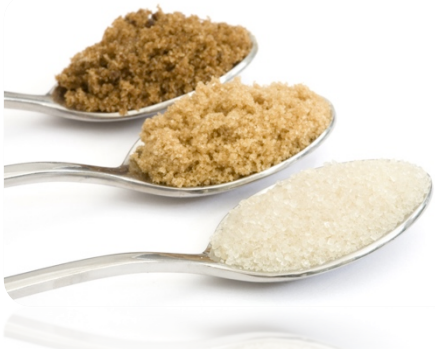
Volume 41 Issue 3, July – September 2016

Nutrition Perspectives

University of California at Davis, Department of Nutrition, Cooperative Extension, and Center for Health and Nutrition Research

Historical Analysis Examines Sugar Industry Role in Heart Disease Research

Using archival documents, a new report published by *JAMA Internal Medicine* examines the sugar industry's role in coronary heart disease research and suggests the industry sponsored research to influence the scientific debate to cast doubt on the hazards of sugar and to promote dietary fat as the culprit in heart disease (1).



While the SRF set the review's objective, contributed articles, and received drafts, evidence is lacking that they changed the article or shaped its conclusions.

Stanton A. Glantz, Ph.D., of the University of California, San Francisco, and coauthors examined internal documents from the Sugar Research Foundation (SRF), which later evolved into the Sugar Association, historical reports and other material to create a chronological case study. The documents included correspondence between the SRF and a Harvard University professor of nutrition who was codirector of the SRF's first coronary heart disease research program in the 1960s.

The SRF initiated coronary heart disease research in 1965 and its first project was a literature review published in the *New England Journal of Medicine* (NEJM) in 1967. The review focused on fat and cholesterol as the dietary causes of coronary heart disease and downplayed sugar consumption as also a risk factor. SRF set the review's objective, contributed articles to be included and received drafts, while the SRF's funding and role were not disclosed, according to the article.

"This historical account of industry efforts demonstrates the importance of having reviews

Sugar ***continued on page 2***

Table of Contents

Sugar (Continued from page 1)

written by people without conflicts of interest and the need for financial disclosure," note the authors, who point out the NEJM has required authors to disclose all conflicts of interest since 1984. There also is no direct evidence that the sugar industry wrote or changed the NEJM review manuscript and evidence that that the industry shaped its conclusions is circumstantial, the authors acknowledge.

Limitations of the article include that the papers and documents used in the research provide only a small view into the activities of one sugar industry trade group. The authors did not analyze the role of other organizations, nutrition leaders or food industries. Key figures in the historical episode detailed in this article could not be interviewed because they have died.

"This study suggests that the sugar industry sponsored its first CHD [coronary heart disease] research project in 1965 to downplay early warning signs that sucrose consumption was a risk factor in CHD. As of 2016, sugar control policies are being promulgated in international, federal, state and local venues. Yet CHD risk is inconsistently cited as a health consequence of added sugars consumption. Because CHD is the leading cause of death globally, the health community should ensure that CHD risk is evaluated in future risk assessments of added sugars. Policymaking committees should consider giving less weight to food industry-funded studies, and include mechanistic and animal studies as well as studies appraising the effect of added sugars on multiple CHD biomarkers and disease development," the article concludes.

Limitations of the article include that the papers and documents used in the research provide only a small view into the activities of one sugar industry trade group. The authors did not analyze the role of other organizations, nutrition leaders or food industries.

Reference:

1. Kearns CE, Schmidt LA, Glantz SA. Sugar Industry and Coronary Heart Disease Research: A Historical Analysis of Internal Industry Documents. JAMA Intern Med. 2016 Sep 12. doi: 10.1001/jamainternmed.2016.5394.

Source: JAMA News Releases; Sep 12, 2016; http://archinte.jamanetwork.com/article.aspx?articleid=2548255

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Sheri Zidenberg-Cherr, Ph.D., Nutrition Specialist, Anna M. Jones, Ph.D., and staff prepare NUTRITION PERSPECTIVES. This newsletter is designed to provide research-based information on ongoing nutrition and food-related programs. It is published quarterly (four times annually) as a service of the UC Davis Center for Health and Nutrition Research, the University of California Cooperative Extension and the United States Department of Agriculture. NUTRITION PERSPECTIVES is available online, free of charge, at http://nutrition.ucdavis.edu/perspectives. Questions or comments on articles may be addressed to: NUTRITION PERSPECTIVES, Department of Nutrition, University of California, Davis, CA 95616-8669. Phone:(530) 752-3387; FAX: (530) 752-8905.

Berkeley, California, Tax Leads to Reduced Sugar-Sweetened Beverage Consumption

Results showed that after the tax was implemented, consumption of SSBs decreased by 21 percent, compared to a 4 percent increase in comparison cities that did not have a tax. Berkeley also showed a 63 percent increase in water consumption compared to a 19 percent increase in the other cities.

