



Rapid evidence review:
The impact of promotions on high fat,
sugar and salt (HFSS) food and drink on
consumer purchasing and consumption
behaviour and the effectiveness of retail
environment interventions

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About this briefing

This briefing paper aims to provide an overview of the best available evidence on the impact of promotions on high fat, sugar and salt (HFSS) food and drink* on consumer purchasing and consumption behaviour and the effectiveness of promotional interventions to influence consumer behaviour in a retail environment.

The first section looks at the context of obesity and landscape of promotions in Scotland. The second section sets out the evidence on the impact of promotions on purchasing and consumption behaviour and the effectiveness of retail promotional interventions to encourage the purchase of healthy foods. The final section provides conclusions from the available evidence and limitations of the review.

The findings from this review should be interpreted in light of the limitations outlined in the final section. In particular, it is worth noting that there are only a small number of studies in this area, and no studies outlining results from the implementation of restrictions on promotions of HFSS food and drink. Thus, while overall there are positive indications, it is difficult to draw any firm conclusions from the current evidence. It should be noted, however, that the lack of evidence due to the small number of studies should not be interpreted as evidence of no effect.

Although the evidence base linking the purchase of HFSS food and drink with consumption is still developing, it cannot be ignored that overweight and obesity in Scotland now affects the majority of adults and a significant proportion of children. In addition, the Scottish population is not meeting the Scottish Dietary Goals[†]. Therefore, it can be argued action is required to reduce the amount of HFSS foods being purchased in Scotland. Based on the evidence, NHS Health Scotland believes that as part of a package of

* High fat, sugar, salt food and drink are foods which are high in fat, sugar or salt, low in nutritional value and not required for our health.

[†] See www.gov.scot/Topics/Health/Healthy-Living/Food-Health/DietaryGoalsScot

measures, restrictions on the promotion of food and drink high in fat, salt and sugar could have a positive impact on reducing levels of obesity in Scotland. In addition, monitoring and evaluation, to track impact across population groups including unintended consequences, will be essential.

Key points

Price promotions

- Consumer spending on price promotions in the UK is the highest in Europe.¹
- While the number of promotions on healthy and unhealthy food and drinks* appear to be equal,² price promotions on unhealthy foods and drinks tend to offer a greater reduction in price or greater product volume for a set cost than promotions on healthy foods and drink, resulting in the uptake of promotions on unhealthy food and drink being much higher.³
- Temporary price reductions are the most prevalent form of promotion in Scotland.³
- Multi-buy type price promotions tend to be more common for less healthy food and drinks compared to healthier food and drink.³

Impact on sales of price promotions

- Overall, the body of evidence strongly suggests that price promotions – both temporary price reductions and multi-buy type promotions – increase the volume of food or drink purchased during a single shopping trip and do not lead to a reduction in the frequency of purchasing at subsequent trips.⁴

* Healthy food is defined as including those foods which are lower in fat, sugar and salt, nutritionally dense and/or high in fibre. Unhealthy food is defined as those foods which do not contribute to the achievement of the Scottish Dietary Goals.

- Multi-buy type promotions and price promotions offering the greatest price discount generate the greatest increase in sales volumes.^{1 4}
- Multi-buy type price promotions lead to a greater increase in sales volumes than temporary price reductions when offering a like-for-like discount.¹
- The purchase of promoted food or drink in particular food categories, i.e. high sugar content, does not necessarily lead to compensatory reductions in the purchase of other items high in sugar, which therefore may increase the total calories bought.¹

Impact on consumption of price promotions

- Although the evidence exploring the impact of promotions on consumption presents indications of an increase in consumption, due to the small number of studies firm conclusions cannot be drawn at this stage.
- Increases in the volume of food purchased may lead to increased consumption, particularly for foods and drinks which are convenient and desirable to consume.^{5 6}

