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Do we provide meaningful guidance for healthy eating? An investigation into consumers' interpretation of frequency consumption terms

Lesley King
University Of Sydney

Wendy L. Watson
Cancer Council, NSW

Kathy Chapman
Cancer Council, NSW

Bridget Kelly
University of Sydney, bkelly@uow.edu.au

Jimmy Chun Yu Louie
University of Sydney, jlouie@uow.edu.au

See next page for additional authors

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Abstract
OBJECTIVE: To investigate consumers' understanding of terms commonly used to provide guidance about frequency and quantity of food consumption. METHODS: A survey of 405 shoppers explored how frequently consumers thought food labeled with the terms "eat often," "eat moderately," "eat occasionally," "a sometimes food," and "an extra food" should be eaten. In a separate phase, 30 grocery buyers responded to open-ended questions about their interpretation of these terms. RESULTS: Responses indicated significant differences in meaning between the terms. However, the specific interpretation of each term varied considerably across respondents. The qualitative research found the terms to be highly subjective, and there was a high degree of uncertainty about the meaning of the term "an extra food" in particular. CONCLUSIONS AND IMPLICATIONS: Food frequency and descriptive terms currently used do not provide meaningful or consistent nutritional guidance. There is a need for simple, unambiguous terminology.

Keywords
consumers, frequency, consumption, terms, provide, meaningful, guidance, healthy, eating, investigation, do, into, we, interpretation

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Authors
Lesley King, Wendy L. Watson, Kathy Chapman, Bridget Kelly, Jimmy Chun Yu Louie, Clare Hughes, Jennifer Crawford, and Timothy P. Gill

Research Brief

Do We Provide Meaningful Guidance for Healthful Eating? An Investigation into Consumers' Interpretation of Frequency Consumption Terms

Lesley King, MPsychol[1]; Wendy L. Watson, MAppSc[2]; Kathy Chapman, M Nutr & Diet[2]; Bridget Kelly, MPH, APD[1]; Jimmy C. Y. Louie, M Nutr Diet, APD[1,3]; Clare Hughes, MPH[2]; Jennifer Crawford, BA Hons[4,†]; Timothy P. Gill, PhD[1,3]

ABSTRACT

Objective: To investigate consumers' understanding of terms commonly used to provide guidance about frequency and quantity of food consumption.

Methods: A survey of 405 shoppers explored how frequently consumers thought food labeled with the terms "eat often," "eat moderately," "eat occasionally," "a sometimes food," and "an extra food" should be eaten. In a separate phase, 30 grocery buyers responded to open-ended questions about their interpretation of these terms.

Results: Responses indicated significant differences in meaning between the terms. However, the specific interpretation of each term varied considerably across respondents. The qualitative research found the terms to be highly subjective, and there was a high degree of uncertainty about the meaning of the term "an extra food" in particular.

Conclusions and Implications: Food frequency and descriptive terms currently used do not provide meaningful or consistent nutritional guidance. There is a need for simple, unambiguous terminology.

Key Words: food labeling, nutrition policy, consumer health information (*J Nutr Educ Behav.* 2012; ■ :1-5.)

INTRODUCTION

Healthful dietary patterns are determined by both the quantity and nutrient quality of food eaten.[1,2] Nutrition guidance and education, at both individual and population levels, need to provide simple, comprehensible messages about the recommended quality and quantity of food to be consumed. In practice, consumers are exposed to nutrition information every day, including through advertising, media, food packaging, and peers, as well as health sources, but many messages are inaccurate[3-6] or not understood by consumers.[7-9]

It is critical to ensure that nutrition guidance is comprehensible to consumers.[10,11] Clear communication of nutritional messages is particularly important in relation to energy-dense, nutrient-poor food, as population surveys show high numbers of adults and children consume excessive amounts of energy-dense, nutrient-poor food.[12-15]

