

4-2016

A Comprehensive Review of (Current and Future) Food Labels

Jamie Murawski
Grand Valley State University

Follow this and additional works at: <https://scholarworks.gvsu.edu/honorsprojects>



Part of the [Life Sciences Commons](#)

ScholarWorks Citation

Murawski, Jamie, "A Comprehensive Review of (Current and Future) Food Labels" (2016). *Honors Projects*. 582.

<https://scholarworks.gvsu.edu/honorsprojects/582>

This Open Access is brought to you for free and open access by the Undergraduate Research and Creative Practice at ScholarWorks@GVSU. It has been accepted for inclusion in Honors Projects by an authorized administrator of ScholarWorks@GVSU. For more information, please contact scholarworks@gvsu.edu.

A Comprehensive Review of (Current and Future) Food Labels

Jamie Murawski

Senior Project

Frederick Meijer Honors College, Grand Valley State University

Mentor: Steven Nizielski

INTRODUCTION

Since 1980, the World Health Organization (WHO) estimates that the number of people struggling with obesity has doubled worldwide (Becker, Bello, Raghav, Peltier, & Bix, 2015). Obesity is a major problem that many people face, children and adults alike. In the United States, 68.8% of Americans are overweight as reported by the Center for Disease Control and Prevention (Delgado, Moyer, & Singh, 2015). Excess body fat contributes to many diseases that affect long-term health. In 2009, of the ten leading causes of death in the US, five of them (heart disease, stroke, some types of cancer, Alzheimer's disease, and diabetes) have strong ties to obesity; they are related to poor nutrition and diet. Presently, 30% of Americans already experience an early sign of heart disease: hypertension (Delgado et al., 2015). Even kidney disease, one cause of death that is not initially caused by poor nutrition, could be slowed or hastened depending on diet. Therefore, diet is a crucial part of our overall health and understanding how to choose foods to support a healthy diet is extremely important.

Nutritional labeling was intended to convey information about the nutritional value and composition of pre-packaged foods to consumers. Ideally, this would allow the consumer to better understand the food they are eating and result in healthier choices to improve their overall diet, preventing obesity and obesity-related illness (Borgmeier & Westenhoefer, 2009; Gregori, Ballali, Vögele, Gafare, Stefanini, & Widhalm, 2014). For those who already have an obesity-related illness, such as hypertension, reading food labels should help them make choices to

improve their overall health. For example, the person with hypertension could examine two products and determine which has a lower sodium content. Prior to the 1960s, very few foods included any nutritional information. This slightly improved in the 70s, when food manufacturers were encouraged to voluntarily include this information on their label. In 1990, the Nutrition Labeling and Education Act (NLEA) was passed in the United States (Delgado et al., 2015). This law allowed the FDA to mandate inclusion of the Nutrition Facts label, located on either the side or back of a food package, which lists cholesterol, sodium, carbohydrate, and protein contained in a product as well as put those amounts in context of a standard, 2,000 Calorie diet (Kessler, 2014). The serving sizes listed were to be realistic to what a person normally ate, not what was recommended by the Dietary Guidelines of America. There is widespread confusion with the comprehension of the information, however, especially with serving size and how it relates to calories and energy (Gregori et al., 2014). Food labels can only be effective or valuable if consumers understand how to use them (Rolfes, Pinna, & Whitley, 2012). Front of package labeling is not so strictly regulated. They typically give a quick overview of calories, sugar, fat, saturated fat, and salt content in a product. However, there are a variety of formats for these labels, which can make reading and understanding them very confusing, misleading, and difficult (Becker et al., 2015; Gregori et al., 2014).

While the NLEA was a great start to consumer education, there is a lot of room for improvement regarding nutrition labels. The effectiveness of current labels will be reviewed, including discussing gaps in the labeling laws currently as well as the common misunderstandings that exist. Finally, the FDA's proposed changes to the Nutrition Facts label will be explained (what is changing and how effective it is anticipated to be). In addition, the various options for front of package labels will be discussed. The Nutrition Facts label is long

overdue for an overhaul; it has not been updated in over twenty years (Dallas, Liu, & Ubel, 2015; Erickson, 2014).

CURRENT NUTRITION LABELS

FILLING THE GAPS: RESTAURANTS

A major shortcoming of the NLEA is the failure to require nutrition information in restaurants. Foods manufactured by small businesses (those with less than 20 locations nationwide) are exempt from food labels. This also includes baked goods sold from the location they are prepared (many grocers as well as local bakeries) and meals from small restaurants, like a local diner (Delgado et al., 2015). With an increasing amount of families having both parents work full-time, lifestyles are becoming more on-the-go and fast-paced which influences the selection of food. In 1980, nearly one-third of a person's total calories were consumed away from home; today, this number has increased to nearly 44% (Ellison, Lusk, & Davis, 2013).

