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Research report

The impact of price reductions on individuals' choice of healthy meals away from home ☆

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ABSTRACT

Food high in energy but low in nutritional value is an important contributor to several serious illnesses, and one type of food that is particularly high in energy but low in nutrition is food consumed away from home. In this paper, we examine the demand and willingness to pay for healthy, Keyhole-labelled meals. A Keyhole-labelled meal is particularly low in energy, fat, sugar and salt, but particularly high in fibre. The results suggest that to get the majority of individuals to choose the healthy option regularly it would be necessary to alter the relative price between healthy and less healthy meals. Generally groups of individuals with a poor nutritional intake require a larger compensation (subsidy) before they choose the healthy alternative. About one third of respondents would choose the healthy option regularly if the prices for a healthy and less healthy meal were the same. In particular groups of individuals who already have a relatively good nutritional intake would select the healthy option. Groups with a generally poor nutritional intake (men and individuals with lower education and lower income) would gain health benefits from a subsidy of Keyhole-labelled meals.

Introduction

Modern Western food that is high in energy while low in nutritional value is an important contributor to several serious illnesses, including hypertension, type 2 diabetes, cardiovascular disease, osteoporosis, dental diseases and many common cancers (Mann, 2002; Park et al., 2005; WHO, 2003; Willett, 2005; Schatzkin et al., 2007; Palacios, Joshipura, & Willet, 2009). As an example, poor nutrition is estimated to cause about one third of cancer deaths and one third of deaths from cardiovascular disease (WHO, 2004). Poor diet – coupled with physical inactivity – is also a cause of the increase in obesity – itself a major risk factor for many of the diseases mentioned.

One type of food that is particularly nutritionally poor is food consumed away from home; such food is generally higher in calories, fat, saturated fat, salt and cholesterol, and lower in fibre, calcium and iron than food consumed at home (Becker, 2008; Callmer & Fridel, 2002; Guthrie, Lin, & Frazao, 2002; Lin, Guthrie, & Frazao, 1999, 2001). The increased consumption of food away from home is also considered to be an important contributor to the increase in obesity and overweight (Chou, Grossman, & Saffer, 2004; MaCrory et al., 1999; Pereira et al., 2005; Rashad, 2006). In Sweden, the budget share of food consumed away from home, as a proportion of total expenditure on food, has increased from 12% in 1985 to 24% in 2007–2009 (Statistics Sweden, 1985, 2009). In the US, where obesity rates are the highest in the world, the budget share for food consumed away from home currently amounts to around 50% of households' total food expenditure. Improving the nutritional content of food consumed away from home may therefore be key to improving public health.

Consumers lack full nutritional information on meals supplied in restaurants, canteens and similar establishments. It may therefore be difficult for them to choose meals that match their nutritional preferences. Further, if consumers cannot assess the nutritional quality of food away from home, there is little incentive for restaurants and other establishments to supply nutritious meals, since such food is generally more costly (see e.g. Monsivais, Aggarwal, & Drewnowski, 2011; Monsivais & Drewnowski, 2007; Rydén & Hagfors, 2011). One way of improving nutritional information on food consumed away from home is to introduce point-of-purchase menu labelling, such as the Keyhole label in Sweden or the mandatory menu (calorie) labelling imposed on chain restaurants in many states in the US (first introduced in New York in 2006).

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Results from previous research on the impact of menu labelling is however mixed, with some studies finding that menu labelling may impact healthy choices (e.g. Downs, Loewenstein, & Wisdom, 2009; Dumanovsky et al., 2011; Lassen et al., 2014; Pulos & Leng, 2010; Thorndike, Riis, Sonnenberg, & Levy, 2014), and others finding no effect of menu labelling (e.g. Dumanovsky et al., 2011; Elbel, Gyamfi, & Kersh, 2011; Elbel, Kersh, Brescoll, & Dixon, 2009; Harnack et al., 2008; Hofkens, Lachat, Kolsteren, van Camp, & Verbeke, 2011; Thunström & Nordström, 2011; Swartz, Braxton, & Viera, 2011; Vadiveloo, Dixon, & Elbel, 2011; Vyth et al., 2011).

If the aim is to promote healthy choices for the majority, other policy instruments may need to be considered in addition to information (Downs et al., 2009), such as a change in the relative price between healthy and less healthy meals. Glanz, Basil, Maibach, Goldberg, and Snyder (1998) found for example that in food decisions taste is the most important factor, followed by price. Studies (e.g. Drewnowski, 1997a, 1997b) also show that the most palatable food is high in fat and energy. Even with an information system, then, if prices of healthy and unhealthy meals are the same, consumers may in general choose less healthy, but tastier meals.

Previous research on price policies on healthy food choices away from home is limited.[1] Horgen and Brownwell (2002) analysed the impact of lowered prices, health messages and a combination of the two on healthy food choices in a restaurant offering sandwiches, salads and soups. The results show that daily average sales of healthy sandwiches and salads increased by 280% and 43% respectively as a result of the health message intervention, and by an additional 5–10% when the health message was combined with a 20–30% price reduction. The same pattern was observed for soup. However, for sandwiches and salads the largest effect on sales was found with price intervention alone, while the combined intervention had the largest effect on sales of soup, compared to baseline.

