Effects of Science and the Media on Consumer Perceptions about Dietary Sugars\textsuperscript{1,2}

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Abstract

Public attitudes about dietary sugars have varied over time, depending on numerous factors including consensus and emerging science, public policy, and consumer attention. The rise of obesity, the increasing concern over its associated health consequences, and the role of sugars in the diet continue to be examined by the scientific community. The media, which closely monitor scientific publications and policy development, endeavor to communicate these research findings, along with policy debates, as information for the general public. Because consumers tend to get most of their health and nutrition information from the media, they have been exposed to a significant amount of information on dietary sugars. This article describes how scientific findings and nutrition policy discussions affect media reports and, consequently, consumer perceptions about dietary sugars including obesity, low-carbohydrate diets, the glycemic index, and high-fructose corn syrup. J. Nutr. 139: 1S–5S, 2009.

A historical perspective on dietary guidance and authoritative statements about sugars

The Dietary Guidelines for Americans\textsuperscript{(1)} is a compilation of scientific recommendations about dietary components, including sugars. The early Guidelines advised consumers to avoid too much sugar. The potential contribution of sugars to dental caries was a key health message.

In 1990 government nutrition guidance began using the word “moderate” to describe the inclusion of sugars in the diet. The 1995 Dietary Guidelines advised, “Choose a diet moderate in sugars.” By 2000, the adjective “moderate” had been converted to a verb, and consumers were encouraged to “choose beverages and foods to moderate intake of sugars.”

With the growing public health issue of overweight and obesity, a major focus of the 2005 Dietary Guidelines was weight management, and the recommendations surrounding sugars emphasized limiting foods with “added sugars” because “added sugars supply calories but few or no nutrients.” The guidance for sugars was included in a broader topic of carbohydrates including the message to choose fiber-rich fruits, vegetables, and whole grains often and to choose and prepare foods and beverages with little added sugars or caloric sweeteners. The carbohydrate message emphasized selecting nutrient-rich foods and referred to added sugars and fats as “discretionary calories.” The key concerns about sugars in the report are that overconsumption of sugars may lead to caloric excess, contributing to weight gain or obesity, and/or that sugars may dilute the nutrient density of the diet.

In 2002, the Institute of Medicine’s (IOM)\textsuperscript{3} report on Dietary Reference Intakes for Carbohydrates reviewed sugar intake and concluded that there was not enough evidence to set an upper limit on dietary sugars\textsuperscript{(2)}. In its examination of the data regarding sugars and micronutrient intakes, the IOM found that very high and very low intakes of added sugars were associated with lower micronutrient intakes. The report suggested a maximum intake level of 25% or less of energy from added sugars in the total diet, based on data showing decreased intake of some micronutrients for some population groups exceeding this level. The report also found no clear and consistent relation between added or total sugar intake and obesity and thus declined to set an upper level for sugars on this basis.

The following year, WHO and the FAO released a report entitled “Diet, Nutrition and the Prevention of Chronic Disease”\textsuperscript{(3)}. The report raised global awareness of the need to focus on the essential role of both diet and physical activity as key determinants of health and reduced risk of chronic disease. Although it acknowledged that the recommendation was “controversial,” the report proposed a goal that “free sugars” (i.e., added sugars and sugars naturally present in honey, syrups, and fruit juice) not exceed 10% of total energy intake. The report stated that “It is recognized that higher intakes of free sugars threaten the nutrient quality of diets by providing significant energy without specific nutrients… restriction of free sugars was

\textsuperscript{1} Published in a supplement to The Journal of Nutrition. Presented at the conference “The State-of-the-Science on Dietary Sweeteners Containing Fructose,” held in Beltsville, MD, March 18–19, 2008. The conference was cosponsored by the Technical Committee on Carbohydrates of the International Life Sciences Institute North America (ILSI North America) and the USDA, Agricultural Research Service. The views expressed in these papers are not necessarily those of the USDA, the Agricultural Research Service, or the Supplement Coordinators. Supplement Coordinators for this supplement were David M. Klurfeld, USDA, Agricultural Research Service, and Molly Kretsch, USDA, Agricultural Research Service. Supplement Coordinator Disclosure: D. Klurfeld and M. Kretsch: no relationships to disclose.

\textsuperscript{2} Author disclosures: S. T. Borra and A. Bouchoux, no conflicts of interest.