With an increasing amount of food eaten outside the home, the missing labels on restaurants foods brought us right back to the original issue: uninformed consumer choices. Restaurants tend to serve extra-large portions, two to three times a normal serving size (Wu & Sturm, 2013). While some consumers ask for a box to bring a portion home, it is common for consumers eat the entire entrée in one sitting, not to mention the meal often begins with an appetizer and is paired with an alcoholic or sugar-sweetened beverage. Sit-down restaurants are a large calorie source for Americans because people underestimate how many calories they are consuming. When asked to estimate the calorie content of various entrées, the majority of participants (90%) of a recent study were found to underestimate the energy content by more than 600 Calories! When provided the calorie information for food items, however, these same

participants chose the higher-calorie options about a third less often (Bleich & Pollack, 2010; Burton, Creyer, Kees, & Huggins, 2006). A person with a better understanding of calories is more likely to be affected by the provided calorie information, because perceived risk is an important part of behavior change (Bleich & Pollack, 2010).

With the passing of the Patient Protection and Affordable Care Act in 2010 came the Menu Education and Labeling Act. This House bill required chain restaurants with more than twenty locations nationwide to display calorie information on their menu following with a statement about suggested daily caloric intake (Dowry, Swartz, Braxton, & Viera, 2013). Nutritional information, including total calories, calories from fat, grams of saturated fat, total fat content, cholesterol, fiber, sugar, and milligrams of sodium, now must be available in writing for the consumer (Blumethal & Volpp, 2010). The menu should have a statement regarding the availability of this information. While this bill is a good first step, it is not without bias. People who are already health conscious or those with family members on a special diet are more likely to ask for nutrition information and allow these labels to influence their purchasing decision (Hersey, Wohlgenant, Arsenault, Kosa, & Muth, 2013).

FRONT OF PACKAGE AND BACK OF PACKAGE CONTENT

Every pre-packaged food item has a back of package (BOP) Nutrition Facts label, as mandated by the FDA. The only packaged foods without nutrient labels are those that provide little nutrients, like coffee, tea, and spices (Delgado et al., 2015). Currently, the Nutrition Facts label has to list both the quantity (usually in grams) and percentage of daily value (%DV) for a nutrient, based off of the dietary recommendations for the nutrient in a 2,000 Calorie diet. Carbohydrates should be listed as a total and further broken down into starch, sugar (both natural and added), and fiber.

All the nutrient values on the Nutrition Facts label are based off of “one serving”, so the FDA (not manufacturers) had to identify the quantity of one serving for each food type. This quantity is listed on the label, as well as the number of servings per container. Serving sizes were based on the “Reference Amount Customarily Consumed” from Nationwide Food Consumption Surveys conducted between 1977-1978 and 1987-1988 by the U. S. Department of Agriculture and have not been updated since (Delgado et al., 2015; McCarthy, 2014). Notice that these serving sizes are based on the amount typically consumed, not the amount recommended by the USDA Food Guide. This can cause discrepancies for users trying to follow these recommendations (Delgado et al., 2015).

The Nutrition Fact label displays several caloric numbers: calories in one serving, calories from fat, and total calories. Calories are a quantitative measure of the amount of energy in a food. Ideally, a person should strive to consume the same amount of calories that they expend in processes needed to sustain life (breathing, circulating blood, digesting) and active activities (work with skeletal muscle, whether exercise or just daily activities) to maintain their weight. To gain weight or lose weight, a person would need to consume calories at a slight excess or deficit, respectively. This means that calorie needs vary from person to person (Delgado et al., 2015). Most people tend to overestimate their own calorie needs. Bleich and Pollack (2010) found that most Americans were able to identify the amount of calories required for a moderately active lifestyle, but only 35% were knowledgeable about the requirements for inactive adults. A surprisingly large amount of Americans live a sedentary lifestyle, which suggests that many do not follow the correct caloric needs for their activity level.

After calories on the Nutrition Facts label, the nutrient content for a product is listed. The order of these nutrients follows the guideline that nutrients that should be limited in one’s diet

are listed first. These include total fat, saturated fat, trans fat, cholesterol and sodium. Following are the nutrients that one should get enough of, including carbohydrates (specifically, fiber), protein, and micronutrients, such as calcium, iron, and vitamins A and C. The FDA recommends using 5% as a cutoff to consider a food low in nutrients and 20% as a cutoff for high criteria (Delgado et al., 2015). The ingredient list is located just below this, with ingredients listed in order of descending mass.