Population-targeted nutrition information seeks to communicate messages based on dietary guidelines. In many countries, such as the United States (US), the United Kingdom, and Australia, information is typically communicated using different formats (including written guides, Web resources, and labels) and a mix of visual cues, such as images and color coding, as well as didactic text.[2,16,17] Both food frequency and descriptive terms are used as part of such messages. For example, the recent Australian Government *Swap It, Don't Stop It* campaign uses the phrase "swap often for sometimes" and suggests to "eat less 'sometimes' food."[18] The current Australian Guide to Healthy Eating refers to "extra foods" as food items other than core food items "that may be eaten sometimes or in small amounts," and that "foods such as cakes, biscuits, hot chips and sugary drinks should be consumed only occasionally."[2] It also recommends consuming "moderate amounts of animal foods."[2] The US Dietary Guidelines consumer brochure states, "Make major sources of saturated fats—such as cakes, cookies, ice cream, pizza, cheese, sausages, and hot dogs—occasional choices, not everyday foods."[17] In the United Kingdom,

[1]Prevention Research Collaboration, School of Public Health, University of Sydney, Australia
[2]Cancer Council New South Wales, Sydney, Australia
[3]Cluster for Public Health Nutrition, Boden Institute of Obesity, Nutrition, Exercise and Eating Disorders, University of Sydney, Australia
[4]Curly Questions, Sydney, Australia
[†]Jennifer Crawford was affiliated with the Ipsos-Eureka Social Research Institute at the time this study was completed.
Address for correspondence: Lesley King, MPsychol, Prevention Research Collaboration, Level 2 K25, University of Sydney, 2006 Sydney, Australia; Phone: +61 2 9036 3291; Fax: +61 2 9036 3184; E-mail: lesley.king@sydney.edu.au

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the government advice is based on the Eatwell Plate and 8 tips for eating well, which use the terms "eat more" and "cut down on saturated fat and sugars."[16,19] Nutrition information to guide consumers on the quantity or frequency that food should be consumed has also been proposed by the food industry in some front-of-package labeling schemes.[20]

Despite the use of food frequency and other nutrition advice terms across different nutrition communication and information systems, there is limited research regarding how consumers interpret nutritional terminology. To the authors' knowledge, there is no published information about how consumers respond to frequency-related terms, that is, what they understand by the terms, or how these terms might influence consumption behaviors. This study sought to investigate consumers' comprehension of selected food frequency and related descriptive terms.

METHODS

Quantitative Survey

A quantitative survey was undertaken with adults (≥ 18 years old), who had the main or shared responsibility for household grocery purchases. Participants were recruited at 2 shopping centers in metropolitan areas of Sydney, Australia, 1 in a high and 1 in a medium socioeconomic area.[21] Quotas for a minimum number of people in selected age groups were used to ensure a spread of ages. Individuals who themselves, or their close family or friends, were employed in the food or marketing industries, or who were nutritionists, were excluded from the sample, as these groups were considered to have better nutrition knowledge than the general population.

In these shopper-intercept surveys, participants were asked how frequently they thought a food item that was labeled with the terms (1) eat often; (2) eat occasionally; (3) eat moderately; (4) an extra food; and (5) a sometimes food should be eaten. Participants were asked to select their answer from a list of possible interpretations, including: "more than once per day"; "once per day"; "two to three times per week"; "once per week"; "once per fortnight"; "once per month"; "less than once per month"; "never"; "it depends on the type of food"; "I am unsure"; and "other (specify)." Interviews took an average of 7 minutes. Data collection by a market research company occurred over 3 days in March, 2011. All interviewers participated in a training session prior to the fieldwork, and they were briefed on the protocols for participant selection, stimuli for testing, rotation procedures, and survey questions. Survey questions were developed through testing of participants' comprehension and ease of response in a pilot study (n = 10).

Data were analyzed using SPSS (version 14.0, SPSS Inc., Chicago, IL, 2004). The Wilcoxon signed-rank test for pairwise comparisons was used to test differences in perceived meaning for the following pairs of terms: Often-Occasionally; Occasionally-Moderately; Extra food-Sometimes food. The Wilcoxon signed rank test was used to compare 2 sets of scores that came from the same participants. Frequency terms were ranked to give a score for each term for each respondent (from 1 for more than once a day, to 7 for never). As data were not normally distributed, this test was used instead of the dependent samples *t* test.

Qualitative Interviews

Individual face-to-face interviews with adults (≥ 18 years old) who had the main or shared responsibility for grocery buying in their household were conducted between December, 2010 and February, 2011. The interview included open-ended exploratory questions regarding participants' understanding of the 5 food frequency and descriptive terms, as used in the quantitative study. The open-ended questions were tested for ease and appropriateness of responses in a pilot study (n = 10). To supplement and illustrate the findings of the quantitative survey, qualitative responses are presented here.