According to a new study in the *American Journal of Public Health*, a $0.01 per ounce tax on sugar-sweetened beverages — or SSBs — in Berkeley, California, has led to a reduction in SSB consumption and an increase in water consumption (1). Berkeley became the first U.S. jurisdiction to implement such a tax in March 2015.

Researchers from the School of Public Health, University of California, Berkeley, and the Department of Epidemiology and Biostatistics, University of California, San Francisco, examined changes in pre- and post-tax beverage consumption in low-income neighborhoods in Berkeley compared to Oakland and San Francisco, California. A questionnaire was used to determine the frequency of beverage consumption approximately eight months after the tax was passed and four months after it was enacted.

Results showed that after the tax was implemented, consumption of SSBs decreased by 21 percent, compared to a 4 percent increase in comparison cities that did not have a tax. Berkeley also showed a 63 percent increase in water consumption compared to a 19 percent increase in the other cities.

"An SSB tax is one of the few public health interventions expected to reduce health disparities, save more money than it costs and generate substantial revenues for public health programs," the authors explain. "If impacts in Berkeley persist, and evidence from other cities passing SSB taxes corroborate our findings, widespread adoption of SSB excise taxes could have considerable fiscal and public health benefits. "

Reference:

1. Falbe J, Thompson HR, Becker CM, et al. Impact of the Berkeley Excise Tax on Sugar-Sweetened Beverage Consumption. Am J Public Health. 2016 Aug 23:e1-e7.

Source: American Public Health Association News Releases; Aug. 23, 2016; http://apha.org/news-and-media/news-releases/ajph-news-releases/2016/ajph-august-2016-highlights

High Variability Suggests Glycemic Index is Unreliable Indicator of Blood Sugar Response

The glycemic index of a given food, a value that aims to quantify how fast blood sugar rises after eating it, can vary by an average of 20 percent within an individual and 25 percent among individuals, report scientists from the Jean Mayer USDA Human Nutrition Research Center on Aging (USDA HRNCA) at Tufts University (1).

In randomized, controlled, repeated tests involving 63 healthy adults, researchers found that individual blood sugar responses after consuming a fixed amount of white bread could range across all three glycemic index categories (low, medium, or high). Part of this variability could be attributed to insulin index and baseline HbA1c levels, which reflect long-term glucose control—evidence that glycemic index values are influenced by an individual's metabolic responses to food.

The glycemic index is intended to represent the inherent effect a food has on blood sugar levels. This study suggests that there is a significant amount of variability in individual responses to glycemic index values.

The study, published in the *American Journal of Clinical Nutrition*, suggests glycemic index has limited utility as a tool to predict how a food affects blood sugar levels.

"Glycemic index values appear to be an unreliable indicator even under highly standardized conditions, and are unlikely to be useful in guiding food choices," said lead study author Nirupa Matthan, Ph.D., scientist in the Cardiovascular Nutrition Laboratory at the USDA HNRCA. "If someone eats the same amount of the same food three times, their blood glucose response should be similar each time, but that was not observed in our study. A food that is low glycemic index for you one time you eat it could be high the next time, and it may have no impact on blood sugar for me."

Developed as a way to help diabetic individuals control their blood sugar, glycemic index is intended to represent the inherent effect a food has on blood sugar levels. However, glycemic index is becoming used for broader purposes such as food labeling, and has served as the basis for several popular diets.

To study whether glycemic index values are accurate and reproducible, Matthan and her colleagues recruited 63 volunteers, who underwent six testing sessions over 12 weeks. Volunteers fasted and abstained from exercise and alcohol before each session. They then consumed either white bread, a simple carbohydrate that served as the test food, or a glucose drink, which served as a reference control, in random order. Each contained 50 grams of available carbohydrate. Blood glucose levels were measured at multiple time points for five hours after eating, and glycemic index was calculated by standard formulas.

The team found that the average glycemic index value of white bread for the study population was 62, placing it in the category of a "medium" glycemic index food.

However, deviations averaged 15 points in either direction, effectively placing white bread in all three glycemic index categories. It would be considered a low glycemic index food (average values of 35 to 55) for 22 of the volunteers, intermediate glycemic index (57 to 67) for 23 volunteers, and high glycemic index (70 to 103) for 18 volunteers. Even within the same individual,

Glycemic Index ***continued on page 5***

Glycemic Index (Continued from page 4)

glycemic index values could differ by more than 60 points between trials.

"Reports frequently tout the benefits of choosing foods with low glycemic index and glycemic load values. Our data suggest those values may not be reliable in terms of a daily intake. A better approach to choosing foods is to consume a diet primarily composed of vegetables, fruits, whole grains, nonfat and low-fat dairy products, fish, legumes (beans), lean meats with preference to preparing food with liquid vegetable oils, and equally as important, to choose healthy foods and beverages you really enjoy," said senior study author Alice H. Lichtenstein, D.Sc., senior scientist and director of the Cardiovascular Nutrition Laboratory at the USDA HNRCA. Lichtenstein is also the Gershoff Professor at the Friedman School of Nutrition Science and Policy at Tufts.