There are a few different types of claims that can be made on the front of package (FOP) food labels. The first are nutrient claims, which must meet the FDA definitions for the criteria. An example of a nutrient claim is “good source of fiber” (Rolfes et al., 2012). Nutrient claims commonly use terms like, “free”, “low”, “reduced”, or “less”(Delgado et al., 2015). These claims can be misleading. For instance, if you are considering choosing a snack, a reduced-salt snack would be preferred to a fully salted snack. However, this reduced-salt snack is likely still high in sodium and therefore should not be consumed in excess. The reduced sodium claim on the front of package could mislead a consumer to think it is a healthy choice (Lobstein & Davies, 2009). This same logic applies to all nutrient claims. Low-fat ice cream is still high in sugar. Low-fat salad dressing is may also be high in sugar. In fact, many times, sugar replaces fat content to improve the flavor of the product while still allowing the food to be classified “low fat”. Health claims, however, are more strictly regulated by the FDA. These include phrases like “improves heart health” or “lowers cholesterol”. These claims must be supported by scientific evidence and approved by the FDA (Delgado et al., 2015). There is a third type that remains unregulated: structure-function claims, such as “improves memory” (FDA.gov). Like nutrient claims, structure-function claims can be misleading to consumers. Chocolate milk could have a label stating, “Builds strong bones” due to its calcium and vitamin D content. However, chocolate

milk is high in both fat and sugar, so a healthier option would be skim or low-fat milk. Consumers only spend four to ten seconds making a decision about a food product before purchase, so an eye-catching structure-function claim could monopolize that time and influence the purchasing decision, leading to a potentially unhealthy choice (Lobstein & Davies, 2009).

As mentioned, FOP labels are not required by the FDA. FOP labels have the potential to greatly influence purchasing behavior. A consumer typically spends 4-10 seconds reading a label before making a purchasing decision, so the FOP label ideally should provide a method for consumers to easily compare products regardless of age, race, or education level (Hersey et al., 2013; Lobstein et al., 2009).. This has led to the voluntary development of many different types of FOP labels. Food manufacturers have taken advantage of this by highlighting only the healthy aspects of their product on the FOP label for an overall unhealthy product, leading to the impression that the item is actually healthy (Hawley, Roberto, Bragg, Lie, Schwartz & Brownell. 2012). The most common FOP label in the US is the voluntary Guidelines Daily Amount (GDA), a type of summary label that presents the nutrients in one serving, including the amount in grams and the %DV (Hersey et al., 2013).

FUTURE OF FOOD LABELING

THE FDA'S PROPOSED CHANGES

Aforementioned, food labeling was created over twenty years ago. In 2014, the FDA proposed a long-overdue new Nutrition Facts label. These changes provide the information necessary for a consumer to make better informed choices so that they may improve their diet and decrease the incidence of some of the obesity related diseases (Kessler, 2014). The new proposed food labels will highlight calories in a bigger font size, update serving sizes to reflect

what people actually eat today, and thus, update percent daily values (these percentages will also be move from the right side of the label to the left side of the label). With many of the pre-packaged foods typically eaten in one sitting, the label will change to display the entire package as one serving (Dallas et al., 2015; McCarthy, 2014). A few common examples of these types of foods and beverages are a 20 oz. soda (2.5 servings today), a pint of Ben & Jerry's Ice Cream (4 servings), and a 2-pack of muffins (2 servings). Vitamins C and A, which are currently requirements on the label, will become voluntary because these vitamins today are no longer likely to be in deficit in the average consumer's diet. Instead, manufacturers will be required to list the actual quantities of vitamin D and potassium (Delgado et al., 2015; Erickson, 2014; McCarthy, 2014).

One of the biggest proposed changes to the label is the addition of added sugars. Recently, Americans have been encouraged to limit their consumption of added sugar by the Department of Agriculture's Dietary Guidelines for Americans (Erickson, 2014; Kessler, 2014). This is because added sugars are empty calories (those with little to no nutrient content) that contribute to obesity and its related health problems, like cardiovascular disease and diabetes (Erickson, 2014; Vanderlee, White, Bordes, Hobin, & Hammond, 2015). Overconsumption of added sugar, found in things like soda or many juice cocktail beverages, is correlated to diets high in energy density but low in nutrients, hence poor health quality. Consumption of foods high in energy but low in nutrients are a large factor that increase the risk for weight gain and obesity-related illnesses (Vanderlee et al., 2015). Currently, it is difficult for consumers to recognize added sugars without scanning the ingredient list, and even then, there are many different complex, chemical names for added sugar. For example, while "sugar" and "molasses" are easily recognized as added sugars, "maltose" or "agave nectar" are less intuitive (Vanderlee

