



Adding sodium information to casual dining restaurant menus: Beneficial or detrimental for consumers?

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ARTICLE INFO

Article history:

Received 30 September 2017

Received in revised form

27 January 2018

Accepted 23 February 2018

Available online 6 March 2018

Keywords:

Sodium

Restaurants

Eating out

Menu labeling

Menu nutrition information

Taste intuition

ABSTRACT

High sodium levels in restaurant food have prompted Philadelphia and New York City to require inclusion of sodium content in addition to calories on menus to “nudge” consumers toward lower sodium foods. However, taste perceptions may impact the effectiveness of this intervention. An online survey tested whether sodium and calorie menu nutrition information (MNI) influenced consumer choices from a casual dining restaurant menu, accounting for consumers’ intuition about taste of food relative to sodium, calories, and healthiness. Consumer choices were assessed based on calorie and sodium content of the menu items they selected. Participants were randomized to a menu with (1) calorie MNI only, (2) calorie plus numeric sodium MNI, (3) calorie MNI plus a sodium warning symbol for foods with 2300 mg of sodium or more, or (4) no MNI. Calorie plus numeric sodium MNI was associated with selection of meals lower in sodium compared to meals from the calorie MNI only menu or no MNI menu, but only for consumers with a taste intuition that (relatively) lower sodium, lower calorie, healthy foods were tasty. Consumers with the opposite taste intuition *(foods with these characteristics are not tasty) ordered meals higher in sodium. Inclusion of the sodium warning symbol did not result in a significantly different meal sodium content compared to the other menu conditions, regardless of taste intuition. However, differing levels of taste intuition alone, without consideration of MNI, was associated with ordering meals of significantly different calorie content. Overall, findings suggest adding calorie plus numeric sodium MNI may lead to beneficial outcomes (i.e., selecting meals lower in sodium) for some consumers and detrimental outcomes (i.e., selecting meals higher in sodium) for others, depending on their taste intuition.

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1. Introduction

U.S. consumers have been warned about the overconsumption of sodium for more than four decades (IOM, 2010; D. W.; Jones & Hall, 2002; Roccella & Horan, 1988). Despite these warnings, data from *What We Eat in America*, National Health and Nutrition Examination Survey (NHANES) 2013–2014, showed that dietary

sodium intake exceeded the recommended upper limit of 2300 milligrams (mg) per day by almost 50% (IOM, 2013; USDA, n.d.-a). This equates to close to 1200 mg of excess sodium intake per day – the amount found in one-half teaspoon of salt. This may not seem like much, however, a reduction in population dietary sodium intake by this amount is projected to save \$18 billion per year in healthcare cost (Palar & Sturm, 2009) and decrease total mortality by approximately 44,000 to 92,000 persons annually in the U.S. by reducing the incidence and prevalence of high blood pressure, heart attack and stroke (Bibbins-Domingo et al., 2010).

In 2015, the New York City (NYC) Department of Health and Mental Hygiene embarked on a new approach to warn consumers about excess sodium consumption by requiring a warning symbol (Fig. 1) to be placed on restaurant menus alongside foods that have 2300 mg of sodium or more in restaurant chains of 15 or more

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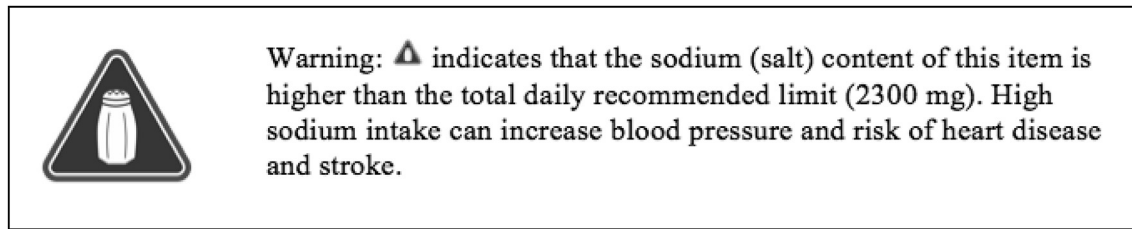


Fig. 1. This text is required in New York City on menus of restaurants with 15 or more locations nationwide. The warning symbol must be printed alongside menu items that contain 2300 mg of sodium or more.

nationwide locations (NYC Department of Health and Mental Hygiene, 2015). Philadelphia also requires sodium MNI, but in a numeric format (Philadelphia Department of Health, 2008). NYC cited the high levels of dietary sodium in restaurant foods and the lack of information about sodium content at the point of purchase as the basis for their requirement (NYC Department of Health and Mental Hygiene, 2015; USDA, n.d.-b). Data from a nationwide survey of dietary intake of U.S. adults in 2013–2014 support this justification and revealed that restaurant foods are the source of approximately one-third of the total daily sodium intake among U.S. adults (USDA, n.d.-b). Furthermore, Auchincloss et al. (2013) reported the average sodium content of meals at national full-service chain restaurants to be 3512 mg – more than 1.5 times the recommended upper limit for dietary sodium intake in a day.