Participants were recruited by the market research company from a database of pre-existing contacts, maintaining a spread of ages, sexes, and education levels. The same exclusion parameters were used. All interviews were conducted by experienced qualitative facilitators who had been briefed on the background and objectives of the study, and the discussion guide.

In the interview, participants were asked how frequently they thought food labeled with each term should be consumed, and why, as an open-ended question. Responses were audiorecorded and transcribed verbatim. Participants received a cash incentive (40 Australian dollars).

Content analysis was used to code responses to the open-ended question. The key codes were independently identified by 2 of the authors (WW, LK), and responses were subsequently scored on the codes. The key codes included: (1) examples of food items; (2) whether the food was nutritionally necessary, or an additional or luxury food item; (3) whether the term was explicitly identified as unfamiliar or unclear; and (4) whether the response took the form of guessing, where participants used the terms "probably," "I imagine," "guessing," or "maybe" to preface or qualify their answer.

The study was approved by the University of Sydney Human Research Ethics Committee. Written consent was obtained from the qualitative interview participants and verbal consent was obtained from the quantitative survey participants.

RESULTS

Survey

The Table provides demographic details of the sample. The sample comprised 405 adults, 79% females, 41% with university qualifications, and 63% born in Australia, and relatively even distribution of ages.

The participants' frequency interpretations of each term are shown in the Figure. The term "eat often" was most frequently interpreted as meaning eat at least once per day (61%). The other terms tested were usually interpreted as meaning that food items should be consumed less frequently than daily.

There were significant differences between the perceived meaning of "eat often" and "eat occasionally," with 367 people identifying that "eat often" meant the food item should be eaten more frequently than if the

Table. Characteristics of Quantitative Study Participants (n = 405)

Characteristic	n (%)
Responsibility for grocery buying	
Main responsibility	313 (77)
Shared responsibility	92 (23)
Sex	
Female	321 (79)
Male	84 (21)
Age (y)	
18-19	5 (1)
20-29	85 (21)
30-39	127 (31)
40-49	91 (22)
50-59	51 (13)
60-69	28 (7)
70-79	18 (4)
Education level[a]	
School only	145 (35)
Diploma or certificate	94 (23)
Degree or diploma from university	165 (41)
Country of birth[b]	
Australia	255 (63)
India	27 (7)
United Kingdom	26 (6)
Other	96 (23)

[a]Did not respond, n = 1; [b]Did not respond, n = 1.

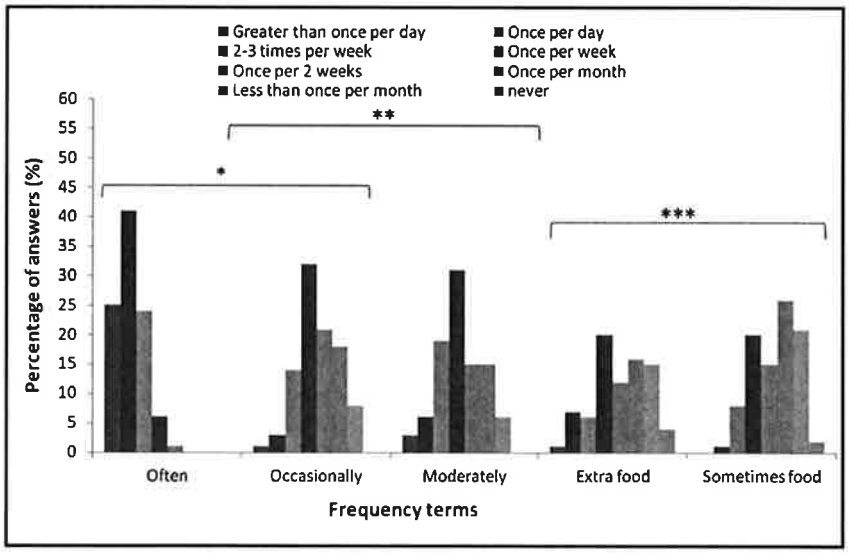

Figure. Frequency responses to each term. *$P < .001$ 'Often' vs 'Occasionally'; **$P < .001$ 'Occasionally' vs 'Moderately'; ***$P < .001$ 'Extra food' vs 'Sometimes food.'

term "eat occasionally" was used ($z = 16.67$, $P < .001$).