et al., 2015). With this change, manufacturers will be required to indicate how much sugar has been added to a food after the natural sugar the food already contains (Kessler, 2014). This change is intended to improve consumer awareness of added sugars in foods (Kyle & Thomas, 2015). A study by Vanderlee et al. (2015) found that including added sugar on the Nutrition Facts label improved both awareness and understanding of the sugar in products. Currently, sugars listed on the label do not have a percent daily value to put them in context of a person's overall diet. Several organizations, including the American Heart Association, the American Diabetes Association, and the 2015 Dietary Guidelines Advisory Committee have supported including added sugar one step further by adding a 10% limit (of total caloric intake) for added sugars, a number initially suggested by the WHO (Kyle & Thomas, 2015). Today, added sugars are estimated to account for almost 16% of the calories a person eats in a day (McCarthy, 2015). Ideally, with increased consumer awareness, this figure will begin to decrease.

Another impending change on the Nutrition Fact label regards the recommended daily amount for sodium. In 2013, the Institute of Medicine (IOM) reported that the average American consumes 3400mg *or more* of sodium each day. That's 1 and ½ teaspoons of salt! The FDA followed the IOM's recommendation to lower the upper limit amount of sodium, so the proposal reduces it from 2400 mg per day to 2300 mg (Erickson, 2014; McCarthy, 2014). However, with the drastic amount of cardiovascular disease in the United States, many health advocates want to see a bigger discrepancy in this change - all the way down to 1500 mg (Erickson, 2014). This is the recommended amount for patients at risk of elevated blood pressure due to diet, including those at high risk, such as geriatric patients, African Americans, and those with diabetes, kidney disease, or preexisting hypertension (McCarthy, 2014).

POTENTIAL PROBLEMS WITH PROPOSED LABELS

There are a host of reasons that the FDA's proposed Nutrition Facts have not yet been implemented. First, executing these changes to the Nutrition Facts label will not come cheap. In fact, the FDA has estimated that these changes will cost food manufacturers around \$2 billion (Erickson, 2014). This cost includes more than the change in labels; if it were only the label change, the proposal would be far less expensive. However, these label changes will likely cause food manufacturers to have to reformulate many of their products in order to continue making health or nutrient claims. This is especially noticeable for sodium content. If the sodium limit is decreased to 1500 mg, the percent daily value (%DV) for sodium would increase. Currently, a food would have to contain 120mg of sodium or less to be considered "low sodium" (5%DV). If the requirement is lowered to 1500mg, that same food now has 8%DV and can no longer be considered "low sodium". Even if the change follows the FDA's proposed outline, 120mg of 2300 mg would be 5.22%DV, just enough above the "reduced" criteria that the manufacturer could no longer make the health claim. This is just one example of reformulation that would be necessary. The addition of added sugars to the label will highlight foods high in sugar, potentially causing the decrease in sales of the product, and thus, a need to lower the amount of sugar in a food's recipe. As such, many of the trade groups representing the food manufacturers have openly opposed these changes (Erickson, 2014). Therefore cost and the resulting opposition from food manufacturers is likely the biggest reason why the 2014 proposal has not yet been put into action.

Another issue is that the proposed labels do not provide consumers with a guide for what they should be eating (Erickson, 2014; Kessler, 2014). There is no consideration for overall healthiness or nutritional value of the food. Consumers should be encouraged to increase their

purchases and consumption of fruits, vegetables, and whole grains. Instead, food manufacturers will likely focus on the nutrients they are able to list and fortify their foods to plump the nutrient quantities. For example, a company may fortify their bread to add more fiber, or like previously discussed, a company may increase the sugar in a food while decreasing the fat so it can be labeled as “low fat” while still tasting good (Kessler, 2014).

The increased emphasis (boldness and size of font) on calories has the potential to be another issue with the new label. Frank Hu, a professor of nutrition and medicine at the Harvard School of Public Health and Harvard Medical School, argued that this emphasis on calories will not help consumers to choose healthy food. Instead, it will encourage them to consume low-calorie foods. While low calorie foods are not inherently bad, this subtle difference may lead consumers to avoid healthy, high-calorie foods, like nuts, seeds, or avocados. In addition, they may consume more zero- or low-calorie (artificial) sweeteners or refined starches (Erickson, 2014), both of which have better, healthier alternatives.

As mentioned, serving sizes today are based on information obtained in the 70s and 80s (Delgado et al., 2015; McCarthy, 2014). Portion sizes served today are generally much bigger than thirty years ago. The FDA’s plan to update the serving sizes on food items is intended to improve a typical consumer’s calorie estimation. However, there is also an unintended, troubling consequence of increasing the size of one serving. A study by Dallas et al. (2015) found that only one in eight people can correctly identify the definition of a serving size. It is misunderstood that a serving size is the amount of a food that a person can or should eat based on the dietary guidelines. When the NLEA passed in the 1990, the FDA had stated that serving sizes were to represent what people typically consumed, *not* what they should be eating. This leads us to the problem with increasing the size of one serving: consumers may serve both themselves and

others more food (Dallas et al., 2015). Patients are usually advised to read the Nutrition Facts label and to watch their portion sizes. If they combine the advice, they may misjudge their serving based on the new, increased serving size. This could lead to consumers eating more food, a severe problem in a nation already struggling with their weight.