Positional promotions

- The evidence on positional promotions is mostly from single studies. Although the findings overall are generally consistent, there are a number of methodological limitations in the individual studies which limit how confident we can be in the conclusions.
- The visibility of products in a retail environment increased by feature and display promotions, for example end of aisle displays, can lead to increases in sales of both healthy and unhealthy food and drinks.^{4 7 8 9}

Health inequality

- Uptake of price promotions is high (around 40% of energy intake) across all SIMD groups in Scotland. This suggests that restrictions on promotions of HFSS foods and drinks are likely to affect purchasing behaviour regardless of level of deprivation or income.³

Retail interventions

- Interventions to increase sales of healthy items through price promotions can be effective, with the effect increasing the higher the discount.¹⁰
- Price promotions on healthy foods and drinks were most effective when combined with restrictions on promotions of unhealthy food and drinks.¹¹

1. Background

Obesity in Scotland is one of the main contributors to physical and mental illnesses such as type 2 diabetes, cardiovascular diseases, depression and thirteen cancers.^{12 13} Overweight* and obesity† in Scotland now affect the majority of adults and a significant proportion of children. In 2016 two thirds (65%) of adults were overweight including 29% who are obese and just over one in four (29%) children were at risk of being overweight, including 14% at risk of obesity.¹⁴

It is increasingly understood that the population rises in obesity have been driven by the availability of affordable and accessible food and drink high in salt, saturated fat and sugar. This leads to increased consumption of an unhealthy diet, defined by WHO as:

comprising minimal fruit and vegetable intake and excessive consumption of processed convenience foods high in salt, saturated fat, trans fat and sugar.¹⁵

Increases in the intake of calories alone are sufficient to explain increases in weight gain over recent decades, especially in developed economies.¹⁶

Despite investment in evidence-based healthy weight interventions for adults and children, levels of obesity have remained at a constant and high level for almost 10 years. In addition, none of the Scottish Dietary Goals relating to saturated fat, sugar, fruit and vegetable intake, fibre and oil-rich fish have been met over the past 15 years.¹⁷ Systematic review-level evidence suggests it is common for participants of healthy weight interventions to regain the weight they lose, with most returning to their starting weight within three to five years.¹⁸

* Overweight BMI 25–29.9 (kg/m²)

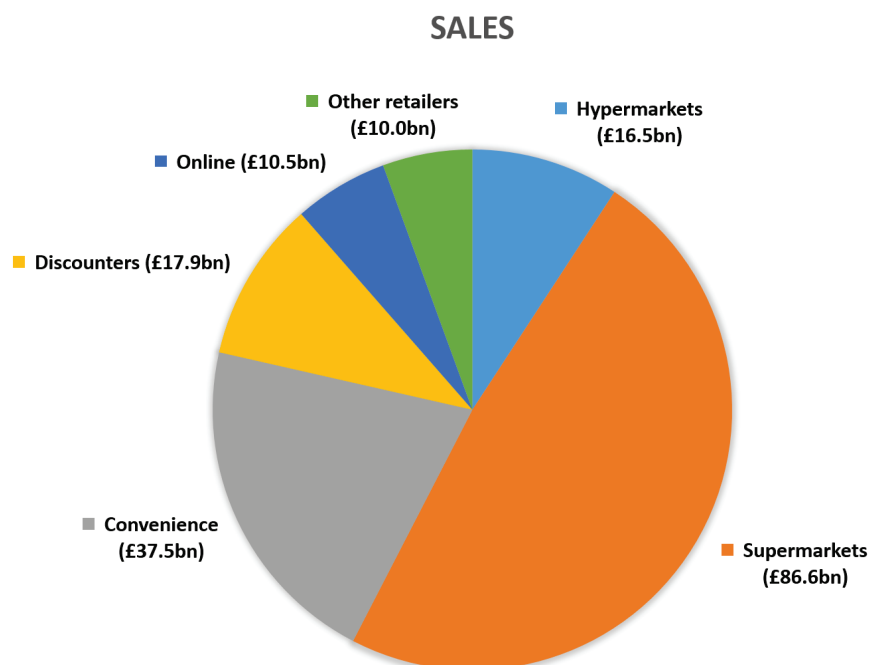
† Obesity I: BMI 30–34.9 (kg/m²); Obesity II: BMI 35–39.9 (kg/m²); Obesity III: BMI 40 or more (kg/m²)
NICE. Weight Management: Lifestyle Services for Overweight or Obese Adults. PH53 London: NICE, 2014.

