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Research report

Assessment of consumers' level of engagement in following recommendations for lowering sodium intake

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ABSTRACT

Population-wide sodium reduction strategies encourage consumer participation in lowering dietary sodium. This study aims to measure and rank consumers' level of engagement in following 23 recommendations to reduce dietary sodium and to compare variation in level of consumers' engagement by sociodemographic sub-groups. The study included 869 randomly selected participants of an online food panel survey from Ontario during November and December 2010. Rasch modelling was used for the analysis. Consumers were less likely to be engaged in 9 out of the 23 recommendations, in particular those related to avoiding foods higher in sodium and implementing sodium reduction strategies while eating in restaurants. Higher level of consumers' engagement was observed in relation to food preparation practices, including use of low sodium ingredients. In comparison to the relevant reference group, men, older individuals, with lower educational level, single, and those who do not prepare food from scratch showed an overall lower level of engagement in following recommendations to lowering dietary sodium, particularly related to avoiding processed foods. These data provide novel insights and can inform public education campaigns, and highlight the need for interventions and programs targeted at the food supply that can assist consumers in lowering their sodium intake.

Introduction

The negative health and economic consequences of high sodium intake are widely recognized, including high blood pressure, stroke, cardiovascular disease, premature mortality and high health care costs (Bibbins-Domingo, Chertow, et al., 2010; Ezzati, Lopez, Rodgers, Vander Hoorn, & Murray, 2002; Joffres, Campbell, Manns, & Tu, 2007; Lawes et al., 2006; Penz, Joffres, & Campbell, 2008; Strazzullo, D'Elia, Kandala & Cappuccio, 2009). Sodium-related increases in blood pressure are common in adults and are increasingly prevalent in children (Yang, Zhang, Kuklina, Fang, et al., 2012). Sodium reduction results in desirable blood pressure lowering effects in both normotensives and hypertensives (He & MacGregor, 2002). Therefore, on a population level, sodium reduction strategies are considered a viable and effective intervention for reducing cardiovascular disease risk (Health Canada, 2010; Joffres et al., 2007).

A multi-stakeholder approach has been taken by many countries to facilitate population-wide sodium reduction, requiring action by policy makers, health practitioners, the food industry and the public (He & MacGregor, 2009). Canada's Sodium Reduction Strategy, for example, aims to have 50% of the population consuming less than 2300 mg by 2016, and includes recommendations targeted at the food supply, research and education and awareness (Health Canada, 2010). Consumer education constitutes a large proportion of sodium reduction efforts. Such education focuses on increasing sodium knowledge and teaching tips and skills to promote effective sodium reduction practices while purchasing food, preparing food and eating outside the home. Adherence to a lower sodium diet, however, has been documented as a major challenge, largely due to the high levels of sodium in processed and prepared foods. Indeed, the majority of Canadians, and individuals in other countries, consume sodium levels that exceed recommendations (Garriguet, 2007; WHO, 2011) which to some extent may be due to non-adherence with sodium reduction recommendations.

Despite the efforts to reduce sodium intake at the population level, there is still a significant gap between the recommended sodium intake for a healthy diet and actual consumption, (Garriguet, 2007; WHO, 2011) and the average levels of hypertension in the population is still very high (Health Canada, 2010). According to Wilkins et al. (2010), one in five Canadians (19%) has high blood pressure and the 83% of them are aware of their condition and most of them receive treatment.

A recent Canadian survey found that 67.0% of respondents were concerned about dietary sodium and 59.3% were currently taking

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action to limit sodium intake, particularly among the elderly and those with hypertension (Arcand et al., 2013). However, there is limited data available regarding the extent to which consumers engage in various actions or recommendations to limit sodium consumption. Implementing personal actions to lower sodium intake may prove challenging for many individuals since sodium is widespread in across the food supply and because consumers are increasingly reliant on processed and prepared foods items. It is important to understand which actions consumers are taking for sodium reduction, so that tailored educational campaigns can be created to meet population needs. The purpose on this study is to describe and rank 23 dietary recommendations for reducing sodium intake in relation to the level of extent to which consumers engage in such behaviours, and to determine any differences by gender, level of education, age, marital status and by those who prepare versus those to do not prepare most of their food from scratch.