ALTERNATIVE & ADDITIONAL SUGGESTIONS FOR CHANGE

It is evident that there is room for improvement in the FDA's proposed Nutrition Facts label, though they are definitely a step in the right direction. Food labels need to promote a dramatic change in shopping behavior in order to influence a person's food choice (Beard, Nowson, & Riley, 2007) and the proposal does not seem to be radical enough to inspire this change. Following are several suggestions to further improve not only back of pack but front of pack labels.

BACK OF PACKAGE LABELS

One major gap in the information provided on the Nutrition Facts label involves trans fat. The FDA is currently working to remove artificial trans fats from all foods. They have set a three-year period to have manufacturers either remove trans fats from their products or receive approval to use partially hydrogenated oils, the main source of trans fats, as an additive. This is because in 2013, trans fats were determined by the FDA to no longer be generally recognized as safe (GRAS). Trans fats have been shown to increase low density lipoprotein (LDL) cholesterol and decrease high density lipoprotein (HDL) cholesterol. It also can increase triglycerides, decrease LDL particle size, and reduce activity of certain enzymes. In short, trans fats can cause inflammation, increase cholesterol problems, and play a role in diabetes, heart failure, atherosclerosis, and cardiac sudden death (Brandt, 2011). Despite this, a food with less than 0.5g

of trans fat per serving can list trans fat as 0g on their nutrition label. To explain why this is a potential problem, Brandt (2011) gives the example of a food with 0.44g trans fat. A person may eat three or four servings of this product in a day, which would have a cumulative effect causing the consumption of more than the dietary guideline amount for trans fat. Brandt (2011) suggests that Nutrition Facts labels should instead include any amount of trans fat in a serving size, regardless of how small it is relative to one serving.

Kessler (2014) suggested several additional changes to improve food labels. For the Nutrition Facts label, he wanted to see a change in the ingredients list. As it exists now, the ingredients are listed in order of descending mass (from largest to smallest). The format is confusing for some consumers and many of the ingredient names are complex. Kessler proposed incorporating the “smart design” used in the overhaul on the font for both serving size and calories into the ingredient list to make it easier to see and understand. Ingredients would still be ordered by descending mass, but related ingredients would be lumped into categories (i.e. defining them as a single ingredient), so that its location in the ingredient list accurately represents how much is in the food. Sugar is a great example of this. Sucrose may be list as the third or fourth ingredient in a food, followed by molasses or high fructose corn syrup later in the list. If the three types of sugar were combined together, however, it would show that sugar is the largest ingredient by mass for that food (indicating that it is likely not a healthy choice). Grains are another great example; there are certain types of bread that list many types of grain, like flax seeds, whole wheat berries, and whole wheat flour. When those ingredients are combined into one group, it would be clear that the bread is a good source of whole grains, even if the consumer did not know what “whole wheat berries” or “flax seeds” were. This, combined with the addition of added sugars, would make high energy density foods with little nutrient content easy to

identify, allowing consumers to more easily improve their intake of added sugars (Kessler, 2014).

Another improvement to the Nutrition Facts label would be the addition of an energy equivalent to calories, such as physical activity required to burn these calories. This expansion of calories could greatly influence consumer behavior (Bleich & Pollack, 2010; Blumenthal et al., 2010; Dowray et al., 2013). Several studies have demonstrated that calorie information with physical activity equivalents significantly decrease consumer purchases of sugar-sweetened beverages (like soda) (Bleich, Herring, Flagg, & Gary-Webb, 2012; Dowray et al., 2013). While this may improve consumer choice related to beverages, the diet-wide effects of emphasizing high-calorie items with exercise equivalents has not been studied (Blumenthal & Volpp, 2010; Fitch, Harnack, Neumark-Sztainer, Story, French, Oakes, & Rydell, 2009). When participants of various studies were questioned regarding their preference for exercise equivalents on the label, the general theme emerged that older adults tend to have a negative view of it. They find the information discouraging, like it is being used as a scare tactic, and that it is not generalizable to all people (Fitch et al., 2009). However, younger participants liked the exercise equivalent because they found it easy to understand (Hawley et al., 2012). Dowray et al. (2013) found that compared with calories alone, menus that also listed “miles to walk” were the most effective at lowering the amount of calories selected. So while they are disliked by many older consumers, they do tend to be effective. More research regarding this addition should be done to determine whether its effectiveness is enough to justify its addition to the label.