The term "eat occasionally" was most commonly understood to mean that a food item should be eaten less frequently than a type of food labeled as "eat moderately"; however, the relative interpretation of these terms was by no means universal. Whereas 188 participants perceived that "eat occasionally" meant a type of food should be consumed less frequently than a food labeled as "eat moderately," 127 thought that "eat occasionally" implied more frequent consumption, and 64 thought the labels had the same meaning ($z = -4.99$, $P < .001$). Overall, "eat moderately" and "eat occasionally" were most frequently understood as meaning that the food item should be consumed once per week (31% and 32%, respectively).

The term "a sometimes food" was interpreted by 26% of participants as food that should be consumed "once per month," and by 21% as something to be eaten "less than once per month"; thus, it indicated the lowest frequency of all terms tested. "An extra food" was most commonly interpreted as "eat once per week" (20%), followed by "once per month" (16%). However, this term had the largest spread of responses across the frequency categories, as well as the highest degree of uncertainty, with 9% responding that it depended on the food, and 8% saying that they were unsure what it meant. Interpretations of "an extra food" and "a sometimes food" were found to be significantly different; 151 responded that "an extra food" meant a food item should be eaten more frequently than when called "a sometimes food," 73 responded that it meant less frequently, and 98 thought that it meant the same ($z = 4.18$, $P < .001$).

Qualitative Interviews

The sample for the supplementary qualitative interviews comprised 30 adults, with 21 females, 12 with a university qualification, and a range of ages (7 aged 20-29 years, 8 aged 30-39 years, 9 aged 40-49 years, 5 aged 50-59, and 1 aged > 60 years). Thirty interviews were sufficient to achieve data saturation; later interviews generated similar comments to earlier interviews, and no additional themes emerged.

Participants' responses to each term are summarized, with the number of specific responses shown as a fraction of the participants to that question (this result varied for each question), where appropriate.

Fruit and vegetables were the most common examples of food items that were identified as appropriate to "eat often," with no further comments on this term. The most common examples of food generated in response to "eat occasionally" included cakes, chocolates, and desserts, and these food items were perceived as those to be eaten as a luxury, treat, or on a special occasion (7/27).

A majority of participants (15/26) described the term "eat moderately" as referring to a small or smaller quantity of food and not necessarily frequency of consumption. For example: "If you ate in moderation, you'd eat a moderate amount... has nothing to do with frequency of consuming" (male, 40-50 years). Various examples of food products that participants thought might be "eaten moderately" included chocolate, pizza, whole milk, red meat, dessert, noodles, and alcohol.

Many participants (13/29) appeared to guess what was meant by "an extra food." For example: "If I had to imagine one, I assume they might be talking about a snack, something you'd consider above a normal meal" (female in her 40s); "I didn't really know what that meant" (female in her 20s). In describing "an extra food," many participants thought the term referred to additional food items,

beyond what was necessary; some described it as a treat or luxury item (4/29), and others (4/29) perceived that it referred to a nutritional supplement, taken to benefit one's health.

Almost half of the participants (11/25) made a guess when considering what was meant by "a sometimes food." For example: "I wasn't a huge fan of that name really. If it was a sometimes food, maybe it's a treat, maybe you have it every one or two months. It didn't mean much to me as a label. It's a bit vague" (female, 20-30 years). Six respondents explicitly stated that the term was unclear or unfamiliar.

DISCUSSION

Although there were significant patterns in the relative interpretation of the terms tested, the interpretations were by no means universal or as expected, with the term "extra food" perceived as suggesting more frequent consumption than a food described as "a sometimes food," for example. The findings support other studies showing that consumers find nutrition guidelines confusing,[22] and previous research showing that Australians have poor understanding of recommended amounts of food items to consume.[23] The variability in interpretation of consumption frequency terms is also consistent with research showing that even when consumers have general awareness of healthful eating messages, they tend to lack specific knowledge.[24] The results of the study indicate that these consumption frequency terms do not communicate precisely or specifically about how often food and beverages are recommended to be consumed, and the results support recommendations to avoid nonspecific and vague advice to consumers such as "balance" and "moderate," and to communicate nutrition advice in a specific and concrete way.[24,25]