Limited studies have shown that the presence of numeric sodium MNI, compared to no MNI or MNI with only calories, positively influenced consumers to select lower sodium meals (Auchincloss et al., 2013; Burton, Tangari, Howlett, & Turri, 2014; Scourboutakos, Corey, Mendoz, Henson, & L'Abbe, 2014). However, the effect of a sodium warning symbol on restaurant consumers' dietary choice has not been evaluated. The use of a variety of MNI symbols have been studied with mixed results (examples include: C. S. Jones, 2009; Sharma, Wagle, Sucher, & Bugwadia, 2011; White, Lillico, Vanderlee, & Hammond, 2016). Unlike the sodium warning symbol, these symbols have generally been used to draw attention to foods that meet certain nutritional requirements considered to be “healthy” as opposed to drawing attention to foods that are “unhealthy.” Alternatively, traffic light (TL) symbols have been used to not only signify healthy choices (e.g., green light foods) but also warn consumers of unhealthy choices (e.g., red light foods). The use of TL MNI has resulted in a decrease in calories ordered compared to no MNI (Morley et al., 2013; VanEpps, Downs, & Loewenstein, 2016) or calorie only MNI (Ellison, Lusk, & Davis, 2014). Although consumers may view the “red light” as a warning symbol, research evaluating the use of warning symbols without the use of other symbols on the menu noting healthier choices (i.e., “green light” foods) has not been completed. Studies evaluating text-based warnings on packaged foods, however, have shown that warnings alone may be beneficial in influencing consumer purchasing intentions toward healthier foods (Bushman, 1998; Roberto, Wong, Musicus, & Hammond, 2016).

The goal, of course, for the sodium warning symbol is that consumers will avoid menu items with the symbol and make a healthier, lower sodium selection instead. However, some people view healthier food as poor tasting food (Raghunathan, Naylor, & Hoyer, 2006). Raghunathan et al. (2006) called this the “unhealthy = tasty” intuition (UTI). Since perceived taste is a primary driver of food selection (Breck, Cantor, Martinez, & Elbel, 2014; Glanz, Basil, Maibach, Goldberg, & Snyder, 1998; Mai, Zahn, Hoppert, Hoffmann, & Rohm, 2014), the warning symbol may be counterproductive and drive consumers with a belief that unhealthy food = tasty food toward high sodium menu items.

Contrarily, consumers whose intuition tells them that healthy food does taste good may benefit from the additional nutrition information (Jo, Lusk, Muller, & Ruffieux, 2016; Mai & Hoffmann, 2012, 2015). Although MNI has been extensively evaluated, an analysis of how a belief that unhealthy food = tasty food (or vice versa) interacts with the addition of MNI was not found. An intuition that healthy food is not tasty may be a barrier to consumers selecting comparatively lower sodium foods, as well as lower calorie foods, when information about these nutrients is printed on restaurant menus.

2. The present research

The aim of the present research was twofold with a preliminary and a primary aim. The preliminary aim was to evaluate the construct validity of an expanded version of a scale developed by Mai and Hoffmann (2015) to measure the “unhealthy = tasty” intuition (UTI). The expanded scale included items to probe perceptions about taste related to sodium as well as calories. This scale has been named by the authors as the “SCUTI” scale (e.g., sodium-calorie-unhealthy taste intuition). In line with the UTI scale, a low SCUTI would reflect an intuition that (relatively) lower sodium, lower calorie, and healthy food is tasty. “SCUTI neutral” would reflect no strong intuition about the taste of food based on sodium, calories, or healthiness. A high SCUTI would reflect an intuition that (relatively) lower sodium, lower calorie, and healthy food is not tasty.

The primary aim of this study was to determine how sodium MNI (along with calories) on a casual dining restaurant menu affects consumer food ordering intentions, accounting for differing levels of intuition about the taste of food relative to sodium, calories, and healthiness. The hypotheses included:

H1. Sodium content of meals ordered will be significantly less (more) for consumers with low (high) SCUTI when ordering from menus with:

- H1a calorie information only OR calorie and numeric sodium information OR calorie information plus a sodium warning symbol compared to no nutrition information;
- H1b calorie plus numeric sodium information compared to calorie information only;
- H1c calorie information plus a sodium warning symbol compared to calorie information only; and
- H1d calorie information plus a sodium warning symbol compared to calorie plus numeric sodium information.

H2. Calorie content of meals ordered will be significantly less (more) for consumers with low (high) SCUTI when ordering from menus with calorie information (with or without sodium information presented numerically or as a symbol) compared to no nutrition information.

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