The team found that the average glycemic index value of white bread for the study population was 62, but that it deviated 15 points in either direction. Depending on the response, white bread could fall into low, intermediate, or high glycemic index categories.

The variability in glycemic index values occurred despite sample sizes larger than required by standard calculations. The study cohort of 63 individuals far exceeded the 10 individuals used by typical glycemic index methodology, as did the six feeding challenges and five-hour blood glucose measuring window.

The team also tested for the influence of biological characteristics: sex, body-mass index, blood pressure, physical activity, and several others. Most factors had only a minor statistical effect on glycemic index variability. Blood insulin response as measured by insulin index and HbA1c, a measure of longer term glucose control, had the largest effect, accounting for 15 and 16 percent of the variability, respectively.

The authors note their findings do not suggest that a high glycemic index food may be healthy, or that a low glycemic index food unhealthy. Both glycemic index and glycemic load—a value that adjusts glycemic index to serving size—reflect only food containing carbohydrates, and no one eats food in isolation. The high variability of glycemic index and glycemic load reveal limitations in their clinical and public health applicability, and glycemic index estimates and subsequent associations with chronic disease risk needs to be reconsidered, say the authors.

"Based on our results, we feel strongly that glycemic index is impractical for use in food labeling or in dietary guidelines at the individual level," Matthan said. "If your doctor told you your LDL cholesterol value could vary by 20 percent, it would be the difference between being normal or at high risk for heart disease. I don't think many people would find that acceptable."

Reference:

1. Wang S, Schwartz MB, Shebl FM, et al. School breakfast and body mass index: a longitudinal observational study of middle school students. Pediatr Obes. 2016. doi: 10.1111/ijpo.12127. [Epub ahead of print]

Source: Michael Greenwood. Yale News; Mar. 17, 2016; http://news.yale.edu/2016/03/17/school-breakfasts-contribute-healthy-weight-study-finds

Prevalence of Celiac Appears Steady but Followers of Gluten-Free Diet Increase

More people are eating gluten-free, although the prevalence of celiac disease appears to have remained stable in recent years, according to an article published by *JAMA Internal Medicine* (1).

Hyun-seok Kim, M.D., M.P.H., of the Rutgers New Jersey Medical School, Newark, and coauthors analyzed data from the National Health and Nutrition Examination Surveys (NHANES) 2009 to 2014. There were 22,278 individuals over the age of 6 who participated in the surveys who underwent blood tests for celiac for whom information about prior diagnosis of celiac disease and adherence to a gluten-free diet was collected in a direct interview.

While the prevalence of celiac disease appears to have remained steady overall between 2009 and 2014, adherence to a gluten-free diet by people without celiac disease has increased over time from 0.52 percent in 2009-2010 to 1.69 percent in 2013-2014, the authors report.

Overall, 106 (0.69 percent) individuals had a celiac disease diagnosis and 213 (1.08 percent) were identified as adhering to a gluten-free diet although they didn't have celiac disease, according to the results reported in a research letter.

Those numbers correlated to an estimated 1.76 million people with celiac disease and 2.7 million people who adhere to a gluten-free diet even though they don't have celiac disease in the United States.

While the prevalence of celiac disease appears to have remained steady overall (0.70 percent in 2009-2010, 0.77 percent in 2011-2012 and 0.58 percent in 2013-2014), adherence to a gluten-free diet by people without celiac disease has increased over time (0.52 percent in 2009-2010, 0.99 percent in 2011-2012 and 1.69 percent in 2013-2014), the authors report.

The two trends may be related because decreased gluten consumption could be contributing to the plateau in celiac disease, according to the report.

Limitations of the study include the small numbers of people participating in NHANES who were identified as having a diagnosis of celiac disease and as adhering to a gluten-free diet without celiac disease.

The report concludes the growing interest in a gluten-free diet by people without celiac disease could be due to a variety of factors, including public perception that it may be healthier, the growing availability of gluten-free products, and a self-diagnosis of gluten sensitivity by some individuals.

Reference:

1. Kim HS, Patel KG, Orosz E, et al. Time Trends in the Prevalence of Celiac Disease and Gluten-Free Diet in the US Population: Results From the National Health and Nutrition Examination Surveys 2009-2014. JAMA Intern Med. 2016 Sep 6. doi: 10.1001/jamainternmed.2016.5254.

Source: JAMA News Releases; Sep 6, 2016; http://media.jamanetwork.com/news-item/prevalence-of-celiac-appears-steady-but-followers-of-gluten-free-diet-increase/

Greater Production of 'Feeling Full' Hormone Could Be Responsible For Weight Loss in the Elderly

A preliminary study that might hold the key to why over-80s are prone to losing weight has been published in the journal *Appetite* (1).

The research by Mary Hickson, Professor of Dietetics, found that after eating, elderly people produced a greater amount of peptide YY (PYY) – the hormone that tells humans when they're full.