Jeffery, French, Raether, and Baxter (1994) found that purchases of fruit and salads in a cafeteria increased threefold as a result of a 50% reduction in the price of fruit and salads combined with an increase in fruit and salad choices. French et al. (2001) found that price reductions of 10%, 25% and 50% on lower-fat vending machine snacks resulted in an increase in sales of 9%, 39% and 93% respectively compared with usual price conditions. Shortcomings of these studies are that they do not analyse the impact on different consumer groups, and that price reductions are generally limited to a single value.

In this study, we analyse consumers' choice of healthy meals when the price for healthy and less healthy meals is the same, and how subsidies on healthy meals affect their selection. We examine the impact on different consumer groups, especially groups that have previously been found to have a particularly poor nutritional intake, such as men (Becker & Pearson, 2002), younger people (Becker, 2009), and individuals with lower education and lower income (Åkeson & Nilsson, 2011). To the best of our knowledge, this is the first study to examine healthy meal choices away from home with different levels of subsidies and across different socioeconomic groups.[2]

We define a healthy meal as a "Keyhole-labelled" meal. The Keyhole symbol is a trademark, owned by the Swedish National Food Agency, that indicates healthy food. The Keyhole criteria for a main course meal stipulate that the energy content should be 400–750 kcal/portion and that the maximum percentage of energy (E%) from fat should be 30%. Further, Keyhole-labelled meals should have a maximum sugar and salt content of 3 g/100 g and 1 g/100 g respectively and should include at least 100 g of fruit and vegetables (excluding potato).[3]

The Keyhole symbol is widely recognised by Swedish consumers – as many as 98% of those responsible for household purchases recognise the symbol (Ministry of Food, Agriculture and Fisheries, 2008). Most know that the Keyhole indicates a healthy choice and express confidence in the label (Ministry of Food, Agriculture and Fisheries, 2008). The Keyhole has been in use nationally since 1989 to help consumers identify healthier food products within a food product group in grocery stores. Since 2009 Swedish restaurants can be granted Keyhole certification and thereby serve meals labelled with the symbol.[4] The Keyhole symbol is then placed on the menu, next to the healthy meal.

Existing stated preference data do not permit analysis of price differences between healthy and less healthy options, since the Swedish restaurants that have been Keyhole certified generally offer Keyhole-labelled and non-labelled meals at the same price.[5] To perform our analysis and study the substitution between non-labelled and Keyhole-labelled meals due to price changes, we will therefore use stated preference data from a contingent valuation survey. In doing so, we were able both to examine the impact of the subsidy on different consumer groups and to vary the level of the subsidy at a low survey cost.

A drawback with the contingent valuation method and stated choice experiments in general is the hypothetical bias that the experiments may suffer from, i.e. the payment in the experiment is hypothetical and no transfer of money takes place. An alternative method would be to use experimental auctions. Since we are interested in studying the impact of price changes across different socioeconomic groups we need a large sample. A drawback with experimental actions is that the cost for recruiting a large number of participants from different socioeconomic groups is high.

The paper is organised as follows. In the section below, we present the data from the survey and the econometric method used for analysis. The third section reports the results, and in the last section we conclude our findings.

Methods

Data

To elicit the willingness to pay for Keyhole-labelled meals, we used the contingent valuation method (CVM), see e.g. Bateman et al. (2002). This means that respondents were given information about a Keyhole-labelled meal and thereafter asked to state their maximum willingness to pay for that meal. The survey was carried out in 2007 as an internet-based questionnaire. The following text was used to describe the healthy meal:

> *"There is a proposal to reduce the price of Keyhole-labelled (healthy) meals in the future. The proposal applies only to meals served in restaurants/canteens and not to food purchased in shops.*
>
> *Imagine that your lunch restaurant/canteen serves a selection of dishes and that one choice is Keyhole labelled. Assume that all dishes*

[1] The literature on the effects of subsidies and taxes on food products bought in grocery stores is on the other hand relatively large (see e.g. An 2013; Eyles et al. 2012; Nordström & Thunström, 2009, 2011a, 2011b).

[2] Lowe et al. (2010) carried out a field experiment in two hospital cafeterias that also allowed an analysis across different types of individuals ($n = 96$). Due to a low attrition rate and technical problems during the experiment, the results from the study are hard to interpret.

[3] In June 2009, the Keyhole symbol was introduced in Denmark and Norway.

[4] Between 2009 and 2012 Keyhole certification was granted to restaurants by an association of seven organisations (including the SLV, the Swedish National Institute for Public Health, and the Swedish Hotel and Restaurant Association). Restaurants offering Keyhole-labelled meals are also obliged to offer healthy accompaniments (drinks, bread, salad and dressing). An additional aim of the certification process is to raise restaurant professionals' knowledge about how to cook and serve healthy meals successfully. Since the end of 2012 SLV has the main responsibility for the Keyhole certification and is working to create a new certification association.

[5] In 2012 about 300 restaurants were Keyhole certified.