Use of Nutrition Information and Understanding of "Percent Daily Value" on Nutrition Facts Tables: Evaluating the Impact of a National Public Education Campaign among Youth and Young Adults in Canada

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ABSTRACT

Purpose: In 2010, Health Canada implemented a national campaign to improve understanding of "percent daily value" (%DV) in Nutrition Facts Tables (NFTs). This study examined sources of nutrition information and knowledge of %DV information communicated in the campaign.
Methods: Respondents aged 16–30 years completed the Canada Food Study in 2016 (n = 2665). Measures included sources of nutrition information, NFT use, and %DV knowledge based on the campaign message ("5% DV or less is a little; 15% DV or more is a lot"). A logistic regression examined correlates of providing "correct" responses to %DV questions related to the campaign messaging.
Results: Overall, 7.2% (n = 191) respondents correctly indicated that 5% is "a little", and 4.3% (n = 115) correctly indicated 15% DV was "a lot". Only 4.0% (n = 107) correctly answered both. Correct recall of %DV amounts was not associated with number of information sources reported, but was greater among those who were female, were younger, and reported greater NFT understanding and serving size information use (P < 0.05 for all).
Conclusions: Results show low awareness of messaging from the *Nutrition Facts Education Campaign* among young Canadians. Such a mass media campaign may be insufficient on its own to enhance population-level understanding of %DV.

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RÉSUMÉ

Objectif. En 2010, Santé Canada a mis en œuvre une campagne nationale visant à améliorer la compréhension du « pourcentage de la valeur quotidienne » (% VQ) des tableaux de la valeur nutritive (TVN). Cette étude avait pour but d'examiner les sources d'information nutritionnelle et les connaissances relatives à l'information sur le % VQ communiquée dans le cadre de la campagne.
Méthodes. Les répondants âgés de 16 à 30 ans ont participé à l'Étude sur les aliments au Canada en 2016 (n = 2 665). Les mesures comprenaient les sources d'information nutritionnelle, l'utilisation des TVN et les connaissances sur le % VQ sur la base du message véhiculé lors de la campagne (« 5 % VQ ou moins, c'est peu; 15 % VQ ou plus, c'est beaucoup »). Une régression logistique a été utilisée pour examiner la corrélation entre des réponses « correctes » aux questions sur le % VQ et les messages de la campagne.
Résultats. Dans l'ensemble, 7,2 % (n = 191) des répondants ont correctement indiqué que 5 % représentait « peu » et 4,3 % (n = 115) ont correctement indiqué que 15 % VQ était « beaucoup ». Seulement 4,0 % (n = 107) ont répondu correctement aux deux questions. Le fait de se souvenir des cibles de % VQ n'était pas associé au nombre de sources d'information indiqué, mais les femmes, les jeunes et les personnes qui ont déclaré mieux comprendre les TVN et se servir de l'information sur la taille des portions (P < 0,05 en tout) s'en souvenaient davantage.
Conclusions. Les résultats montrent que les jeunes canadiens sont peu sensibilisés aux messages véhiculés dans la *Campagne d'éducation sur le tableau de la valeur nutritive*. Une telle campagne de médias de masse ne suffirait peut-être pas à elle seule à améliorer le niveau de compréhension de la population quant au % DV.

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INTRODUCTION

In Canada, rates of diet-related disease are rising, indicating the need for effective, nutrition-based interventions [1, 2]. Nutrition education and consumer information represent an important component of nutrition policy to promote healthy eating [3]. The Nutrition Facts Table (NFT) is among the most common and credible sources of nutrition information [4–8]; however, consumers struggle to understand and apply quantitative nutrient information displayed in NFTs [9–13]. For example, approximately one-third of Canadian adults cannot identify the percent daily value (%DV) of nutrients on NFTs [14], and have difficulty determining what percentage constitutes a little or a lot of a nutrient [9, 13].

In an effort to increase consumers' understanding and use of NFTs, Health Canada launched the *Nutrition Facts Education Campaign* (NFEC), a national campaign delivered

via media advertising from 2010–2015 [13], making use of a logo indicating the primary message that "5% DV or less is a little" and "15% DV or more is a lot" (see Figure 1 in the Supplementary File[1]). The campaign identified women 19–54 years with children aged 2–12 years who use the NFT to inform food choices, as the primary target audience, although the campaign was widely disseminated across media and marketing channels. Overall, the campaign represented one of the most comprehensive public education efforts to enhance comprehension of nutrient amounts in the NFT to date in Canada [15]. A formal evaluation of the NFEC in 2015 found that 30% of the target audience reported being aware of the "a little" or "a lot" %DV concept; however, the study used prompted awareness of the campaign logo, which may overestimate actual levels of exposure and recall [16]. Thus, the aim of the current study was to assess young Canadian's knowledge of the campaign's primary messages without using prompted awareness of the campaign logo and to examine correlates of education campaign knowledge.

METHODS
Data were collected via self-completed online surveys as part of the 2016 Canada Food Study (CFS), and 2665 respondents were retained for analysis. The study was reviewed by and received ethics clearance through a University of Waterloo Research Ethics Committee (ORE #21631). A full description of study methods can be found in the technical report [17].