The researchers reported elderly people produced a greater amount of peptide YY (PYY) after eating – the hormone that tells humans when they're full.

The study saw six healthy women over the age of 80 eat a breakfast after several hours of fasting; and their hormone levels were compared to those of a number of healthy younger participants in age brackets 20–39; 40–59; and 60–79.

Professor Hickson measured levels of PYY at regular time intervals for three hours in each participant alongside levels of ghrelin – the hormone that tells us when we're hungry.

Researchers had previously suggested that weight loss in the over-80s, termed 'anorexia of ageing', could be down to lower production of ghrelin, resulting in older people feeling less hungry.

But the results showed that each of the over-80s tested produced a greater amount of PYY than their younger counterparts, while their ghrelin levels did not change.

To obtain a more accurate picture of whether this could be the case in all older people, Professor Hickson has recommended that the study be carried out on a larger number of participants of both genders, but said that, at this early stage, she was intrigued by the findings.

Professor Hickson said:

"With ageing there is frequently a loss of appetite, termed anorexia of ageing, which can result in under-nutrition. We do not know how appetite control alters with ageing, so this study was a necessary and promising start. The difficulty we have is ensuring that all test subjects are healthy – and finding over-80s with no existing health problems was a challenge. We recognize that healthy subjects over this age are not necessarily representative of their population due to the lack of ill health, but excluding illness was necessary to test whether ageing per se is associated with changes in appetite control.

"If further studies on a greater number of participants show an increased production of PYY, we can work to investigate this hormone imbalance to address, and hopefully combat, anorexia of ageing."

Reference:

1. Hickson M, Moss C, Dhillo WS, et al. Increased peptide YY blood concentrations, not decreased acyl-ghrelin, are associated with reduced hunger and food intake in healthy older women: Preliminary evidence. Appetite. 2016 Oct 1;105:320-7. doi: 10.1016/j.appet.2016.06.002.

Source: Plymouth University Press Office; Aug. 5, 2016; https://www.plymouth.ac.uk/news/greater-production-of-feeling-full-hormone-could-be-responsible-for-weight-loss-in-the-elderly

Moderate and Vigorous Exercise Have Comparable Effects on Nonalcoholic Fatty Liver Disease

A new study shows a brisk walk is just as good as a jog when it comes to reducing liver fatty content, important news for the more than 3 million people diagnosed each year in the U.S. with nonalcoholic fatty liver disease (NAFLD). Researchers including Jiang He, a professor in the Department of Epidemiology, and Hui-Jie Zhang, a postdoctoral fellow at Tulane University School of Public Health and Tropical Medicine, published their findings in *JAMA Internal Medicine* (1).

The researchers randomly divided 220 people with obesity and NAFLD into three groups, assigning each group different levels of exercise for one year. In the vigorous-moderate group, participants jogged 150 minutes a week at 65-80 percent of their maximum heart rate for the first six months, followed by 150 minutes of brisk walking (45-55 percent of maximum heart rate) for the other half of the year. The second group of participants walked briskly for 150 minutes a week for the entire year. The third group did not exercise.

Researchers found vigorous and moderate exercise were equally effective in reducing intrahepatic triglyceride content among patients with nonalcoholic fatty liver disease.

Researchers found vigorous and moderate exercise were equally effective in reducing intrahepatic triglyceride content among patients with nonalcoholic fatty liver disease. That means people who have difficulty with vigorous exercise can still prevent and treat NAFLD with moderate activity.

"Nonalcoholic fatty liver disease has reached epidemic proportions worldwide and is the most common cause of chronic liver disease," says He. "The condition affects 20-30 percent of adults in the general population and 70-90 percent of patients with obesity or diabetes in Western countries."

While moderate and vigorous exercise had nearly the same effect on intrahepatic triglyceride content, patients who performed the more strenuous activity also significantly reduced their weight, waist circumference, body fat mass and body fat percentage compared to those who exercised moderately or not at all.

Nonalcoholic fatty liver disease has been associated with an increased risk of cardiovascular disease independent of metabolic risk factors, such as diabetes, hypertension and dyslipidemia.

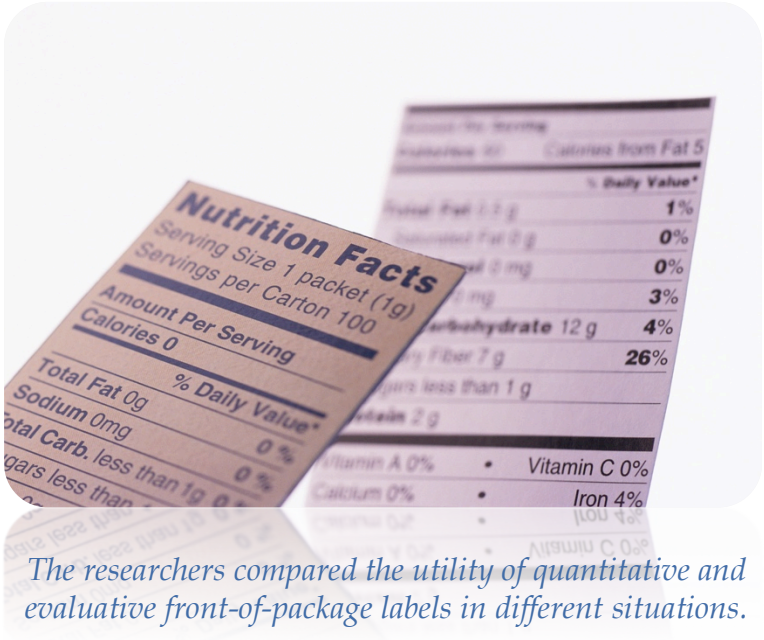
Reference:

1. Zhang HJ, He J, Pan LL, et al. Effects of Moderate and Vigorous Exercise on Nonalcoholic Fatty Liver Disease: A Randomized Clinical Trial. JAMA Intern Med. 2016 Aug 1;176(8):1074-82. doi: 10.1001/jamainternmed.2016.3202.

Source: Tulane University News; Jul. 5 2016; http://news.tulane.edu/pr/moderate-and-vigorous-exercise-have-comparable-effects-nonalcoholic-fatty-liver-disease

Not All 'Front-of-Package' Nutrition Information Produces the Same Effect

Marketing researchers at the University of Arkansas and their colleague at the University of Mississippi compared nutrition information labels on the front of packaged food products to understand which labels help consumers choose more healthful items. Their conclusion: It depends (1).



The researchers compared the utility of quantitative and evaluative front-of-package labels in different situations.

"Our research suggests that there is no single, 'one-size-fits-all' front-of-package nutrition label that is suitable for all the different types of situations in which consumers are evaluating and choosing products," said Elizabeth Howlett, professor of marketing in the Sam M. Walton College of Business.

Shoppers often find it daunting to decide which packaged food products are the healthiest. A typical supermarket carries more than 40,000 different items, and previous marketing research has shown that consumers make the vast majority (82 percent) of their purchase decisions while shopping in the store.

Consumers sometimes evaluate a single product, an activity marketing researchers call non-comparative processing. More often, however, consumers participate in comparative information processing, which means they evaluate multiple products simultaneously. For example, a consumer might ask himself whether he should purchase the French-style lemon yogurt, the Greek-style blueberry yogurt, or the low-calorie berry variety.

Comparative information processing is considerably more difficult than non-comparative processing, because consumers must make direct comparisons between several options and multiple types of calorie and nutrient information. Though these tasks are clearly very different, Nutrition Facts panels provide only one type of standardized nutrition information.

Howlett and her co-authors, Scot Burton, Distinguished Professor of marketing in Walton College; and Christopher Newman, assistant professor of marketing at the University of Mississippi and former doctoral student at the U of A, examined two formats for front-of-package nutrition labels. One format provided specific, objective and quantitative information – for example, 10 grams of fat. The other format provided evaluative information, such as Walmart's green "great for you" icon.

The researchers found that the different formats worked better in different situations. A front-of-package label that provided specific, objective and quantitative information was more suited to a non-comparative choice, the instance in which a consumer is evaluating a single product. Front-of-package labels that provided evaluative information were more suited to a comparative task, when customers were evaluating multiple products.

"Currently, many different types of front-of-package nutrition information formats appear on product labels and their effectiveness in different choice contexts needs to be better understood," said Newman. "We believe that public policy

Label *continued on page 10*

Label (Continued from page 9)

"If the primary goal of nutrition labeling is to help consumers make healthier choices, then the ability to easily identify the most healthful alternatives from a broad set of options is crucial," said Burton.

decision makers such as those at the Food and Drug Administration must consider how well the type of nutrition information presented on a product label matches the consumer's specific type of choice task."

"If the primary goal of nutrition labeling is to help consumers make healthier choices, then the ability to easily identify the most healthful alternatives from a broad set of options is crucial," said Burton. "Our results suggest that, in general, when there is a match between the choice processing context and the type of format used to present front-of-package nutrition information, consumers tend to make more healthful food choices. This is particularly important in comparative contexts in which evaluative information may improve choice from a set of brands."

