

Socioeconomic inequalities in food purchasing: The contribution of respondent-perceived and actual (objectively measured) price and availability of foods

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Abstract

Background. Research has shown that lower socioeconomic groups purchase foods that are less consistent with dietary recommendations. The price and availability of foods are thought to be important mediating factors between socioeconomic position and food purchasing.

Objectives. We examined the relative contribution of the perceived and objectively measured price and availability of recommended foods to household income differences in food purchasing.

Methods. Using a face-to-face interview, a random sample of Brisbane residents ($n=812$) were asked about their food purchasing choices in 2000. They were also asked about their perceptions of the price and availability of 'recommended' foods (i.e. choices lower in fat, saturated fat, sugar, salt or higher in fibre) in the supermarkets where they usually shopped. Audits measuring the actual availability and price of identical foods were conducted in the same supermarkets.

Results. Lower socioeconomic groups were less likely to make food purchasing choices consistent with dietary guideline recommendations. Objective availability and price differences were not associated with purchasing choices, nor did they contribute to socioeconomic inequalities in food purchasing choices. Perceived availability and price differences were associated with the purchase of recommended foods. Perceived availability made a small contribution to inequalities in food purchasing, however perceived price differences did not.

Conclusion. Socioeconomic inequalities in food purchasing are not mediated by differential availability of recommended foods and differences in price between recommended and regular foods in supermarkets, or by perceptions of their relative price. However, differential perceptions of the availability of recommended foods may play a small role in food purchasing inequalities.

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Introduction

Unhealthy dietary intakes are significant contributors to major chronic conditions such as cardiovascular disease and cancer (National Health and Medical Research Council, 2003). These diseases show marked socioeconomic gradients; lower socioeconomic groups experience higher mortality and morbidity rates from cardiovascular disease and some cancers than their

more advantaged counterparts (Dalstra et al., 2005; Mackenbach et al., 2000). Unhealthy dietary intakes have been identified as key contributing factors to these health inequalities (Davey Smith and Brunner, 1997; James et al., 1997; Smith and Baghurst, 1992).

Dietary guidelines aim to decrease the burden of disease amongst the general population and socioeconomically disadvantaged groups in particular. The guidelines advocate making food choices that are low in fat, saturated fat, salt and sugar, and higher in dietary fibre (National Health and Medical Research Council, 2003). Lower socioeconomic groups are less likely to make food choices consistent with these recommendations (Turrell et al., 2002; Roos et al., 1996). Much research has focussed on the individual-level determinants of socioeconomic

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inequalities in diet. This focus has tended to ignore the context in which individuals make decisions about food choice (Cummins and MacIntyre, 2002). Two recent reviews concluded that we know relatively little about how availability and price are associated with intakes (Kamphuis et al., 2006; Giskes et al., 2007). Additionally, we know even less about how these factors influence food purchasing (a behaviour that precedes intakes) and socioeconomic inequalities in food purchasing.

A growing body of evidence has examined the location of supermarkets as a proxy for the availability of a wide variety of foods at low prices. Studies in the US and Canada have found that deprived and minority areas are less serviced by supermarkets, but have more independent grocery stores (that stock a limited range of items at higher prices) (Cummins and MacIntyre, 2006). The opposite trend was found for retail provision in the UK; a greater number of supermarkets/discounters were located in deprived areas, and the price and availability of a range of foods did not show much variation by area deprivation (Cummins and MacIntyre, 2002). An Australian study did not find any association between access to food retail outlets (assessed in terms of distance, numbers of local shops and their opening hours) and area deprivation (Winkler et al., 2006a). A number of natural experiment studies in the UK have not shown convincing evidence that increased access to a wide variety of foods at low prices was associated with improvements in residents' dietary behaviours (Cummins et al., 2005). While many of these studies have looked at area-level infrastructure as a proxy for the availability and price of foods, the reality is that some participants may choose to shop in other areas. A potentially more insightful (and arguably more realistic) method of examining the role of availability and price on food purchasing decisions is assessing the availability and price of items in the shops where participants reported doing their shopping. No known study has done this to date.

