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Research report

What types of nutrition menu labelling lead consumers to select less energy-dense fast food? An experimental study

Belinda Morley [a,*], Maree Scully [a], Jane Martin [b], Philippa Niven [a], Helen Dixon [a], Melanie Wakefield [a]

[a] Centre for Behavioural Research in Cancer, Cancer Council Victoria, 1 Rathdowne Street, Carlton, VIC 3053, Australia
[b] Obesity Policy Coalition, 100 Drummond Street, Carlton, VIC 3053, Australia

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ABSTRACT

This study assessed whether the inclusion of kilojoule labelling alone or accompanied by further nutrition information on menus led adults to select less energy-dense fast food meals. A between-subjects experimental design was used with online menu boards systematically varied to test the following labelling conditions: none (control); kilojoule; kilojoule + percent daily intake; kilojoule + traffic light; and kilojoule + traffic light + percent daily intake. Respondents were 1294 adults aged 18–49 in Victoria, Australia who had purchased fast food in the last month and were randomly assigned to conditions. Respondents in the no labelling condition selected meals with the highest mean energy content and those viewing the kilojoule and kilojoule + traffic light information selected meals with a significantly lower mean energy content, that constituted a reduction of around 500 kJ (120 kcal). Respondents most commonly reported using the traffic light labels in making their selections. These findings provide support for the policy of disclosure of energy content on menus at restaurant chains. Given the magnitude of the reduction in energy density reported, and the prevalence of fast food consumption, this policy initiative has the potential to yield health benefits at the population level.

Introduction

The increasing prevalence of overweight and obesity represents a significant threat to population health and policies that support the provision of appropriate nutrition information form part of an integrated approach to global health promotion (World Health Organization, 2003). The application of nutrition information has consistently been linked with healthier diets using cross-sectional, longitudinal and experimental designs, though much of the available evidence is based on self-report data (Campos, Doxey, & Hammond, 2011). Nutrition information panels are mandatory on packaged foods in most high-income countries (e.g., Food and Drug Administration, 1994; Food Standards Australia and New Zealand, 2000) and several summary forms of this information have been developed for the front of packaging to assist consumers in making healthier choices. Percentages of nutrient amounts based on recommended daily values is the front-of-pack labelling scheme favoured by the food industry (Magnusson, 2010) but shows some deficits in its use and interpretation by consumers, particularly those from disadvantaged groups (Feunekes, Gortemaker, Willems, Lion, & van den Kommer, 2008; Kelly et al., 2009; van Kleef, van Trijp, Paeps, & Fernández-Celemín, 2008). A Traffic Light Labelling system which provides 'at a glance' information using universally recognised symbols to indicate the amounts of important nutrients assists consumers in distinguishing the healthiest product from less healthy ones in experimental conditions (Borgmeier & Westenhoefer, 2009; Jones & Richardson, 2007; Kelly et al., 2009).

While the provision of nutrition information on packaged foods is well established, greater consumption of foods prepared away from home has been identified as an important contributing factor to rising rates of obesity (Swinburn, Caterson, Seidell, & James, 2004). Food consumed outside the home now accounts for almost half of overall yearly food expenditure in the United States (Economic Research Service/United States Department of Agriculture, 2010). The largest proportion of average Australian household weekly food expenditure (27%) is also spent on meals consumed outside the home, including from fast food restaurants (Australian Institute of Health and Welfare, 2012). Consumers are largely unaware of the high energy density of these foods (Berman & Lavizzo-Mourey, 2008; Burton, Creyer, Kees, & Huggins, 2006; Lachat, Nago, Verstraeten, Roberfroid, Van Camp, & Kolsteren, 2012) and their frequent consumption has consistently been associated with increased body weight (Bezerra, Curioni, & Sichieri, 2012; Bowman & Vinyard, 2004; Niemeier, Raynor, Lloyd-Richardson, Rogers, & Wing, 2006; Prentice & Jebb, 2003).

Where nutrition information is made available by fast food chains, it is most commonly on food packaging and company

* Corresponding author.
E-mail address: Belinda.Morley@cancervic.org.au (B. Morley).

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Web sites and not provided on the premises prior to purchase (Roberto, Agnew, & Brownell, 2009; Wellard, Glasson, Chapman, & Miller, 2011; Wootan, Osborn, & Malloy, 2006). The placement of this information on menu boards at the point-of-sale improves accessibility and acts as a prompt to inform purchase decisions (Berman & Wootan, 2003; Seiders & Petty, 2004). Such policies may also encourage reformulation to improve the nutrition content of available foods thereby having wider benefit (Berman & Lavizzo-Mourey, 2008; Bruemmer, Krieger, Saelens, & Chan, 2012; Young & Swinburn, 2002). Given the level of consumption of food from fast food restaurants, even small reductions in kilojoule intake could have a significant impact at the population level.

Legislation was enacted in the United States in 2010 requiring restaurant chains with 20 or more outlets nationwide to provide calorie information on menus (Food and Drug Administration, 2010), and trialled on a voluntary basis in the UK commencing in 2009 (UK Food Standards Agency, 2009). A small number of restaurant chains in Australia also voluntarily display nutrition information on menus, and three states and territories have recently introduced the mandatory provision of kilojoule counts on menus, though the thresholds for number of outlets per chain vary (ACT Government, 2011; NSW Food Authority, 2010; SA Government, 2012). A nationwide approach to mandatory kilojoule counts on menus and vending machines, and a provision to encourage the inclusion of traffic light labels, has been recommended (Blewett, Goddard, Pettigrew, Reynolds, & Yeatman, 2011).