This study itself did not test alternative terms for communicating about frequency of consumption, but it was designed as an initial investigation in a sequential approach where the results could guide what was tested in later studies. Although there are specific accounts of field testing messages in Australia, the Eastern Caribbean, and the US, for example, these accounts do not provide comprehensive or generalizable evidence, although they do reinforce the value of consumer testing of any messages.[22,26,27] Recent evidence on consumers' understanding of front-of-package food labeling also supports the case for the value of simple information.[28,29] At this stage, there is insufficient consumer research to underpin the formulation of meaningful nutrition communications in Australia and elsewhere.

Although this is a small study, it is the first that addresses consumers' nutrition literacy regarding these specific commonly used frequency terms. As the study sample had overrepresentation of more educated people, the results may reflect a higher level of nutrition literacy than exists in the general population. The overrepresentation of females is likely to reflect that women are predominantly responsible for grocery shopping. The demographic profile of participants showed that the proportion of people born outside of Australia, considered as a proxy for ethnicity, was similar to population estimates and thus representative in terms of ethnicity and English language fluency. Overall, the study involves a broadly representative sample of Australian grocery shoppers, and additional analyses by the authors indicate that comprehension of terms did not vary by participants' level of education. The mixed-methods approach produced highly consistent results and allowed qualitative exploration of interpretations as well as a quantitative assessment of consumer responses. The results contribute to the accumulating body of evidence on consumers' understanding of nutritional terminology by focusing on specific terms that are in wide usage but that have not previously been examined.

IMPLICATIONS FOR RESEARCH AND PRACTICE

These findings have implications for setting-based nutrition programs and nutrition counseling, where such terms are widely used. They also have implications for front-of-package labeling schemes that propose the use of such terms,[20] as well as for other nutritional communications. In particular, there are implications for the development of new consumer messages based on the revision of the Australian Dietary Guidelines currently underway, and scope to improve the precision of nutritional advice in future resources.

These findings are relevant for messages in a variety of communication formats, including consumer guides, nutrition Web sites, and food-labeling systems. Nutrition advice and information should provide specific and precise recommendations and be thoroughly tested in terms of consumers' comprehension. If comprehension and clarity cannot be achieved through the use of descriptive terms, then it may be preferable to provide more definitive recommendations based on clearly articulated quantities and frequency of consumption.

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REFERENCES

1. National Health and Medical Research Council. Dietary Guidelines for Australian Adults. http://www.nhmrc.gov.au/publications/synopses/_files/n33.pdf. Published April 10, 2003. Accessed March 15, 2012.
2. Australian Government Department of Health and Ageing. *The Australian Guide to Healthy Eating: Background Information for Nutrition Educators*. Canberra: Commonwealth of Australia; 1998.
3. Chan C, Patch C, Williams P. Australian consumers are sceptical about but influenced by claims about fat on food labels. *Eur J Clin Nutr*. 2005;59:148-151.
4. Maubach N, Hoek J. A qualitative study of New Zealand parents' views on front-of-pack nutrition labels. *Nutr Diet*. 2010;67:90-96.
5. Williams P, Yeatman H, Zakrzewski S, et al. Nutrition and related claims used on packaged Australian foods - implications for regulation. *Asia Pac J Clin Nutr*. 2003;12:138-150.
6. Williams P, Yeatman H, Ridges L, et al. Nutrition function, health and related claims on packaged Australian

food products-prevalence and compliance with regulations. *Asia Pac J Clin Nutr*. 2006;15:10-20.