Therefore, in addition to effort at an individual level, changes to the environments which determine what people buy¹⁹ and what people eat²⁰ (known as the obesogenic environment) are needed to assist in preventing excess weight gain, and to support individuals to maintain a healthy weight.

While there are a range of drivers of the obesogenic environment, this paper specifically seeks to address the particular influence of promotions on driving unhealthy dietary choices, in particular the influence of HFSS food promotion on consumer purchase behaviour. While promotions include a range of strategies that increase the pervasive appeal of a product, and have been considered to include advertising and marketing in the literature,²¹ this paper specifically focuses on promotions delivered in the retail setting.

Food and drink retail environment in the UK

The food and drink retail sector in the UK is a highly competitive and lucrative market. Sales in 2016 were forecast to reach £179.1 bn.²²



Total food and drink sales in Scotland in 2016 (£billion)

The sector is dominated by the larger supermarkets who use low prices to sell high volumes of products and attract consumers.²³ The recent recession has increased the number of consumers who report price as a deciding factor when choosing where to shop. Once in store they report that their choices are influenced by end-of-aisle displays and in store promotions.²⁴

Research on consumer behaviour in the online retail environment reports that the combined effects of price and promotion seem to be weaker than in the physical retail environment, where promotions induce larger changes in brand choices than online.²⁵ It has been suggested that this may be due to the influence of product positioning and other environmental cues in the physical retail environment which do not occur online. It should be noted, however, that the impact of ‘relational marketing’* distinctive to the online environment is not fully understood.²⁶ It is likely to have a significant impact on consumer behaviour, especially in certain groups such as children and young people. Therefore, the online environment may be an area of interest for further research in the promotion of HFSS foods and drinks. This review, however, did not find any studies that specifically explored the impact of promotions in the online environment for inclusion.

Sales promotions

Sales promotions are intended to encourage the impulsive purchase of a product or to encourage the purchase of a product more often or in greater volume than without the presence of the promotion.⁴

* Relational marketing is where the retailer can gather consumer data to tailor promotions to smaller groups of consumers and provide interactive marketing communications such as through games.

The types of sales promotion most commonly used by retailers in Scotland are:³

- **Price promotions**
 - Temporary price reductions, such as direct price discounts
 - Multi-buy type price promotions, such as buy one get one free, 3 for 2, X for £Y*
- **Positional or product information promotions**
 - End-of-aisle, protruding shelf labels, front of store displays.

Sales promotions aim to increase the appeal and recall of a product to consumers. Decisions made by consumers in the busy retail environment are often made automatically without conscious thought. This allows quick decision-making despite the large array of choices on offer. These unconscious decisions favour characteristics such as appearance, price, convenience and positioning.⁷ Sales promotions can appeal to this unconscious system and evidence suggests that this results in an increase in sales in the short term.

In addition to increasing sales, volume-based promotions such as multi-buy type promotions may normalise purchasing of particular food and drink categories in larger quantities. Promotions have become a normal feature of the retail environment. Shoppers respond to this environment by accepting that bulk purchasing strategies are acceptable or expected.²⁷ The result can be sustained increases in purchase and availability in the household of high fat, salt and sugar (HFSS) foods that have low perishability and are heavily promoted. Purchasing of these products becomes habitual as a result,²⁸ triggered by environmental cues.