Reference:

1. Newman CL, Howlett E, Burton S. Effects of Objective and Evaluative Front-of-Package Cues on Food Evaluation and Choice: The Moderating Influence of Comparative and Noncomparative Processing Contexts. 2016 Feb 1;42(5):749-66

Source: University of Arkansas News; Jul. 12, 2016; http://news.uark.edu/articles/34894/not-all-front-of-package-nutrition-information-produces-the-same-effect

Children Make Poor Dietary Choices Shortly After Advertisements of Unhealthy Foods and Beverages

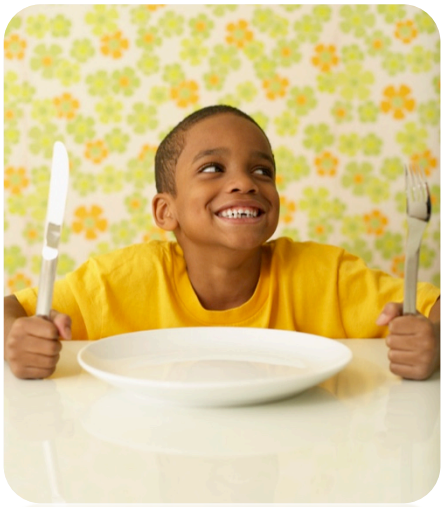
Ads for unhealthy foods and beverages high in sugar or salt have an immediate and significant impact on children and lead to harmful diets, according to research from McMaster University (1).

The study, published in the scientific journal *Obesity Reviews*, examined 29 trials assessing the effects of unhealthy food and beverage marketing and analyzing caloric intake and dietary preference among more than 6,000 children. Researchers found that the marketing increased dietary intake and influenced dietary preference in children during or shortly after exposure to advertisements.

Lead author of the study, Behnam Sadeghirad, says that these findings demonstrate the influence that these advertisements, a growing epidemic, have on children's food choices.

"The rates of overweight and obesity among children are rising

Advertisements *continued on page 11*



Children's food choices can be significantly impacted by exposure to advertisements.

Advertisements (Continued from page 10)

worldwide," said Sadeghirad, a PhD student in clinical epidemiology and biostatistics at McMaster. "This is the first systematic review evidence based on 29 randomized trials and it shows that the extensive exposure kids have to marketing of unhealthy foods and beverages via product packaging (superheroes, logos), TV and the internet increases their short-term caloric intake and preference for junk food."

For the study, Sadeghirad's team looked at previous studies that examined advertising of unhealthy foods and beverages through television and movie commercials, videogames, use of branded logos, packaging with licensed characters and booklet/magazine ads.

When children were exposed to unhealthy advertisements, they consumed significantly more unhealthy than healthy calories, the study found. The findings also suggest that younger children (≤ 8 years of age) might be more susceptible to the impact of food and beverage marketing in terms of quantity and quality of calories consumed.

The researchers hypothesize that younger children might be more vulnerable to the influence of advertisements and associate the marketed products with positive features of commercials and subsequently try to imitate the behaviors they see.

Recent studies report that children are exposed to an average of five food ads per hour, with unhealthy foods accounting for greater than 80 percent of all televised food advertisements in Canada, the United States and Germany.

The researchers say these findings are particularly important considering recent studies revealing that children are exposed to an average of five food ads per hour, with unhealthy foods accounting for greater than 80 per cent of all televised food advertisements in Canada, the United States and Germany.

"Overall, our analyses show the need for a review of public policy on child-targeted unhealthy food and beverage marketing," added Bradley Johnston, corresponding author of the study, an assistant professor in the Department of Clinical Epidemiology and Biostatistics at McMaster and director of SORT (Systematic Overviews through advancing Research Technology) at The Hospital for Sick Children.

"The increasing prevalence of obesity seems to further coincide with marked increases in the food and beverage industry's budget for marketing aimed at children and youth, with data showing that energy-dense, low-nutrient foods and beverages make up the majority of commercially marketed products."

Reference:

1. Sadeghirad B, Duhaney T, Motaghipisheh S, et al. Influence of unhealthy food and beverage marketing on children's dietary intake and preference: a systematic review and meta-analysis of randomized trials. Obes Rev. 2016 Jul 18. doi: 10.1111/obr.12445.

Source: McMaster University News Releases; Jul. 5, 2016;
http://fhs.mcmaster.ca/main/news/news_2016/poor_diet_choices_after_advertisements.html

AAP Clinical Report : Steps to Prevent Teen Obesity and Eating Disorders

The AAP has released recommendations for pediatricians to provide guidance to parents.

Adolescents whose parents focus on healthy eating and physical activity rather than weight are less likely to have an eating disorder or engage in unhealthy weight control behaviors, according to a new clinical report by the American Academy of Pediatrics (AAP). The report, "Preventing Obesity and Eating Disorders in Adolescents" is published in the journal *Pediatrics* to provide pediatricians with evidence-based tools to provide guidance to patients (1).

Over the past 30 years, the rate of child obesity has more than doubled, and the rate of teen obesity has quadrupled. While the obesity rates have plateaued in recent years, the health care burdens and costs remain significant. Hispanic, American-Indian and African-American adolescents have the highest prevalence of obesity, according to research. Family involvement in treatment of teen obesity and eating disorders have been determined to be more effective than an adolescent-only focus.

AAP recommendations include discouraging dieting, skipping of meals or the use of diet pills; promoting a positive body image; encouraging more frequent family meals; and suggesting that families avoid talking about weight.