Measures
Respondents were asked about their sex, age, race, body mass index, health literacy [18], and parental status. Respondents were asked "*What percent daily values (%DV) does Health Canada consider to be 'a LITTLE'?*" (correct response was considered to be "5%"), and "*What percent daily values (%DV) does Health Canada consider to be 'a LOT'?*" (correct response was considered to be "15%"). Respondents were also asked about frequency of NFT use, the type of information looked for on the NFT (including serving size), ease of understanding, and whether they received information on food or nutrition from a variety of sources in the past 12 months (number of options were summed to create an index, to yield a scale from 0 to 10). A full description of measures can be found in the main survey [19].

Data analysis
Descriptive statistics were used to examine the proportion of the sample with correct responses to either or both questions. A logistic regression examined correlates of providing "correct" responses to both %DV questions (incorrect response to 1 or both %DV questions = 0, correct response to both %DV questions = 1), adjusted for sociodemographic variables selected a priori, including variables known to be associated with label

use; self-rated nutrition knowledge; information sources; frequency of NFT use; NFT understanding; and use of serving size information. Analyses were conducted using IBM SPSS Statistics (IBM SPSS Statistics for Windows, version 24.0. IBM Corp., Armonk, New York). Post-stratification sample weights were constructed based on population estimates for 2016 from the 2011 Census [20]. Five sample probabilities were created for 30 demographic groups (age by sex) based on weighted proportions and applied to the data set. Weights were calculated as (1/sample probability) for each group, and applied to the full data set [17]. Estimates are weighted unless otherwise specified.

RESULTS AND DISCUSSION
Demographic characteristics of the sample are presented in Table 1. Very few respondents could accurately identify the primary message in the NFEC: when asked what %DV Health Canada considers to be "a little" and "a lot", 7.2% (n = 191) and 4.3% (n = 115) provided correct responses, respectively, and 4% (n = 107) of respondents provided correct responses to both %DV questions. Results of the logistic regression model can be found in Table 2. Correct responses to the "5% a little, 15% a lot" question were negligible, suggesting that the campaign may have had limited reach among young people in Canada. Correct responses were somewhat higher among females—the primary target of the campaign; however, identification of the primary campaign messages was still low even among this primary audience (5%). Findings are similar to the formal evaluation of the NFEC [16], which employed different methods to test recall of the campaign logo and found that 30% of the general population reported being aware of the "a little" or "a lot" %DV concept; however, those that recalled the campaign were no more likely to accurately apply the %DV information in a functional task [16]. Correct responses in the current study were slightly higher among women, but lower among older participants, with no significant differences among parents, those who reported more information sources (see Supplementary Table 1[1]), or those who use the label more frequently. These findings may suggest that the campaign impact was poor even among the campaign's target group (women 19–54 years with children aged 2–12 years who use the NFT to inform food choices).

Respondents who reported looking specifically for serving size information on NFTs and who self-reported greater understanding of NFTs were more likely to accurately identify %DV amounts communicated in the campaign, but knowledge among all sub-populations was low. For example, only 8.8% of respondents who reported that NFTs were "very easy to understand" provided correct responses. This finding is consistent with previous research demonstrating that consumers' self-reported perceptions of how well they understand the NFTs overestimates their actual ability to use and apply the information [4, 11, 12, 21].

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[1]Supplementary data are available with the article through the journal Web site at http://dcjournal.ca.www.nrcresearchpress.com/doi/suppl/10.3148/cjdpr-2019-010.

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REPORT / RAPPORT

Table 1. Sample characteristics.

Characteristic	Unweighted % (*n*)	Weighted % (*n*)
Total	2665	2661
Sex		
Female	62.0 (1653)	50.5 (1346)
Male	38.0 (1012)	49.5 (1319)
Age		
Mean	21.8	23.4
Standard deviation	3.8	4.2
Race		
White only	47.7 (1272)	48.7 (1298)
Chinese only	8.6 (230)	8.4 (224)
South Asian only	6.7 (178)	6.9 (185)
Black only	5.6 (149)	5.4 (144)
Aboriginal inclusive	4.1 (108)	3.7 (99)
Mixed/other/not stated/missing	27.3 (728)	26.8 (715)
Body mass index		
Underweight	7.1 (188)	6.0 (161)
Normal weight	54.6 (1454)	54.8 (1461)
Overweight	16.9 (451)	18.6 (495)
Obese	8.5 (226)	8.7 (231)
Missing	13.0 (346)	11.9 (317)
Literacy		
High likelihood of limited literacy (score 0−1)	12.5 (334)	12.6 (335)
Possibility of limited literacy (2−3)	21.2 (565)	19.7 (524)
Adequate literacy (4−6)	66.3 (1766)	67.8 (1806)
Parent status		
Children	2.9 (77)	4.5 (119)
No children	97.1 (2588)	95.5 (2546)
Self-rated nutrition knowledge		
Not at all knowledgeable	5.0 (134)	4.8 (127)
A little knowledgeable	29.6 (788)	28.0 (746)
Somewhat knowledgeable	46.4 (1237)	47.1 (1256)
Very knowledgeable	16.6 (442)	17.3 (462)
Extremely knowledgeable	2.4 (64)	2.8 (74)

Note: Frequencies were based on a logistic regression model. Sample members are weighted equally in unweighted results. Sample weights were applied to data based on population estimates for 2016 from the 2011 Census in weighted results.