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\textsuperscript{3} Abbreviations used: GI, glycemic index; HFCS, high-fructose corn syrup; IFIC, International Food Information Council; IOM, Institute of Medicine.
also likely to contribute to reducing the risk of unhealthy weight gain.”

**Sugars and recent food and nutrition policy development in schools**

An indicator of how sugar recommendations are interpreted can be observed in food and nutrition policy development in other arenas. In the past 3–5 y, policy makers have worked toward improving the health environment for schools. Nationwide, school districts have implemented wellness policies, many of which restrict the sales of foods with added sugars (4), including beverages sold in school vending machines.

In 2006, the Alliance for a Healthier Generation released its Healthy Schools Program Framework, which includes specific nutritional guidelines that include limits for added sugars for “competitive foods,” which are sold alongside federally reimbursed school lunch items and may consist of beverages, snacks, or other meal items (5). The guidelines were developed in cooperation with food companies, which have agreed to invest in new product development and reformulation of their existing products (5).

In 2007, the IOM released its Nutrition Standards for Foods in Schools report (6), which sets standards for snacks, foods, and beverages regarding the amount of energy from fat, saturated fat, trans fat, added and total sugars, and sodium. Shortly afterwards, Democratic Senator Tom Harkin of Iowa introduced legislation that proposes to review nutrition standards for foods available in schools during school hours, excluding federally reimbursed meals (7). The proposed legislation would require the USDA to review the positive and negative contributions of nutrients, ingredients, and foods to the diets of children including energy, portion size, saturated fat, trans fat, sodium, as well as added sugars.

At the same time, in both the United States and global markets, grocery stores, manufacturers, and other consortia began to introduce nutrient profiling programs, which attempt to evaluate the overall healthfulness of foods using a variety of criteria. The evaluation process takes into account and gives credit for nutrient density and vitamin and mineral content, whereas the sugar content may be a criterion for excluding or limiting a food (8) (Fig. 1).

**Media coverage of sugar and obesity**

Articles in the media mirror public—and political—interest and concerns, and tracking these articles provides an informative documentation of trends. Before the recent upsurge in interest in carbohydrates and sugars—mostly fueled by the low-carbohydrate diet fad—media stories about dietary sugars and health covered topics such as empty calories and dental issues; other topics such as glycemic index (GI) and high-fructose corn syrup (HFCS) were not as widely reported (14). The popularity of low-carbohydrate diets peaked in 2004 with numerous articles covering the debate about the role of all carbohydrates, not just sugars, in the diet (15). Many stories dealt with the issue of “good carbs” and “bad carbs,” indicating that some carbohydrates are inherently more beneficial than others. The low-carbohydrate diet phenomenon may have passed its zenith, but it continues to influence media trends.

**Global media coverage of low-carbohydrate diets**

The GI, introduced by David Jenkins in 1981, has periodically drawn attention from scientists and diet book authors, as well as the media. Simply stated, the GI and glycemic load (GL) are functional measures widely used to assess carbohydrate quality and quantity. GI measures the incremental blood glucose response to the carbohydrate contained in a food, expressed as a percentage of the response to a reference food, usually glucose or white bread (19). In 2002 and 2003, there was very limited coverage of GI with <20 stories per quarter in the United States. However, in 2004, GI was frequently mentioned in the media as a tool that could reduce risk factors for diabetes, cardiovascular disease, and overweight (15). From 2004 until 2007, media articles that appeared in both the United States and globally have been steadily driven by numerous scientific journal articles about the potential beneficial effects of low-GI diets on health. Much of the media coverage has recommended the consumption of low-GI foods for health benefits without the scientific base to support the recommendation.

**Global media coverage of fructose and obesity**

Since 2002, much of the media coverage on dietary sugars has centered on soft drinks and more recently, HFCS. As previously noted, the spike in media coverage during the first quarter of 2004 was the result of multiple articles reporting on a commentary on fructose that appeared in the American Journal of Clinical Nutrition (16). The authors of the commentary proposed that the increased intake of soft drinks and other beverages sweetened with HFCS was at least partially responsible for the current epidemic of obesity. Following the publication of the commentary, media coverage of HFCS leapt from 45 articles in quarter 4 of 2003 to 193 in quarter 1 of 2004. By 2005, coverage of fructose/HFCS had leveled out, but at a new, higher baseline.
In 2007, coverage of HFCS increased further, driven mostly by research studies associating HFCS and fructose with obesity. In late 2007, proposed local bans of products containing HFCS, the 2007 Farm Bill (20), and such documentaries as “King Corn” (21) were among the topics most often appearing in articles on HFCS/fructose and obesity.

