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Research report

# The effect of energy and traffic light labelling on parent and child fast food selection: a randomised controlled trial ☆

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ABSTRACT

*Objectives:* Labelling of food from fast food restaurants at point-of-purchase has been suggested as one strategy to reduce population energy consumption and contribute to reductions in obesity prevalence. The aim of this study was to examine the effects of energy and single traffic light labelling systems on the energy content of child and adult intended food purchases. *Participants and methods:* The study employed a randomised controlled trial design. English speaking parents of children aged between three and 12 years were recruited from an existing research cohort. Participants were mailed one of three hypothetical fast food menus. Menus differed in their labelling technique – either energy labels, single traffic light labels, or a no-label control. Participants then completed a telephone survey which assessed intended food purchases for both adult and child. The primary trial outcome was total energy of intended food purchase. *Results:* A total of 329 participants completed the follow-up telephone interview. Eighty-two percent of the energy labelling group and 96% of the single traffic light labelling group reported noticing labelling information on their menu. There were no significant differences in total energy of intended purchases of parents, or intended purchases made by parents for children, between the menu labelling groups, or between menu labelling groups by socio-demographic subgroups. *Conclusions:* This study provided no evidence to suggest that energy labelling or single traffic light labelling alone were effective in reducing the energy of fast food items selected from hypothetical fast food menus for purchase. Additional complementary public health initiatives promoting the consumption of healthier foods identified by labelling, and which target other key drivers of menu item selection in this setting may be required.



## Introduction

The prevalence of obesity in adults and children in developed countries has increased markedly over recent decades (World Health Organization, 2012), increasing the risk of chronic conditions such as heart disease, diabetes, and cancer (World Health Organization, 2013). An important contributor to population weight gain has been an increased consumption of foods purchased and prepared out of home such as those from fast food outlets (Guthrie, Lin, & Frazao, 2002; Nielsen, Siega-Riz, & Popkin, 2002a,b; Poti & Popkin, 2011). Fast food meals are often higher in fat, sodium and energy than home prepared meals (Dunford, Webster, Barzi, & Neal, 2010; Guthrie et al., 2002; Prentice & Jebb, 2003; Wellard, Glasson, & Chapman, 2012), with a typical fast food meal accounting for nearly 50% of an adult's daily recommended energy intake (Brindal, Mohr, Wilson, & Wittert, 2008). Despite dietary guidelines for adults and children recommending that such foods are consumed infrequently (National Health, 2013), population surveys conducted in Australia suggest that as many as 38% of adults (Miura, Giskes, & Turrell, 2012) and about 25% of children (Hardy, 2011) consume fast foods at least weekly.

Labelling of food from fast food restaurants at the point-of-purchase has been suggested as one strategy to improve public health nutrition (Kuo, Jarosz, Simon, & Fielding, 2009; National Preventative Health Taskforce, 2009; Zimmet & James, 2006). Two potential point-of-purchase nutrition labelling initiatives for fast food restaurants are sign-post labelling and energy (kilojoule or calorie) labelling (National Preventative Health Taskforce, 2009). Sign-post labelling systems highlight the nutritional content of foods by classifying foods according to criteria for selected key nutrients (e.g. fat, salt and sugar). Traffic light labelling is one sign-post labelling system that refers to food or beverages sign-posted

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as red, amber or green, representing those items with high, medium or low levels respectively of fats, sugar and salt. Some traffic light labelling systems provide multiple colour signposts (multiple traffic light systems) for a single product corresponding to specific nutrient properties (e.g. fat, salt or sugar), while other traffic light labelling systems provide a single colour sign post for a product that is considerate of a number of nutrient properties (hereafter referred to as single traffic light system). Both single traffic light (Temple et al., 2011) and multiple traffic light systems (Borgmeier & Westenhoefer, 2009; Kelly et al., 2009) have been found to assist consumers in identifying healthier food options. Such labelling promotes a message of moderation and is generally well understood and viewed favourably by consumers (Feunekes, Gortemaker, Lion, & van den Kommer, 2008; Kelly et al., 2009; Pettigrew, Pescud, & Donovan, 2011).

The potential effectiveness of sign-post labelling on reducing the energy content of foods consumed by adult or child patrons of fast food restaurants, to the authors knowledge, has not been previously investigated. Nonetheless, research in other settings suggests that its impact on consumer behaviour may be limited. For example, an uncontrolled pre-post evaluation of nutrition education and sign-post labelling of canteen menu items in a UK school found very little impact on the food choices of children aged 5–7 years (Ellis & Ellis, 2007). Similarly, analysis of online sales data from a UK grocery chain showed no significant increase in sales for selected 'healthy' products after the implementation of a traffic light sign-post labelling system (Sacks, Rayner, & Swinburn, 2009). The grocery chain did not provide any supportive social marketing or education initiatives however, to support consumer use of the labelling system.