The few evaluations of the effectiveness of menu labelling in reducing the energy content of food purchases have shown mixed findings (Harnack & French, 2008; Swartz, Braxton, & Viera, 2011) and are limited to the United States where implementation is more advanced and calorie information (and a statement regarding daily caloric intake) is mandated (Food and Drug Administration, 2010). In recent experimental studies (Chu, Frongillo, Jones, & Kaye, 2009; Liu, Roberto, Liu, & Brownell, 2012; Roberto, Larsen, Agnew, Baik, & Brownell, 2010; Tandon, Wright, Zhou, Rogers, & Christakis, 2010) and an evaluation that did not include a comparison group (Pulos & Leng, 2010), calorie menu labelling was associated with significant reductions in the energy content of foods purchased. The addition of information on the recommended daily caloric intake was also shown to enhance this effect (Roberto et al., 2010). However, other studies have found no difference (Harnack, French, Oakes, Story, Jeffery, & Rydell, 2008), a slight increase (Finkelstein, Strombotne, Chan, & Krieger, 2011) and variable findings by restaurant chain (Dumanovsky, Huang, Nonas, Matte, Bassett, & Silver, 2011).

The mixed findings to date on the efficacy of energy content labelling suggest that there may be more effective ways of displaying this information on menus and that supplementing energy content with additional nutrition information may enhance the existing policy initiative. Furthermore, in contrast to Europe and North America where a preference for calorie information is evident (Borra, 2006; Cowburn & Stockley, 2005; van Kleef et al., 2008), Australian consumers who make use of nutrition information do not use the energy content of foods as their primary influence in making purchase decisions (Kelly et al., 2009; Morley, Martin, Niven, & Wakefield, 2012). Therefore, while the limited studies available show some promising evidence in support of energy content labelling on menus, there is a need for further experimental evaluations to determine whether the presence of this information is associated with choosing products with lower energy content in other jurisdictions where this obesity prevention policy has been proposed. The aim of this study is to examine the influence of potential models of point-of-sale nutrition menu labelling on the energy content of Australian adults' fast food meal selections.

Methods

Design

The present study used a between-subjects experimental design to test five menu labelling conditions. A web-based methodology was used to expose adults to one of the five randomly selected menu boards, from which respondents made their evening meal selection. The study was approved by Cancer Council Victoria's Human Research Ethics Committee.

Sample

A sample frame of Victorian adults aged 18–49 years who had purchased food from a fast food restaurant chain in the last month were sourced from an existing online panel managed by the market research company commissioned to conduct the fieldwork for the study. Panel members were originally sourced from various methods, including computer-assisted telephone interviews, face-to-face and online market research databases.

An email invitation was sent to eligible panel members with a web link to the survey. Three screening questions were asked at the beginning of the survey to confirm that respondents met the eligibility criteria (i.e. aged 18–49 years, purchased food from fast food restaurant chain in last month) and were not employed (or had close family/friends) in the fast food industry, nor were they dietitians or nutritionists.

On the basis of a power calculation to obtain an effect size at least equivalent to that of relevant past studies (Dumanovsky, Huang, Bassett, & Silver, 2010; Kelly et al., 2009) and with a type I error rate of 0.05, the study aimed to recruit 250 respondents per experimental condition.

Experimental conditions

Respondents were randomly allocated to view one of five menu boards that varied by type of labelling. The five menu labelling conditions were: (i) no menu labelling (control); (ii) kilojoule (kJ) menu labelling; (iii) kJ + percent daily intake (%DI) menu labelling; (iv) kJ + traffic light menu labelling; and (v) kJ + traffic light + %DI menu labelling. In accordance with proposed (Victorian Government, 2010) and subsequently adopted Australian policy (ACT Government, 2011; NSW Food Authority, 2010; SA Government, 2012), these conditions were chosen to evaluate the effect of kilojoule information alone and supplemented by additional nutrition information.

The menus were split into "Main and Sides" and "Drinks and Desserts" and comprised items typically sold at fast food restaurants (e.g. burgers, wraps, chips, soft drinks, sundaes). The kJ content of each menu item was determined by referring to nutrition information on fast food company websites. Percent daily intake values displayed the proportion of daily nutrient contribution that a serve of food provides, based on an average adult diet of 8700 kJ (2000 calories). The traffic light label gave an overall rating for each menu item based on fat, salt and sugar content. The UK Food Standards Agency criteria for traffic light labelling was used to decide whether each menu item should have a 'red', 'amber' or 'green' traffic light label (UK Food Standards Agency, 2007). A benefit of using the UK Food Standards Agency criteria is that it includes nutrient criteria per serve, in addition to per 100 g/100 ml, which is an important consideration when classifying fast food items. Examples of menu boards for the kJ + %DI and kJ + traffic light labelling conditions are shown in Fig. 1. Nutrition information was displayed in accordance with the policy that was proposed