Research on food retail provision and the availability and price of foods has almost exclusively relied on objectively measured data (e.g. Cummins and MacIntyre, 2002; Winkler et al., 2006b). The use of objective data may only tell part of the story about how availability and price mediate socioeconomic differences in food purchasing. People's food purchasing may also be driven by their perceptions of availability and price, and differential perceptions may contribute to socioeconomic inequalities in food purchasing. A number of studies have shown that lower socioeconomic groups perceive that some recommended foods (i.e. choices lower in fat, saturated fat, sugar, salt or higher in fibre) are not always available where they shop (Kearney and McElhone, 1999; Kearney et al., 2000). Additionally, lower socioeconomic groups are more likely to perceive a recommended diet to be more expensive (Kearney and McElhone, 1999; Giskes et al., 2002). While there has been much work on the objective environment to date, we are not clear about where interventions would be best targeted to bring about dietary change. It is currently unknown which strategy may be most effective in improving population dietary behaviour and decreasing inequalities in these: making changes to the actual food purchasing environment or focussing on people's perceptions of the food environment.

In the current study we examined the relative contribution of perceived and objective price and availability of recommended foods to household income differences in food purchasing. We addressed these aims using objective availability and price data from supermarkets where participants shopped and participant's perceptions of food availability and price in these same stores.

Methods

Data collection

Data for this study were collected as part of the 2000 Brisbane Food Study in Brisbane, Australia. Two methods of data collection were employed: (1) a face-to-face structured interview to assess food purchasing behaviour, and obtain the name and address of the supermarket where participants do most of their grocery shopping and participant's perceptions of the availability and price of a range of food items at this supermarket; and (2) supermarket audits to objectively assess the availability and price of the same foods.

A stratified two-stage cluster design was used to select households for participation in the interviews. Stage 1 of the sampling involved selecting 50 small areas within the city. Census collector's districts (CCDs) were the area-level units used in the current study. CCDs are the smallest administrative units used by the Australian Bureau of Statistics to collect census data. Brisbane consisted of 1517 contiguous CCDs at the time of the study, each containing an average of 200 occupied private dwellings. Socioeconomic characteristics of CCDs were summarised by the Index of Relative Socioeconomic Disadvantage (IRSD) score. The IRSD reflects the overall level of socioeconomic disadvantage of an area measured on the basis of attributes such as low income, low educational attainment, high levels of public sector housing, high unemployment and jobs in relatively unskilled occupations (Australian Bureau of Statistics, 1996). The 1517 CCDs were ranked based on their IRSD scores. The distribution of IRSD scores was subsequently divided into 10 strata (deciles), and five CCDs were selected from each strata using systematic without replacement probability proportional to size sampling.

Stage 2 involved selecting 1003 private dwellings from the 50 CCDs (20 dwellings on average per CCD), which was done by simple random sampling. Given the focus of the study, the person within each dwelling who self-identified as being primarily responsible for most of the household's food shopping was interviewed. Interview response rate was 66.4%. The majority of participants (77.9%) were female and had a mean age of 46.8 years (sd=18.3). Interviews took place between September and December 2000.

Supermarket audits were conducted between October and December 2000 by trained auditors. All supermarkets within a 2.5 km radius of the centroid of each CCD were audited. Of these, a total of 58 supermarkets were identified where participants shopped, based on where they reported doing most of their grocery shopping in the interview. One supermarket refused to participate, resulting in a supermarket participation rate of 98.3% ($n=57$).

Instrumentation and measures

Food purchasing behaviour

Food purchasing behaviour was measured on the basis of 14 food groups shown in Table 1. These food groups were chosen based on a number of considerations. Firstly, they were foods included in the five core food groups of the Australian Guide to Healthy Eating (Commonwealth Department of Health and Family Services, 1998). They were staple foods in the Australian diet and were available in choices that differed in their fat, fibre, salt or sugar content. Choices that had nutrient contents more consistent with dietary guideline recommendations were identified as 'recommended' choices, and the standard choice was referred to as the 'regular' choice. For example, for bread the 'recommended' choice was the option higher in fibre (e.g. wholemeal) and the 'regular' choice was lower-fibre option (e.g. white bread).

Participant's purchasing behaviours for 58 foods that comprised the recommended and regular sub-categories of each food group in Table 1 were assessed. One question related to each food group. For example, participants were asked,

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