Habits are difficult to change and are strongly influenced by cues in the environment which are often processed outside of conscious awareness –

* X for £Y promotions are used to encourage the purchase of a larger number of products for a set cost, reducing the cost per item but encouraging greater volume of food or drink to be purchased. This therefore increases calories purchased. For example three pastries for £1.50.

thus modifying the environment could be an effective approach to behaviour change.²⁹

Promotions of high fat, sugar and salt foods in Scotland and UK

Consumer expenditure on price promotions in the UK is the highest in Europe¹ – double that of countries such as Germany, France and Spain.

In 2016, food and drink bought on price promotion represented 36% of all the calories purchased in Scotland.³⁰

Although it appears healthy and unhealthy food and drink are promoted equally in retail settings,² many foods and drinks which are high in fat, salt and sugar are bought on promotion more frequently than other healthier categories – around 50% compared to around 30% respectively. The analysis of purchase data from the Kantar WorldPanel in 2016 shows 39% of all the saturated fat, 35% of all the sugar and 31% of all the sodium is purchased as a result of promotions.³⁰

In Scotland, temporary price reductions are the most prevalent kind of promotion, accounting for around 74% of promotions in Scotland. Temporary price reductions are used both as a promotional tool and to encourage the quick sale of food close to expiry date.

Multi-buy type price promotions represent around 23% of promotional activity in Scotland. However, they tend to be more regularly used in the promotion of food and drink high in fat, salt and sugar, compared to healthier categories (apart from water and diet soft drinks). For example, the Food Standards Scotland analysis of the promotional landscape in Scotland highlights ‘27% of regular soft drinks are purchased through this type of promotion compared with just 4% of vegetables’.³

As mentioned above, a UK-wide study covering 11 major retailers estimated to be 70% of the total grocery market found no difference in the prevalence of promotions offered on healthier and unhealthier foods. However, the promotions offered on unhealthy foods on average gave a greater reduction in price or offered a greater product volume for a set cost than for healthier foods. In addition, the study suggested that the same level of discount resulted in a larger sales increase on unhealthy foods than that for healthier foods, with sales increasing by 7.7% for every Standard Deviation Point* decrease in nutritional value.² This suggests that like-for-like promotions of unhealthy food and drinks generate disproportionately greater sales than promotions on healthy food products.

Consumers in the UK may recognise the impact of promotions on their behaviour. A single UK study using self-reported consumer data suggested that the following proportions of the sample recognised the influence of a promotion on their purchasing behaviour:

- 96.3% reported buy one get one free
- 92.6% reported price discounts
- 67.5% reported free samples
- 65.5% reported coupons.

Those in the sample that bought products in buy one get one free promotions reported that these promotions encouraged them to buy in greater volumes and to switch brands.³¹ However, this study is from 2002 when buy one get one free promotions were more prevalent. Therefore it may reflect the visibility of promotion types in the retail environment.

Furthermore, research has indicated that price-based promotions are the most salient form of marketing for young people in Scotland.³²

* Each product category was given a mean nutritional value. An individual product's nutritional value was then mapped against the mean nutritional value for the category it belonged. The number of standard deviation points tracks how far each product is from the mean category nutritional value.

Positional promotions are also prevalent in the promotion of HFSS food and drink in the UK. One audit of supermarkets' product positioning of snack products in eight developed countries found that the UK had the highest mean total aisle length dedicated to snack food including crisps, chocolate and confectionery, with snack food at over 70% of checkouts.³³ The UK also had the second highest ratio (1.31) of snack foods aisle length to fruit and vegetables aisle length within the supermarkets sampled. It should be noted, however, that the sample size from UK supermarkets was low (8) therefore reducing the generalisability of the results.

2. Evidence summary

The following evidence review focused on promotions in the retail environment and was limited to studies published in English. It provides a summary of the currently available evidence on the impact of promotions in purchasing and consumption and the effectiveness of retail promotional interventions to encourage the purchase of healthy food.

Price promotions

This review identified one systematic review, one non-systematic review and seven reports of primary studies (one grey literature) that examined the impact of price promotions on consumer purchasing and consumption. The following section brings together the findings of these papers.