The spikes in coverage of HFCS in both 2004 and 2007 coincided with spikes in coverage of dietary sugars because the topics were closely aligned. However, it is important to provide the perspective that the total number of stories focusing on HFCS (435) was much lower than the total number of stories on sugars and obesity (5257) in 2007.

It should be noted that a great deal of controversy continues to surround HFCS in the media. Although recent research has indicated that sucrose and HFCS have similar monosaccharide compositions and sweetness values and do not have significantly different effects on hunger, satiety, or short-term energy intakes (22), scientific, policy, and consumer questions persist.

**Consumer perceptions of dietary sugars**

In the 1970s and early 1980s, sugars received considerable attention following the publicity surrounding the Feingold diet and the first wave of the Atkins diet (9). However, in the late 1980s, it appeared that sugar might possibly leave the spotlight. The Food Marketing Institute’s consumer data showed that from 1986 until 2000, there was a gradual downward trend in consumer concern about sugar and almost no concern about carbohydrates (10). However, the volume and primarily negative perspective of current media coverage coincide with increased consumer concerns about both sugars and carbohydrates.

According to qualitative research conducted for IFIC by Cogent Research in 2006, consumers were concerned about sugar in general but primarily because they associated it with weight gain and not because they thought that sugar, per se, was unhealthful (23).

In 2006 and 2007, the IFIC Foundation conducted quantitative consumer research about nutrition and health (24,25). According to the IFIC Foundation’s 2007 Food and Health Survey (n = 1000), consumers reported that they were checking information about dietary sugars on the Nutrition Facts Panel when making food decisions (25). In 2007, sugars were the no. 4 most checked label item (63%); only energy (73%), fat (73%), and trans fat (63%) were checked by as many or more consumers (see Fig. 2).

**Consumer awareness of HFCS**

IFIC’s qualitative data from focus groups conducted in 2006 indicated that (unaided) most consumers had not heard of HFCS (11). When asked to list different types of sweeteners, HFCS was mentioned by only a few consumers. Even in the focus group...
with the most negative perceptions of the sweetener, only 1 person mentioned HFCS unaided. In addition, consumers were unsure about how HFCS was made and did not know whether it was different from other sweeteners. When asked directly in the qualitative research, most consumers reported their perceptions of HFCS as being similar to those they have about table sugar. However, results from the quantitative IFIC Foundation 2007 Food and Health Survey showed that, when prompted, 81% of consumers said they had heard of the term “high-fructose corn syrup” (25). It is important to note that this level of recognition may reflect the crossover effect of the words “fructose” or “corn syrup.” The IFIC Foundation’s 2007 quantitative data indicated that, of those who had heard of HFCS, 60% of consumers reported that they were trying to consume less HFCS, a small increase from 2006 when only 54% reported that they were trying to consume less (25).

A substantial body of quantitative and qualitative research and media tracking reveals an interconnection among nutrition research, dietary guidance, popular media articles, and consumer attitudes about sugars, health, and obesity.

Today’s media sources are delivering an abundance of dietary information from government and other sources including emerging science, popular diet books, and more. This has resulted in a communication environment for sugars that is challenging for nutrition communicators and consumers alike.

Guidance from both policy makers and journalists often refers to terms and recommendations that may confuse rather than confirm nutrition advice. Terms such as “added sugars,” “high-fructose corn syrup,” “glycemic index,” “glycemic load,” and “discretionary calories” are routinely used by health professionals and delivered by journalists but may not always be understood by the public. Further, in an attempt to encourage healthful, nutrient-dense food choices, consumer communications offering advice about sugars and health often fail to take into account the important factor of taste that is the primary motivator for food selection.

The intersection of science, dietary advice, and media coverage of complicated topics is one in which information clutter can override clarity. The important question for nutrition communicators is how to reconcile the practical and overarching factor of food palatability with the need to manage the diet for health. To be successful in communicating with consumers about appropriately managing sugars in a healthful diet, it is critical that nutrition communicators develop simple, usable, and sound messages that take consumer food preferences into consideration.

Other articles in this supplement include references (26–35).

Acknowledgments

We thank Michele Tuttle, MPH, RD, and Sarah Barnett, JD, MLS, for their valuable contributions to the development of this paper.

Literature Cited


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