FRONT OF PACKAGE LABELS

The back of package information is complicated and difficult to read quickly. Instead of the massive focus on the content found on this label, the FDA should create a uniform front-of-

package label requirement for all packaged foods. This could even extend to the food items sold in sit-down and fast-food restaurants. Regulating front of package labels is potentially one of the biggest areas that could be changed to influence behavior. The typical consumer only takes 4-10 seconds to look at a food label and make a purchasing decision (Lobstein et al., 2009). To have the maximum effectiveness, a label should be able to be used by consumers of all ages, races and ethnicities. It should capture the user's attention and lead to easy perception and processing, thus fostering healthier choices (Hersey et al., 2013).

Drescher, Roosen, and Marette (2014) questioned participants in a study to determine consumer preference to front-of-package information. While the majority of consumers demonstrate the preference for a simple, easy to understand front-of-package label, there are many different opinions on which format is best. There are two general types of front-of-package labelling: nutrient specific and summary systems (Hersey et al., 2013). Summary systems will be discussed first because they are simpler. These systems use an algorithm to calculate an overall



Swedish Keyhole symbol [®]

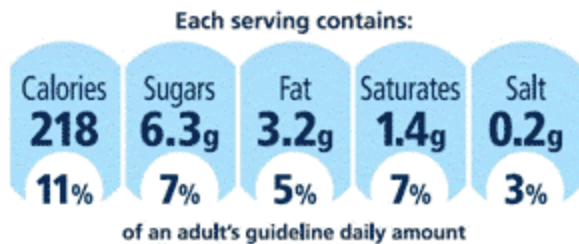


Choices Programme (Netherlands and internationally) [©]

nutritional score of a food item. There are two of these style currently in place (pictured left); one is the Keyhole symbol (in Sweden) and the other is the Choices Programme logo (Netherlands, United Kingdom, some others) which are both displayed on an item when its nutrient profile meets the criteria for "healthy". NuVal is the system which gives foods a score from 1-100. The higher the score, the better the nutritional content of the food. It analyzes the nutrient content of over 30 criteria including those to limit and those to get enough of. Participants of Hawley et al. (2012) seemed to prefer this simplified system, but other studies demonstrate that, despite the preference,

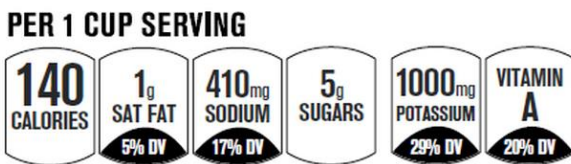
consumer choice seems to be most improved with the nutrient specific systems (Ellison, Lusk, & Davis, 2013; Lobstein et al., 2009; Temple, 2014).

As with summary systems, there are several different types of nutrient specific systems currently in use. One of the most common in the US is the Guideline Daily Amounts (GDA)



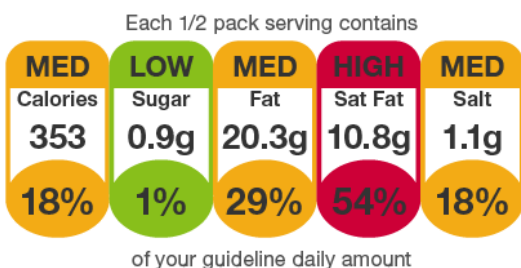
label (pictured left). This label presents the nutrients in one serving, including the amount in grams and the %DV (Hersey et al., 2013).

Another system is the “Facts Up Front” label (pictured below/left). This is actually a type of GDA label that lists calories, saturated fat, sodium, and sugar per serving. It is normally used for beverages and manufacturers have the



option to list two “good” things about the product, as well, such as vitamin or mineral content (Hersey et al., 2013).

Overall, the research best supports the traffic light nutrient specific system (Balcome, Fraser, & Di Falco, 2010; Becker et al., 2015; Drescher et al., 2014; Ellison et al., 2013; Hersey et al., 2013; Jones & Richardson, 2007; Temple, 2014). This system is utilized in the United Kingdom. Traffic light labels list the grams and %DV for total fat, saturated fat, sugar, sodium,



Source: Food Standards Agency

and sometimes total calories (pictured left). This information is color-coded based on the amount present: red, orange or amber, and green for high, medium, and low per 100g, respectively.