Methods

Participants

Data was obtained from an online sodium-focused survey administered to members of the Ontario Consumer food panel during November and December 2010. Panel participants were recruited through random digital dialling by a market research company. Stratification of the panel by gender, age and educational level in order to reflect the demographic profile of Ontario based on 2006 Census of Canada (Statistics Canada, 2007) occurred during recruitment. In comparison to the Ontario population, the sample used in this study was overrepresented by women, people above 50 years old and with a university certificate/diploma or degree and underrepresented by men, persons with high school or less and age below 40 years old (see Table 1). The survey was sent to a sample of 4679 Ontarians. A total of 1385 surveys were completed (30% response rate).

Knowledge of the relation between sodium and high blood pressure was assumed based on studies indicating that most Canadian are knowledgeable of issues related food nutrition and health (Henson, Blandon, & Cranfield, 2010; Henson, Blandon, Cranfield, & Deepananda, 2010). In addition, this assumption was validated by using questions assessing respondents' knowledge of the relationship between sodium consumption and high blood pressure and other related diseases. For example for the question how much do you think sodium affects your health? The majority (86%) answered 3 or higher (on a scale from 1 = 'a little' to 5 = 'a great deal'). Likewise, 71% of respondents agreed to some extent (3 or higher in a 5 point Likert scale) that their health will improve if they reduce their sodium consumption (see Table 2).

Table 1
Demographic characteristics of participants and comparison with Ontario population.

Characteristics	Sample survey (n = 1368) (%)	Ontario population (%)[a]
Gender		
Male	32.7	49.5
Female	67.3	50.5
Age		
20–29	5.9	19
30–39	15.4	21
40–49	23.2	26
50–59	28.9	21
60–69	26.6	13
Education		
Less than high school	1.7	22.2
High school graduation certificate or equivalent	15.0	26.8
Trades certificate diploma	8.5	7.99
University Certificate/Diploma below Bachelor level/College	27.2	18.4
University	47.5	26.6

[a] Statistics Canada – 2006 Census. Catalogue Number 92-591-XWE.

Questionnaire

The questionnaire asked about behaviours and attitudes towards dietary sodium. Survey questions were developed based on expert opinions and were adapted from national surveys and studies on sodium (CASH, 2010; Grimes, Riddell, & Nowson, 2009; Health Canada, 2010; Hypertension Canada, 2010a, 2010b; Public Health Agency of Canada, 2009). Each question was reviewed and pilot tested among a small group of participants from Guelph, Ontario. Snap 10 Professional Survey Software and Webhost (Snap Surveys Ltd., 2009) were used for designing the survey and for collecting data. Participants provided informed consent at the time of survey completion. Research ethics board approval was obtained from the University of Guelph.

Variables

Level of engagement in following recommendations for lowering sodium intake

Participants were asked to what extent they personally have followed each of 23 recommendations aimed at reducing dietary sodium (Table 2). The exact wording of the question was "Below are given some of the common recommendations for reducing the amount of sodium that people eat. To what extent have you personally followed each of these recommendations over the last year?" The recommendations were presented on a Likert scale format with a response set with values from 1 to 5 (from 1 = not at all

Table 2
23 Dietary recommendations for reducing sodium intake.

Requiring modification of food preparation
1.Cook with fresh foods
2. Drain and rinse canned vegetables and beans before use
3. Limit the use of high sodium ingredients such as stocks or bouillon cubes during cooking
4. Avoid the use of condiments such as soy sauce, pickles, ketchup and mustard
5. Use spices and/or seasoning rather than salt during cooking
6. Use a salt substitute instead of table salt
7. Do not add salt during cooking
8. Use vegetable/olive oil instead of margarine/butter
9. Do not add salt at the table

Requiring avoidance of higher sodium food items
10. Limit the consumption of salty cold cuts (salami, bacon, ham, smoked meats, etc.)
11. Avoid the consumption of processed foods
12. Limit the consumption of bread
13. Avoid ready-to-eat dishes, like pasta, poultry and red meat mixed dishes
14. Avoid salty snacks
15. Avoid eating pizza
16. Limit the consumption of cheese

Requiring modification for food selection at the grocery store or while eating out
17. Read the information about sodium on the packaging labels when shopping for food.
18. At restaurants ask for salt not to be used in preparing your meal
19. Ask for sauces/dressings on the side of your plate when eating out
20. At restaurants ask for low-sodium options on the menu
21. Buy foods labelled as low or reduced sodium
22. Choose low/reduced sodium brands when a choice of particular food products is available
23. Choose vegetable juices that are low in sodium