Reference:

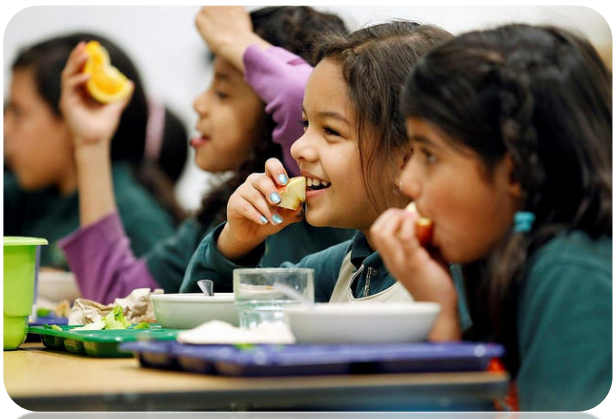
1. Golden NH, Schneider M, Wood C; Committee on Nutrition; Committee on Adolescence; Section on Obesity. Preventing Obesity and Eating Disorders in Adolescents. Pediatrics. 2016 Sep;138(3). pii: e20161649. doi: 10.1542/peds.2016-1649.

Source: AAP Press Room; Aug 22, 2016; https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/AAP-Clinical-Report-Steps-to-Prevent-Teen-Obesity-and-Eating-Disorders.aspx

Marketing Vegetables in School Cafeterias Yields Dramatic Results

A study in the journal *Pediatrics* suggests that marketing tactics, often blamed for popularizing nutritionally poor foods among U.S. children, also can lead more kids to select vegetables at lunchtime (1). Researchers for the study, "Marketing Vegetables in Elementary School Cafeterias to Increase Uptake," tallied the number of students who took fresh vegetables from the salad bar at 10 elementary school cafeterias in a large, urban school district over a six-week period. Vinyl banners with branded, cartoon vegetable characters displaying "super human" strength were wrapped around the base of the salad bars at one group of schools. At other schools, short television segments with nutrition education delivered by the

Vegetables *continued on page 13*



Marketing tactics can be used to increase selection and consumption of vegetables in the school lunchroom.
Photo by USDA, https://flic.kr/p/psT21X

Vegetables (Continued from page 12)

vegetable characters were shown. A third group of schools in the study received both the salad-bar banners and the television segments, and a control group received no intervention. In all of the intervention schools, decals with the vegetable characters were placed on the floor directing traffic to the salad bars. Results showed nearly twice as many students took vegetables from the salad bar when exposed to the banners. More than three times as many students exposed to both the banners and television segments visited the salad bar for vegetables, although the extra increase from combined exposure was mostly among girls; boys were most responsive to the banners. The marketing campaign also increased servings of vegetables chosen in the regular lunch line. Amid calls by some advocacy groups to ban all advertising aimed at children, study authors said, their findings highlight potential opportunities to leverage marketing strategies in a positive way by using branded media to promote healthier food choices among children.

Reference:

1. Hanks AS, Just DR, Brumberg A. Marketing Vegetables in Elementary School Cafeterias to Increase Uptake. Pediatrics. 2016 Aug;138(2). pii: e20151720. doi: 10.1542/peds.2015-1720.

Source: AAP Press Room; Jul 5, 2016; https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/Marketing-Vegetables-in-School-Cafeterias-Yields-Dramatic-Results.aspx

Omega-3 and Omega-6 Supplement Improves Reading for Children

The children were randomly assigned to receive either capsules with omega-3 and omega-6, or identical capsules that contained a placebo for 3 months

Supplement of omega-3 and omega-6 fatty acids may improve reading skills of mainstream schoolchildren, according to a new study from Sahlgrenska Academy, at the University of Gothenburg, Sweden (1). Children with attention problems, in particular, may be helped in their reading with the addition of these fatty acids.

The study included 154 schoolchildren from western Sweden in grade 3, between nine and ten years old. The children took a computer-based test (known as the Logos test) that measured their reading skills in a variety of ways, including reading speed, ability to read nonsense words and vocabulary.

The children were randomly assigned to receive either capsules with omega-3 and omega-6, or identical capsules that contained a placebo (palm oil) for 3 months. The children, parents and researchers did not learn until the study was completed which children had received fatty acids and which had received the placebo. After three months, all children

Reading *continued on page 14*

Reading (Continued from page 13)

received real omega-3/6 capsules for the final three months of the study.

"Even after three months, we could see that the children's reading skills improved with the addition of fatty acids, compared with those who received the placebo. This was particularly evident in the ability to read a nonsense word aloud and pronounce it correctly (phonologic decoding), and the ability to read a series of letters quickly (visual analysis time)," says Mats Johnson, who is chief physician and researcher at the Gillberg Neuropsychiatry Centre at Sahlgrenska Academy, University of Gothenburg.

The group receiving the omega-3 and -6 fatty acid supplement improved their reading skills compared to the placebo group, particularly the ability to read a nonsense word aloud and pronounce it correctly (phonologic decoding), and the ability to read a series of letters quickly (visual analysis time).