7. Malam S, Clegg S, Kirwan S, Lawless S, McGinigal S; BMRB Social Research. Comprehension and use of UK nutrition signpost labelling schemes. http://www.food.gov.uk/multimedia/pdfs/pmpreport.pdf. Published 2009. Accessed March 15, 2012.
8. Rothman RL, Housam R, Weiss H, et al. Patient understanding of food labels: the role of literacy and numeracy. *Am J Prev Med*. 2006;31:391-398.
9. International Food Information Council Foundation. Consumer Attitudes Toward Food Safety, Nutrition & Health: 2011 Food & Health Survey. http://www.foodinsight.org/Content/3840/2011%20IFIC%20FDTN%20Food%20and%20Health%20Survey.pdf. Published May 5, 2011. Accessed March 15, 2012.
10. Cowburn G, Stockley L. Consumer understanding and use of nutrition labelling: a systematic review. *Public Health Nutr*. 2005;8:21-28.
11. Jones G, Richardson M. An objective examination of consumer perception of nutrition information based on healthiness ratings and eye movements. *Public Health Nutr*. 2007;10:238-244.
12. Rangan AM, Randall D, Hector DJ, Gill TP, Webb KL. Consumption of 'extra' foods by Australian children: types, quantities and contribution to energy and nutrient intakes. *Eur J Clin Nutr*. 2008;62:356-364.
13. Rangan AM, Schindeler S, Hector DJ, Gill TP, Webb KL. Consumption of 'extra' foods by Australian adults: types, quantities and contribution to energy and nutrient intakes. *Eur J Clin Nutr*. 2009;63:865-871.
14. Rangan AM, Kwan J, Flood VM, Louie JCY, Gill TP. Changes in 'extra' food intake among Australian children between 1995 and 2007. *Obes Res Clin Pract*. 2011;5:e55-e63.
15. Reedy J, Krebs-Smith SM. Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. *J Am Diet Assoc*. 2010;110:1477-1484.
16. Department of Health. The eatwell plate. NHS Choices Web site. http://www.nhs.uk/livewell/goodfood/pages/eatwell-plate.aspx. Updated April 15, 2011. Accessed March 15, 2012.
17. US Department of Agriculture, Center for Nutrition Policy and Promotion. What's on your plate? CNPP-25. http://www.choosemyplate.gov/downloads/mini_poster_English_final.pdf. Published August 2011. Accessed April 4, 2012.
18. Australian Government. Ways to Swap. Swap It, Don't Stop It Web site. http://swapit.gov.au/ways-to-swap. Accessed March 15, 2012.
19. Department of Health. Eight tips for healthy eating. NHS Choices Web site. http://www.nhs.uk/Livewell/Goodfood/Pages/eight-tips-healthy-eating.aspx. Updated December 20, 2010. Accessed March 15, 2012.
20. Sanitarium Health & Wellbeing. Front-of-Pack Labelling: Which Traffic Lights? http://www.sanitarium.com.au/~/media/sanitarium/about-us/traffic-light-report.ashx. Published April 2011. Accessed March 15, 2012.
21. Australian Bureau of Statistics. Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia – Data only, 2006. Australian Bureau of Statistics Web site. http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2033.0.55.0012006?Open Document. Updated July 3, 2008. Accessed March 15, 2012.
22. International Food Information Council Foundation. 2010 Food and Health Survey: Consumer Attitudes Towards Food Safety, Nutrition, & Health. http://www.foodinsight.org/Resources/Detail.aspx?topic=2010_Food_Health_Survey_Consumer_Attitudes_Toward_Food_Safety_Nutrition_Health. Published 2010. Accessed March 15, 2012.
23. Pollard CM, Daly AM, Binns CW. Consumer perceptions of fruit and vegetables serving sizes. *Public Health Nutr*. 2009;12:637-643.
24. Britten P, Haven J, Davis C. Consumer research for development of educational messages for the MyPyramid Food Guidance System. *J Nutr Educ Behav*. 2006;38(6 suppl):S108-S123.
25. Keenan DP, AbuSabha R, Robinson NG. Consumers' understanding of the Dietary Guidelines for Americans: insights into the future. *Health Educ Behav*. 2002;29:124-135.
26. Smith AMK, Schmerlaib Y, Sindall C. Development of the Australian Guide to Healthy Eating 2: materials development, evaluation and consultation. *Aust J Nutr Diet*. 1999;56:194-208.
27. Albert J, Samuda P, Molina V, et al. Developing food-based dietary guidelines to promote healthy diets and lifestyles in the Eastern Caribbean. *J Nutr Educ Behav*. 2007;38(6 suppl):343-350.
28. Kunkel D, McKinley C. Developing ratings for food products: lessons learned from media rating systems. *J Nutr Educ Behav*. 2007;39(2 suppl):S25-S31.
29. Institute of Medicine. *Examination of Front-of-Package Nutrition Rating Systems and Symbols: Promoting Healthier Choices*. Washington, DC: The National Academies Press; 2011.