lower-income neighbourhoods.⁴¹ As low income appears to be a common denominator in physical access, the interconnection of the physical environment with the economic environment is clear.

Even in unique “bounded” physical environments, such as schools, the availability of food low in nutrient density versus healthier food is likely to influence food choice.⁵ Promoting healthy food policies in schools, including approved menus for school meals and student stores, guidelines for bag lunches and healthier choices for fundraising, has implications for the promotion of healthy eating through the creation of supportive environments.⁴² Herein lies an example of the complexities of the interconnections among determinants, as school food policies to promote healthy eating may be in conflict with the need to generate revenue, as will be discussed further in the economic environment section.

Another area in which social, economic and physical environments intersect explicitly is in the charitable food distribution system in Canada, primarily through food banks. Given that food banks have become institutionalized in Canada,⁴³ they have become one channel through which low-income Canadians access food regularly, at least for a portion of their total diet, and therefore constitute a “physical environment”. One Canadian study on the nutritional quality of foods available from food banks suggests that access and availability of healthy food may be compromised for this population.⁴⁴

Economic Environment as a Determinant of Healthy Eating

The economic environment, in which food is a commodity to be marketed for profit, has major implications for eating practices in a market-based economy such as Canada. Increasingly, the food industry targets marketing messages at young children, perhaps in recognition of their vul-

nerability to such messages associated with an underdeveloped critical consumer conscience. As well as children's reduced critical thinking abilities, marketers recognize the strong influence children and youth have on the purchasing patterns of caregivers and the large disposable income of current children and youth.⁴⁵ As Taylor reviews,⁵ from a very young age, children are bombarded with media messages through television advertisements, the bulk of which promote a diet high in fat and sugar, and lower in fruits and vegetables. Exposure to advertisements influences individual determinants of healthy eating such as food preferences and perceptions of healthy eating that give priority to distorted nutritional messages designed to sell individual products, not promote a total diet.⁵ Adults are not immune to influence from media.³⁴

Marketing food, however, transcends persuasive advertising to include the promotion of less healthy foods in physical environments (school, worksites). The proliferation of soft-drink vending in schools is a prime example of this interconnection of the physical and economic environments. Although soft-drink vending is not commonplace in Canadian elementary schools, it is almost universal in high schools, and many university campuses have entered into exclusive contracts with soft drink manufacturers for exclusive "pouring rights" assumed to engender brand loyalty.⁴⁶ As Power eloquently argues in her review,³⁸ the food industry's primary logic is to make profit, which is often in conflict with the promotion of healthy eating.^{47,48} The food industry, through its marketing practices, has a significant influence on the ways in which social norms around eating are shaped. As such, the economic environment intersects with the social environment as a determinant of healthy eating.

Point-of-choice nutrition education in food retail and service operations has been used extensively, in partnership with the food industry, with variable success rates in motivating healthy choices.⁴⁹ Pricing strategies have also been used to promote healthy food choices. Evaluation of combined nutrition messages with price reductions suggests that price decreases may be a more powerful means than health messages of increasing consumption of healthy

foods.⁵⁰ Thus, this is a strong point for subsidization strategies. Examined critically, however, one must recognize that such programs are likely to be accepted by the food industry only if they prove to be profitable. Public policy, to be discussed in a later section, is a potential means of mediating corporate-driven economic interests to create a social environment more supportive of healthy food choices.

Within Canada, research consistently demonstrates that "the most important barrier to healthy eating is inadequate income."³⁸ (pg. S39) Income is a determinant of healthy eating that transcends several social groups, notably children,⁵ seniors and Aboriginal peoples. In a market-based economy, those with inadequate income to purchase a healthy diet for myriad reasons, including inadequate welfare rates, minimum wage, or higher costs of healthier foods and diets, are unable to fully participate as consumers. Enhancing individual determinants, such as nutritional knowledge, may provide some coping skills, but as Power's review clearly demonstrates,³⁸ most low-income Canadians demonstrate significant resourcefulness and "buy more nutrients for their food dollar than higher income households." (pg. S39)