No children diagnosed with ADHD were included in the study, but with the help of the children's parents, the researchers could identify children who had milder attention problems. These children attained even greater improvements in several tests, including faster reading already after three months of receiving fatty acid supplements.

Polyunsaturated fats and their role in children's learning and behavior is a growing research area.

"Our modern diet contains relatively little omega-3, which it is believed to have a negative effect on our children when it comes to learning, literacy and attention," says Mats Johnson. "The cell membranes in the brain are largely made up of polyunsaturated fats, and there are studies that indicate that fatty acids are important for signal transmission between nerve cells and the regulation of signaling systems in the brain."

Previous studies in which researchers examined the effect of omega-3 as a supplement for mainstream schoolchildren have not shown positive results, something Mats Johnson believes may depend on how these studies were organized and what combination and doses of fatty acids were used. This is the first double-blind, placebo-controlled study showing that omega-3/6 improves reading among mainstream schoolchildren.

"Our study suggests that children could benefit from a dietary supplement with a special formula. To be more certain about the results, they should also be replicated in other studies," says Mats Johnson.

Reference:

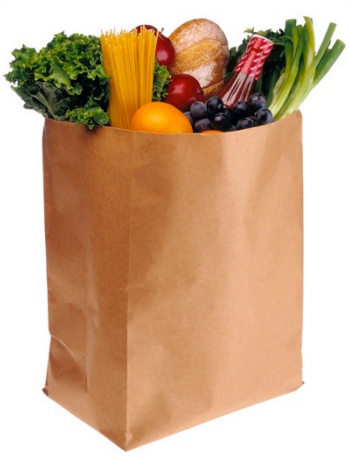
1. Elorinne AL, Alfthan G, Erlund I, et al. Food and Nutrient Intake and Nutritional Status of Finnish Vegans and Non-Vegetarians. PLoS One. 2016 Feb 3;11(2):e0148235. doi: 10.1371/journal.pone.0148235.

Source: University of Eastern Finland News and Events; Mar. 22, 2016; http://www.uef.fi/-/vegaanin-on-noudatettava-ravitsemussuosituksia-ja-taydennettava-ruokavaliotaan

Testing Effects of Combining Incentives, Restrictions in Food Benefit Program

A clinical trial that mimicked a food benefit program and paired incentives for buying fruits and vegetables with restrictions on sugary foods found that participants ate fewer calories, less sugary foods, more solid fruit and had better scores on an index that assessed consistency with dietary guidelines, according to a new report published by *JAMA Internal Medicine* (1).

About 1 in 7 Americans participated in the Supplement Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, at some point in 2015. There is interest in finding ways SNAP can better help families buy the food they need for good health. A variety of modifications to the program have been proposed, including incentives for buying fruits and vegetables and restrictions on buying less nutritious foods with program funds.



The group with incentive plus restriction on food benefits compared with the control group reduced calorie intake and increased consumption of solid fruit.

For legal reasons, it is not possible to alter practices in the actual SNAP program, so Lisa Harnack, Dr.P.H., of the University of Minnesota, Minneapolis, and coauthors recruited adults for a clinical trial who were near eligible for SNAP or eligible for SNAP but not currently participating.

Lower-income participants were given debit cards loaded with an amount of food benefits similar to what they would have received from SNAP every four weeks over the 12-week experiment period. For example, benefits were $152 monthly for a household of one, $277 for two people and $401 for three people in a household.

Study participants (n=279) were assigned to 1 of 4 experimental financial food benefit groups: an incentive of 30 percent of the purchase price of fruits and vegetables; a restriction on buying sugar-sweetened beverages, sweet baked goods or candies with benefits; the incentive plus the restriction; or a control group with no incentive or restrictions on food purchased with benefits.

Dietary recall was used to measure intake of calories, discretionary calories and overall quality of diet.

The incentive plus restriction condition on food benefits compared with the control group reduced calorie intake, lowered the intake of discretionary calories, reduced intake of sugar-sweetened beverages, baked good and candies, increased the intake of solid fruit, and improved scores on a healthy eating index that assessed consistency with dietary guidelines, according to the results. Fewer improvements were seen when participants had only the incentive or restrictions, the authors report.

Study limitations include the representativeness of the study group because actual SNAP participants may respond differently.

"These results suggest that a food benefit program that pairs financial incentives for the purchasing of fruits and vegetables with restrictions on the purchase of less nutritious foods may reduce energy intake and improve the nutritional quality of the diet of program participants in comparison with a food benefit program that does not include incentives and restrictions," the paper concludes.

Reference:

1. Harnack L, Oakes JM, Elbel B, et al. Effects of Subsidies and Prohibitions on Nutrition in a Food Benefit Program. JAMA Intern Med. 2016 Sep 19. doi: 10.1001/jamainternmed.2016.5633

Source: JAMA News Releases; Sep 19, 2016; http://media.jamanetwork.com/news-item/testing-effects-of-combining-incentives-restrictions-in-food-benefit-program/

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