These four nutrients were selected due to their impact on health (Drescher et al., 2014). These systems tend to be easier to understand at a glance than GDA alone. Several studies demonstrate

that traffic light labels with text allow participants to more quickly process the nutrients in a food than ones without text and ones without color (Becker et al., 2015; Hersey et al., 2013; Jones & Richardson, 2007). This system, though potentially the most effective, is not without flaws. Traffic light labels do not demonstrate the food's ingredients and therefore do not highlight when a food is made from refined products. This is especially problematic for cereals and grains. Temple (2014) criticized these labels by demonstrating what the labels would look like for several breakfast products. On some products, the traffic lights stated that the food is low in sugar content and others were high. However, in terms of nutrient content, the foods high in sugar were superior to two of the foods low in sugar. If the consumer read the BOP label, he or she would have noticed the high carbohydrate content is due to dietary fiber and avoid mistakenly categorizing it as unhealthy. Temple suggests avoiding this situation by adding an "overall health" value, similar to the summary system, for each food.

The food industry opposes the traffic light labels because it may bias consumers. In a traffic light, red symbolizes stop. This inherent knowledge could cause a person to interpret a food item with a red criteria to also mean stop (Balcome et al., 2010; Drescher et al., 2014). This discrimination against products with red labels could cause the company's sales to decrease, requiring them to either pull the product from the market or reformulate it to have a lower content of the nutrient in the red. While reformulation would not necessarily be a bad thing, it would incur addition costs for food manufacturers after the initial expenses to redesign and reprint their labels.

CONCLUSION

There is a lot to be done to improve the health of Americans. With a two-thirds of Americans being overweight and one-third experiencing hypertension, an early warning sign of cardiac disease, there needs to be a huge push to improve the American diet. Nutrition labelling is one of the best places to target to improve a consumer's food purchases, and thus, consumption. As the FDA proposes the first major overhaul of the Nutrition Facts label since its initial development in the 1990s, many nutrition experts have begun to publish research considering alternative methods to improve the label to best help the consumer to choose healthy foods. Nutrition labels are crucial for providing people with information regarding the calorie and nutrient content of the foods they are consuming. We have come a long way since the 70s when foods first became labeled (though voluntarily), but our health is not improving and therefore there needs to be a dramatic change. The FDA's proposed changes are a great start in helping consumers to better understand the label, but they are likely not drastic enough to influence behavior.

Instead of the sole renovation of BOP labels, the FDA should also create a requirement for a FOP label. This label should utilize the traffic light system similar to the one currently used in the UK, plus a summary of "total healthiness" of the object. In addition to these labels, the FDA should begin consumer education programs to further improve consumers understanding of the information listed on labels. This could be in the form of lessons in elementary schools, maybe as part of a health class, or creating a commercial to air on several different popular television networks to give a brief overview of the new labels. Another more personal route would be to have physicians sit down one-on-one with the patients at risk of developing obesity-related illnesses to explain how the use of food labels and implementing diet change can improve

their health. One of the biggest influences on a consumer to use food labels is education: the consumers most likely to use the label are the ones who are either well educated on the requirements necessary (health conscious consumers) or those with family members who have specific diets. The earlier we can start implementing healthier dietary changes the better, because negative eating habits adopted early are very likely to persist throughout adulthood (Gerend, 2009).

Ideally, by helping consumers improve their choice in food selection, the incidence of obesity and its various related illnesses, such as cardiovascular disease, Alzheimer's, several types of cancer, diabetes, and possibly even kidney disease could be slowed or better, reduced. If the incidence of these diseases were decreased, the costs each year for healthcare would be much lower. The food industry would be driven to develop tasty, healthy products. All in all, food labeling inadvertently plays a role in our choices, our diet, and thus, our health. Improving food labels is an important first step to improving the overall health of American people.