Community initiatives to promote healthy eating, such as food policy councils, have been developed as models for influencing the physical and economic determinants of healthy eating by providing ready access to a variety of nutritious, affordable foods. For example, originally developed in response to the need of low-income city dwellers, the Toronto Food Policy Council (TFPC) of the Toronto Board of Health was developed in 1990. The TFPC is a unique organization with membership from large food corporations, conventional and organic farms, cooperatives, unions, social justice and faith groups, and City Council. As such, there is a commitment to a common goal by a variety of stakeholders at the community level and beyond. The Council supports programs, such as Field to Table, that connect low-income inner city residents with farmers in need of a market for their produce, as well as rooftop and community gardens. The TFPC's local action is "balanced by longer-term efforts to develop policies at the municipal and provincial

level that will support Ontario farmers and provide quality, environmentally-sound, nutritious food to the people of Toronto".⁵¹ There is a need for research to determine whether community approaches to address economic determinants of healthy eating are workable in a variety of Canadian contexts, have an impact on food and eating practices at the population level, influence population-level policies that promote supportive environments for healthy eating, and ultimately influence population health status.

Social Environment as a Determinant of Healthy Eating

The previous sections make clear that food and eating have meaning far beyond physical and emotional nourishment. Eating is a socially constructed act that is embedded not only in individual perspectives of healthy eating drawn from dietary guidance and marketing of products but also in physical and economic environments that determine what food is available to us and at what cost. Food and eating also have social, cultural and symbolic functions; food and feeding can signify a sense of belonging, caring and community.^{52,53} Our social context and culture is often "invisible" to us, as our immersion in our socio-cultural context assures a "taken-for-grantedness" of our day-to-day experiences. Increasingly, we live in a social environment that disconnects us from the source of our food: food comes from supermarkets and restaurants, not farms and the land or sea. Our social context devalues the preparation of food in the home and promotes quick and easy meals from the freezer. The time investment in sharing meals is less significant than the time saved by drive-through or take-out.⁴⁵ Yet, we continue to celebrate life and traditions through sharing food, since food and eating have strong social dimensions.

Our understanding of culture is enhanced by examining that which is culturally foreign to us. For example, as Willows³³ states, "Of importance to understanding the role that culture plays in determining food choice in Aboriginal communities is that the activities required to procure traditional food are not merely a way of obtaining food but, rather, a mode of production that sustains social relationships and distinctive cultural char-

acteristics.” (pg. S33) Juxtaposed against mainstream Canadian culture, which, as previously described, includes a strong social dimension to food and eating, the value of food in sustaining social relationships and cultural characteristics is not foreign at all.

The question that we face is, have we freely chosen our cultural destiny or have we allowed our “choices” to be dictated by interests inconsistent with the promotion of health? If, as Power argues,³⁸ “one of the conditions for improving the food practices of... Canadians is an improvement in the dominant food culture and food norms, then it will be important to characterize food cultures and food norms in this country, plus the most effective means of shifting them.” (pg. S40) Examining food practices through a broad policy lens is one means of assessing the potential for creating a cultural context and supportive social environment for the promotion of healthy eating.

Collective determinants, Part 2: Creating supportive environments for healthy eating through healthy public policy

Policies define what is considered important and guide our choices. Individuals may have implicit personal food policies and make choices according to family preferences, nutritional value, cost, environmental sustainability, religious or numerous other reasons. Policies at the local, regional and national level can have a significant impact on our collective food choices and thus act as determinants of healthy eating. The capacity to make large-scale macrosystem changes in the social environment to promote healthy eating is, in part, dependent upon political will.

Some of the less controversial and well-established policy approaches to the promotion of healthy eating deal with dietary guidance and attempt to work through improving nutritional knowledge and perceptions of healthy eating. Health Canada promotes the health and well-being of Canadians by collaboratively defining, promoting and implementing evidence-based nutrition policies and standards in documents such as *Canada's Food Guide to Healthy Eating*⁵⁴ and *Canada's Guidelines for Healthy Eating*.⁵⁵ These documents underpin nutrition and health policies, and

standards and programs across the country, and they serve as a basis for a wide variety of healthy living initiatives. The national plan of action on nutrition, *Nutrition for Health: An Agenda for Action (1996)*⁵⁶ builds on the population health model and sets out strategic directions to encourage policy and program development that is coordinated, intersectoral, supports new and existing partnerships, promotes the efficient use of limited resources and encourages relevant research to improve the nutritional health of Canadians.

In a physical environment context, policies that protect the food supply through protection of the natural environment, such as preventing industrial contamination of food and water, have potential macro-level impacts on opportunities for healthy eating. Agricultural policies intersect with economic policies in influencing the availability of a safe, nutritious and affordable food supply.