Impact of price promotions on sales

Overall, the body of evidence strongly suggests that price promotions, both temporary price reduction and multi-buy type promotions, increase the volume of food or drink purchased during a single shopping trip and do not lead to a reduction in the frequency of purchasing at subsequent trips, therefore increasing the volume purchased overall. These findings are consistent across the studies and therefore can be said to be fairly robust.

A non-systematic review of studies of moderate quality suggests that price promotions lead to increases of purchases of between 12% and 60% in the short term.⁴

In addition, only 17% of these sales are estimated to be from purchases the consumer was planning to make. The other 83% are estimated to be the increased volume purchased as a result of the promotion itself.¹ Given the continuous implementation of promotions on foods and drinks high in fat,

sugar and salt in the retail environment, a longer-term effect through the accumulation of short-term effects is likely.

The non-systematic review included one study which randomly sampled 250 participants over 78 weeks. In addition to sales volume, the study used sales frequency data. The results indicated 25% of sales arising from price promotions resulted in increased 'category consumption', where consumers purchase greater quantities of the food or drink when on promotion and repurchased them at the same or similar rates at subsequent shopping trips.³⁴

A recent report also suggested that increases in the volume of food and drink purchased on promotion did not result in reductions in purchases of other high fat, salt and sugar foods and drinks. In other words, if a customer buys biscuits on promotion it does not result in them purchasing less confectionery elsewhere in the store. Indeed, the report suggested that the opposite is true; 'increases in sales of chocolate as a result of a promotion are positively associated with sales of more confectionery, which could lead to a larger increase on sales of food and drink high in sugar overall'.¹

Multi-buy type price promotions encourage a consumer to purchase goods in higher volumes than they would in the absence of the promotion, spending more of their disposable income than they otherwise would have. Evidence suggests that promotions run as multi-buys or promotions offering greatest price decreases generate a greater increase in sales^{1 4} when compared to positional or product information promotions.

However, when comparing multi-buy promotions and temporary price reductions, representing a like-for-like discount, multi-buy promotions generate the greatest sales increase. One study conducted for Public Health England observed that the expansion in sales from multi-buy type promotions ranged from 29% of sales (from a 5–15% discount) to 35% of sales (for 45–50% discount). This is in comparison to 20% (from a 5–15% discount) and 25% (for 45–50% discount) for temporary price reduction.¹

Impact of price promotions on consumption

Although the evidence exploring the impact of promotions on consumption presents indications of an increase in consumption, due to the small number of studies firm conclusions cannot be drawn at this stage.

The hypothesis is that the increase in the volume of products purchased as a result of a price promotion may lead to stockpiling by consumers. The increased salience and convenience of the stockpiled products may then lead to increased consumption. The small body of evidence, with some methodological limitations, supports this supposition.^{5 35}

Findings from one empirical study on post-purchase consumption behaviour suggested that exogenous stockpiling (stockpiling a product solely as a result of a promotion rather than anticipated future need), significantly increased the average daily consumption of food and drink. The same increase was not found for products such as washing powder.⁵

The evidence also suggests that the type of food and drink on promotion may also affect the rate of consumption. The more convenient, desirable and/or perishable the stockpiled food or drink is to consume, for example crisps and confectionary, the more quickly they were consumed.³⁴

One study suggested this rise in consumption was a result of both increased consumption frequency and the quantity consumed during each incidence.⁵

Stockpiling did impact on the consumption of lower convenience products such as noodles, oatmeal and microwave popcorn. However, although stockpiling sometimes increased the quantity consumed on each occasion, it did not appear to increase the frequency of consumption.

However, caution should be taken when interpreting this evidence due to the small number of identified studies and methodological limitations.