REFERENCES

- Balcome, K., Fraser, I., & Di Falco, S. (2010). Traffic lights and food choice: a choice experiment examining the relationship between nutritional food labels and price. *Food Policy, 35*, 211-220.
- Beard, T., Nowson, C., & Riley, M. (2007). Traffic-light food labels. *Medical Journal of Australia, 186*(1), 19.
- Becker, M. W., Bello, N. M., Raghav, S. P., Peltier, C., & Bix, L. (2015). Front of pack labels enhance attention to nutritional information in novel and commercial brands. *Food Policy, 56*, 76-86.
- Bleich, S. N., Herring, B. J., Flagg, D. D., & Gary-Webb, T. L. (2012). Reduction in purchases of sugar-sweetened beverages among low-income black adolescents after exposure to caloric information. *American Journal of Public Health, 102*(2), 329-335.
- Bleich, S. N., & Pollack, K. M. (2010). The public's understanding of daily caloric recommendations and their perceptions of calorie posting in chain restaurants. *BMC Public Health, 10*(1), 121.
- Blumenthal, K., & Volpp, K. G. (2010). Enhancing the effectiveness of food labeling in restaurants. *Journal of the American Medical Association, 303*(6), 553-554.
- Borgmeier I. & Westenhoefer J. (2009). Impact of different food label formats on healthiness evaluation and food choice of consumers: a randomized-controlled study. *BMC Public Health, (9)*, 184.
- Brandt, E. (2011). Deception of trans fats on food and drug administration food labels: A proposed revision to the presentation of trans fats on food labels. *American Journal of Health Promotion, 25*(3), 157-158.
- Burton, S., Creyer, E. H., Kees, J., & Huggins, K. (2006). Attacking the obesity epidemic: the potential health benefits of providing nutrition information in restaurants. *The American Journal of Public Health, 96*(9), 1669-1675.
- Dallas, S. K., Liu, P. J., & Ubel, P. A. (2015). Potential problems with increasing serving sizes on the Nutrition Facts label. *Appetite, 95*, 577-584.
- Delgado, V., Moyer, M., Singh, A. (2015). The food label: a guide to educating bariatric patients. *Bariatric Surgical Practice and Patient Care, 10*. 87-92.
- Dowray, S., Swartz, J., Braxton, D., & Viera, A. (2013). Potential effect of physical activity based menu labels on the calorie content of selected fast food meals. *Appetite, 173*-181.
- Drescher, L., Roosen, J., & Marette, S. (2014). The effects of traffic light labels and involvement on consumer choices for food and financial products. *International Journal of Consumer Studies, 217*-227.
- Ellison, B., Lusk, J., & Davis, D. (2013). Looking at the label and beyond: The effects of calorie labels, health consciousness, and demographics on caloric intake in restaurants. *International Journal of Behavioral Nutrition and Physical Activity, 10*, 21.
- Erickson, B. (2014). Food label fight. *Chemical & Engineering News, 92*(30), 26-28.
- Fitch, R. C., Harnack, L. J., Neumark-Sztainer, D. R., Story, M. T., French, S. A., Oakes, J. M., & Rydell, S. A. (2009). Providing calorie information on fast-food restaurant menu boards: Consumer views. *American Journal of Health Promotion, 24*(2), 129-132.
- Gerend, M. (2009). Does Calorie Information Promote Lower Calorie Fast Food Choices Among College Students? *Journal of Adolescent Health, 44*, 84-86.
- Gregori, D., Ballali, S., Vögele, C., Gafare, C. E., Stefanini, G., & Widhalm, K. (2014). Evaluating food front-of-pack labeling: A pan-European survey on consumers' attitudes toward food labeling. *International Journal of Food Sciences and Nutrition, 65*(2), 177-186.

- Hawley, K., Roberto, C., Bragg, M., Liu, P., Schwartz, M., & Brownell, K. (2012). The science on front-of-package food labels. *Public Health Nutrition*, 430-439.
- Hersey, J., Wohlgenant, K., Arsenault, J., Kosa, K., & Muth, M. (2013). Effects of front-of-package and shelf nutrition labeling systems on consumers. *Nutrition Reviews*, 1-14.
- Jones, G. & Richardson, M. (2007). An objective examination of consumer perception of nutrition information based on healthiness ratings and eye movements. *Public Health Nutrition*, 10, 238-244.
- Kessler, D. (2014). Toward more comprehensive food labeling. *New England Journal of Medicine*, 193-195.
- Kyle, T. K. & Thomas, D. M. (2015). Added sugar in the nutrition facts label: Consumer needs and the scientific uncertainty. *The Obesity Society*, 23(12), 2326.
- Lobstein, T., & Davies, S. (2009). Defining and labelling 'healthy' and 'unhealthy' food. *Public Health Nutrition*, 12(3), 331-340.
- McCarthy, M. (2014). Proposed US food labels would highlight calories, added sugars, and serving sizes. *British Medical Journal*, 348, g1852.
- Rolfes, S., Pinna, K., & Whitley, E. (2012). Understanding Normal and Clinical Nutrition. *Cengage Learning*. 53-60.
- Temple, N. (2014). Re: Food labels: A critical assessment. *Nutrition*, 30(10), 1217-1218.
- Vanderlee, L., White, C. M., Bordes, I., Hobin, E. P., & Hammond, D. (2015). The efficacy of sugar labelling formats: Implications for labeling policy. *Obesity*, 23(12), 2406-2413.
- Wu, H. W. & Sturm, R. (2013). What's on the menu? A review of the energy and nutritional content of US chain restaurant menus. *Public Health Nutrition*, 16(1), 87-96.
- U. S. Food and Drug Administration. (n.d.). Structure/function claims. Retrieved from *Fda.gov*
- U. S. Food and Drug Administration. (n.d.). FDA cuts trans fat in processed foods. Retrieved from *Fda.gov*