Given the evidence linking lower socioeconomic status and social inequity to poorer diet and nutritional status, policies that redistribute income and provide a social safety net (income taxes, provincial health care taxes) act to promote health. Protecting and rebuilding Canada's social safety net may hold promise for promoting healthy eating. Specific policies, such as monitoring income support to ensure that it is adequate to purchase the components of a healthy diet, as recommended in *Nutrition for Health: An Agenda for Action (1996)*,⁵⁶ may also influence healthy eating.

In the context of a “consumer culture”, policies provide protection to consumers by counterbalancing prevailing marketing motivated by profit, not health. For example, taxation policies could subsidize the cost of low-energy, nutrient-dense food with taxes of sufficient magnitude to affect sales of high-energy, low-nutrient dense foods.⁵⁷ These potential policy levers promote healthy eating through a changed price structure for food that favours purchase of more nutritious choices.⁵⁸ Taxation has been successfully used in some jurisdictions as a disincentive for snack food purchase⁵⁹ or a means to generate revenue for health promotion.⁶⁰ It has been noted that Canada's GST/HST system provides a potential model for a changed price structure for food.⁴¹ There

remains much research to be done on the public acceptability of such policies, and on the level of taxation or subsidization necessary to motivate changes in consumer behaviour.

Similarly, given the extent of exposure to food advertising, the majority of which is for foods of lower nutritional quality, restrictions on advertising may hold promise as a policy lever. Given the potential opposition to restrictive advertising by corporations and civil libertarians, it is important to recognize that public support for such policy change is essential for success.⁵⁹ Research is needed to evaluate the impact on healthy eating of current advertising restrictions, such as Quebec's restrictions on advertising to children.⁶¹ The role of media literacy training to promote resistance to advertisements also requires investigation. For both taxation and advertising, learning from successes in tobacco reduction is recommended, including taking into account the differences between tobacco and food products. Again, the process of intervening in macro-level environments and the impact of such interventions on the promotion of healthy eating require significant investment in research.

Policy is a powerful means of mediating multiple environments. Dietary guidance mediates an environment of multiple, conflicting food and nutritional messages to create an environment for informed individual choice. Environmental protection policies can mediate the effects of industry on the physical environment by protecting the food supply. Economic policies can mediate food affordability. Social policy can mediate corporate-driven economic interests, support disadvantaged Canadians to become self-sufficient, and can mediate a culture of food consumerism to create a cultural context and supportive social environment for the promotion of healthy eating.

SUMMARY AND CONCLUSIONS

This paper used a population health perspective to examine the complex set of interactions among the determinants of healthy eating. Although determinants of healthy eating are intimately connected, for clarity of understanding the synthesis of current knowledge on determinants of healthy eating was organized as follows:

1) individual determinants of personal food choices, 2) collective determinants, including a) environmental determinants as the context for eating behaviours and b) public policies as creating supportive environments for healthy eating. Individual determinants of personal food choice, including physiological state, food preferences, nutritional knowledge, perceptions of healthy eating and psychological factors, are not sufficient to explain eating behaviour, which is highly contextual. Collective determinants of eating behaviour include a wide range of contextual factors, such as the interpersonal environment created by family and peers, the physical environment, which determines food availability and accessibility, the economic environment, in which food is a commodity to be marketed for profit, and the social environment. Within the social environment, social status (income, education and gender) and cultural milieu are determinants of healthy eating that may be working "invisibly" to structure food choice. Policy is a powerful means of mediating multiple environments.

This overview and synthesis of determinants of healthy eating reveals basic information gaps, partially associated with limitations of food, nutrition and health surveillance, that pose a barrier to understanding the determinants of healthy eating. Development of a comprehensive, integrated food, nutrition and health surveillance system for Canada would create an information base for understanding the determinants of healthy eating at all levels. In addition, ongoing surveillance would facilitate tracking the impacts of interventions.

Applying a population health promotion lens to understanding the determinants of healthy eating provides insight into identifying gaps for further research, which may help prioritize action strategies for the promotion of healthy eating. Although there are some gaps in knowledge regarding individual determinants of healthy eating, there are significant gaps in knowledge regarding collective determinants. Understanding the complex interactions among multiple environments and policy contexts for individual food choice is essential to guide efforts to promote and support healthy eating in Canada. In addition, there are huge gaps in our understanding of the process of intervening in

macro-level environments, including policy-related initiatives, and the impact of such interventions on the promotion of healthy eating. Environmental determinants of food choice and policy contexts for promoting healthy eating, therefore, require significant investment in research.

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