Given the impact of price promotions on purchasing and indications of impact on consumption behaviour, interventions to restrict their use have been identified as an area for action.¹ Although there was no evidence found on the impact of implementing restricting promotions in HFSS products, evidence was found from a high-quality study using sales data exploring the impact of the restrictions on multi-buy promotions on alcohol in Scotland. This found that the intervention was associated with a 2.6% decrease in alcohol sales between 2009 and 2012.³⁶ The reduction was most pronounced in wine sales (4% decrease), which were traditionally most heavily promoted through X for £Y promotions, for example three bottles for £10. This suggested an influence on purchasing behaviour despite other promotional activities (such as temporary price reductions) being present. Another study found no significant effect of the multi-buy ban on alcohol sales.³⁷ However, this study had methodological limitations as it used self-reported data which is prone to bias.

Positional promotions

This review identified one systematic review, two reviews and five reports of primary studies that examined the impact of positional and product information promotions on consumer purchasing and consumption. The following section brings together the findings of these papers.

The evidence base is mostly from single studies, although the findings overall are generally consistent. There are a number of methodological limitations in the individual studies which limit how confident we can be in the conclusions.

Promotions which do not include a reduction in price may also impact on consumer choice.¹¹ Feature and display promotions can create a nudging effect defined as ‘any addition to or modification of the environment that influences consumers in a predictable way without changing economic incentive’.³⁸ These promotions can change which products are the most visible for consumers and impact on product choice.³⁹

Evidence from a limited number of studies suggests that positional promotions, where products are placed in salient and convenient locations, can have a positive impact on sales.^{4 7 8} These include end-of-aisle displays, point of sale, island bin displays, store entrances and middle of shelf displays where consumers pass frequently, or where the eye is drawn. It should be noted, however, that many positional promotions may include a price promotion element. There was limited evidence that suggested that price promotions supported by positional promotions had a larger effect than price promotions alone.⁴

A single observational study, with methodological limitations, controlling for price, suggested that an end-of-aisle position could increase sales volumes for carbonated drinks, which increased by 51.7% ($p < 0.001$), coffee by 73.5% ($p < 0.001$) and tea by 113.8% ($p < 0.001$). The researchers estimated this was the equivalent to a promotional decrease in price of 22%–62% per volume. This should be interpreted with caution, however, as the study did not take into account the role of substitution between brands. This may not be indicative, therefore, of an increase in sales across the category but of consumers swapping to different brands.⁹ It does, though, suggest a significant impact of the position of a product on consumer choice of which product to purchase.

This increase in sales due to product position may be due to both increased visibility of the product and assumptions that consumers make based on the amount of space retailers provide to products. Moderate-quality evidence from a single eye tracking experimental study, where participants' eye movements are monitored to assess where the eye is drawn, suggests that products positioned in the centre of the shelf display near the top (eye level) improved both attention and consideration to purchase the product by consumers.⁴⁰

The amount of shelf space given to a product also had a positive effect on consideration to purchase. The study, using a low market share brand, found doubling shelf space, without changing price, improved the number of times a

product was chosen by 67%. It was noted in other studies that this positive effect did not increase beyond 15 square inches of additional shelf space.

Product information promotions

There was limited evidence on the effect of product information promotions such as shelf tags, posters, brochures and flyers on consumer purchasing behaviour. A systematic review, of weak evidence, found no significant effect of product health or nutritional information or point of purchase labelling on sales. However some studies suggested that product health or nutritional information was more likely to have an impact when it highlighted the absence of unhealthy nutrients than the presence of healthy nutrients.⁴¹

A more recent single study suggested the promotion of healthier products through 'healthy' shelf labels had a statistically significant impact on sales of promoted items.⁴² The study included no control, however, so the results cannot infer the increase was a result of the shelf labelling.

Retail promotional interventions to improve consumer purchasing and consumption of healthy food

This review identified three systematic reviews and two reports of primary studies that examined the impact of retail promotional interventions on consumer purchasing and consumption of healthy food and drink. The following section brings together the findings of these papers.

It is difficult to draw firm conclusions from this evidence due to the heterogeneity of interventions included in the literature. However, the available evidence suggests that a combination of promotional interventions including price, product placement and information of healthy foods may have the most impact on sales.