Strengths and limitations

The study did not use probability-based sampling methods; therefore, the study cannot provide nationally representative estimates. Some respondents were below the age of 16 years during the campaign, and this specific age group was not the main target for the NFEC, which may also impact findings. The current study did not directly assess recall or awareness of the NFEC, which would help to distinguish respondents who were exposed to the campaign compared to those that were not. Additionally, the survey was lengthy which may have resulted in participant fatigue.

RELEVANCE TO PRACTICE

Despite a well-resourced national media campaign implemented for several years with substantial industry partnership, population-level knowledge of the primary campaign message from the NFEC among this age group was negligible. Mass media campaigns may be inadequate to address young people's difficulties in comprehending quantitative nutrient information on food labels. Consumers may be better served by changing the content of the NFT itself. Accordingly, Health Canada proposed adding a footnote to all NFTs indicating "5% DV or less is a little; 15% DV or more is a lot" [3].

Table 2. Estimates from the logistic regression model for correct responses to %DV questions.

	% Correct	AOR (95% CI)	P
Total	4%	—	—
Sex	—	—	$\chi^2 = 8.3, P = 0.004$
Male	2.7%	Reference	—
Female	5.3%	1.88 (1.22, 2.89)	—
Age	—	—	$\chi^2 = 3.9, P = 0.04$
Mean, standard deviation	22.76, 3.90	0.95 (0.90, 1.00)	0.04
Race	—	—	$\chi^2 = 5.7, P = 0.3$[a]
White only	4.5%	—	—
Chinese only	6.3%	—	—
South Asian only	4.5%	—	—
Black only	3.0%	—	—
Aboriginal inclusive	2.4%	—	—
Mixed/other/not stated/missing	2.8%	—	—
Body mass index	—	—	$\chi^2 = 2.9, P = 0.6$[a]
Underweight	3.9%	—	—
Normal weight	4.5%	—	—
Overweight	4.6%	—	—
Obese	1.8%	—	—
Missing	2.5%	—	—
Literacy	—	—	$\chi^2 = 0.6, P = 0.7$[a]
High likelihood of limited literacy (score 0–1)	1.8%	—	—
Possibility of limited literacy (2–3)	3.1%	—	—
Adequate literacy (4–6)	4.7%	—	—
Parent status	—	—	$\chi^2 = 0.009, P = 0.9$
Children	3.3%	Reference	—
No children	4.1%	0.95 (0.32, 2.89)	—
Self-rated nutrition knowledge (continuous)	—	—	$\chi^2 = 3.4, P = 0.07$
Not at all knowledgeable	1.7%	—	—
A little knowledgeable	2.5%	—	—
Somewhat knowledgeable	4.2%	—	—
Very knowledgeable	5.0%	—	—
Extremely knowledgeable	14.9%	—	—
Sources of information index (continuous)	—	—	$\chi^2 = 2.9, P = 0.09$
Mean, standard deviation	2.70, 2.23	1.09 (0.99, 1.19)	0.09
NFT use[b] (continuous)	—	—	$\chi^2 = 3.8, P = 0.05$
Never	1.7%	—	—
Rarely	2.3%	—	—
Sometimes	3.3%	—	—
Most of the time	7.4%	—	—
Always	7.7%	—	—
NFT understanding[b] (continuous)	—	—	$\chi^2 = 7.6, P = 0.006$
	—	1.43 (1.11, 1.84)	0.006
Very hard to understand	1.9%	—	—
Hard to understand	2.7%	—	—
Neither hard nor easy	2.4%	—	—
Easy to understand	4.8%	—	—
Very easy to understand	8.8%	—	—
Use of NFT serving size information	—	—	$\chi^2 = 11.2, P = 0.001$
Does not look for serving size info	2.7%	Reference	—
Looks for serving size info	7.5%	2.04 (1.34, 3.10)	—

Note: NFT, Nutrition Facts Table.
[a]Specific contrasts not shown because categorical variable is not significant.
[b]For use of NFT and NFT understanding, higher scores = greater use and understanding.

This approach is more cost-effective and has the potential for greater efficacy given closer proximity between the exposure to health information and the target behaviour [22].

Alternative measures not requiring math skills may be required to achieve meaningful differences in use and understanding of nutrient levels among young people, such as integrating "low" and "high" descriptors directly into the NFT [20], or using front-of-package symbols and colours, as Health Canada has proposed [6, 23]. Future research should examine the impact of these labelling policies in Canada and the extent to which they decrease disparities in consumer understanding and use of nutrient information.

Conflicts of interest: The authors declare that they have no competing interests.

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