Energy labelling provides information regarding the energy content of food and beverages (Nestle, 2010). Evaluations of the impact on adult consumer behaviour of legislation mandating point-of-purchase energy labelling of fast food products implemented in several states in the US have been equivocal (e.g. Bassett et al., 2008; Elbel, Kersh, Brescoll, & Dixon, 2009; Finkelstein, Strombotne, Chan, & Krieger, 2011; Roberto, Larsen, Agnew, Baik, & Brownell, 2010; Swartz, Braxton, & Viera, 2011; Vadiveloo, Dixon, & Elbel, 2011). The influence of point-of-purchase energy labelling at fast food restaurants on parent's purchases for their children, however, has only recently been the subject of scientific inquiry (Elbel, Gyamfi, & Kersh, 2011; Tandon, Wright, Zhou, Rogers, & Christakis, 2010; Tandon et al., 2011). A randomised trial found a significant reduction in intended energy content of purchases for children when they were presented with a mock McDonald's menu with energy information during attendance at a primary care paediatric clinic (Tandon et al., 2010). Several natural experiments examining the purchasing behaviours pre- and post-legislation changes requiring the fast food industry to use energy labelling techniques, however, found no significant decrease in energy content of purchases for either parents or the parent's purchases for their children (Elbel et al., 2011; Tandon et al., 2011). The extent to which such legislative changes to the menus of fast food outlets were accompanied by any consumer awareness of education initiatives, was not reported.

Despite an increased number of jurisdictions adopting point-of-purchase menu labelling (specifically, energy labelling), the authors are unaware of any previous studies that directly compare the effects of sign-post or energy labelling of fast food products on purchase intentions. Furthermore, past research has identified a need to investigate the potential impact of such labelling systems on foods purchased by parent's for child consumption (Roberto et al., 2010; Tandon et al., 2010). The primary aim of this study was, therefore, to assess the impact of (i) energy labelling and (ii) single traffic light labelling systems on the energy content of intended purchases of children and parents from a hypothetical fast food menu. As secondary descriptive objectives, we also sought to determine if the impact of menu labelling systems differed according to participant demographic or weight-related characteristics, and the awareness and use of labelling information.

## Methods

The study was approved by the Hunter New England Human Research Ethics Committee (06/07/26/4.04). The study employed a three-arm randomised controlled trial design. Study procedures were based on a previous trial of purchase intentions of parents and children conducted by Tandon et al. (2010).

### *Participants and recruitment*

English speaking parents of children aged between three and 12 years residing in the Hunter New England region of New South Wales, Australia, were eligible for participation in the current study. Participants were recruited from an existing research cohort of parents established as part of a random household child health telephone survey. A research assistant telephoned randomly selected parents from the research cohort, assessed eligibility and invited study participation. Participants were not aware of the experimental manipulation of the study. See Fig. 1 for an outline of participant allocation.

### *Procedures*

The study protocol required eligible participants to complete two scripted telephone surveys conducted by a trained research assistant. A survey conducted during June and July 2011 collected demographic and health behaviour data from parents and a child aged three to 12 years in their household. Where parents had more than one child from age three to 12, the child with the most recent birthday was selected. Following completion of the demographic survey, participants were randomly allocated to one of three groups using a random number function embedded in the computer assisted telephone interviewing software in a 1:1:1 ratio, without stratification. Based on group allocation, participants in this study were mailed one of three hypothetical fast food menus. Menus were comprised of items selected from a variety of common fast food outlets in Australia. Generic descriptive names were provided for each food item to reduce any pre-conceived beliefs about existing branded fast food products. Energy content, volume measures and pricing were taken from the Australian websites of fast food outlets from which the menu items had been sourced. Nutrient profiles of all menu items were consistent across menu groups. After receiving the printed menu, participants took part in the second telephone survey to collect trial outcome data.

The three experimental groups were:

*Group 1*: Standard fast food menu (control). All items in this menu were included in subsequent menus. The standard menu contained 36 food and beverage items, including healthier options. All menu items were grouped into three categories: beverages, main menu items and dessert items. Menu items as well as a description of the item's ingredients were presented in a standard order on each menu. The menu included volume measures for beverages (millilitres) and unit price sourced from existing fast food chain websites.

*Group 2*: Standard menu with energy labelling – this menu was identical to that provided to Group 1, with the addition of energy content information being displayed next to each menu item. Energy content was displayed in kilojoules (kJ) per serve. Energy information was obtained from the Australian websites of fast food outlets from which the menu items had been sourced. The menu