Systematic review-level evidence of moderate quality concluded that interventions that offered price promotions on healthier food and drink had a positive effect on purchasing, with the higher the discount on these items, the more significant the intervention effect.¹⁰

In contrast, the available evidence suggests a mixed picture for the use of positional or product information promotions on sales of healthier foods. The findings across three systematic reviews provided contrasting conclusions, making it difficult to reach a firm conclusion. One systematic review of moderate to high-quality studies suggested no consistency of impact across the studies included.¹⁰ However, it indicated that combining price promotions with positional and/or product information promotions increased the likelihood of higher sales.¹⁰

A second systematic review of mostly moderate/low-quality studies again found mixed evidence on the impact of shelf space on product selection for healthier foods. There was no difference in selection for healthy products positioned on the top and bottom shelves. However, one moderate-quality study altered the assortment of snack foods on four shelves, and when there was a greater assortment of healthier snacks (75% healthy – 25% less healthy) consumers were between 2.9 and 3.5 times more likely to purchase a healthier item.³⁹

The final systematic review, of moderate to high-quality studies, concluded that interventions such as shelf labelling and product information can have positive effects on healthy food purchases. However, the review also concluded that increases in healthier purchasing did not always lead to reductions in unhealthy purchases.⁴³

Interventions may have greater impact on increased purchase of healthier items if they alter the placement and promotion of less healthy foods in addition to increasing access and affordability of healthier options.¹¹

Health inequalities

Health inequalities are 'unfair and avoidable differences in people's health across social groups and between different population groups'.⁴⁴ Health inequalities commonly occur by gender, income, social class, deprivation, educational status, ethnicity and geography.

There was little evidence on the impact of price promotions between different population groups. An analysis of Scottish data found little or no difference in the proportion of energy purchased on price promotion according to the household Scottish Index of Multiple Deprivation (SIMD) quintile, and little variation in the percentage of nutrients purchased on price promotion by quintile of SIMD.³ Consequently, high levels of purchases are made on price promotion irrespective of SIMD quintile.

However, one UK study with methodological limitations did suggest a difference in the uptake of price promotions across socio-economic status (SES) groups. The study suggested higher SES groups had a greater uptake of price promotions than lower SES groups. This higher uptake was driven by price promotions on healthy products. Price promotions of unhealthy foods resulted in similar sales uplifts across all SES groups. In addition, price promotions on less healthy items resulted in the greatest sales increases across all SES groups: 39% for high (more affluent), 35.1% for middle and 31.5% for low (more deprived).²

The Living Costs and Food Survey⁴⁵ identifies that the lowest earning 10% of UK households spend more than double the percentage of their disposable income on their food basket, compared to the highest earning 10% (17.3% and 7.5% respectively). Given the majority of purchases made on promoted food are unplanned and lead to additional expenditure that squeezes the budgets of low-income households, minimising promotions creates opportunities to alleviate the financial pressures on disposable income of poorer households more broadly.

We know from a growing body of evidence that universal interventions that change an element of people's living and working conditions, such as restrictions on the promotion of HFSS foods, are more likely to be equally or more effective among disadvantaged groups.^{44 46} On the other hand, universal interventions that aim to increase individual knowledge or skills only, such as healthy eating campaigns, may in fact increase inequalities – unless they are specifically targeted at disadvantaged groups or applied with a scale and intensity in proportion to the level of disadvantage.⁴⁶

Evidence from this review suggests that restrictions to the promotion of HFSS foods are likely to be of greater benefit to more disadvantaged groups.*

* Please note that this statement takes into account the current understanding about health inequalities and how they might be tackled rather than direct evidence found in this review.

3. Limitations

The review has a number of limitations. The majority of the evidence identified was from single studies which explored different areas of the impacts of promotions, therefore limiting the certainty and significance we can place on generalising the findings.

A number of the studies were published over 10 years ago, which may mean their findings are less relevant today. However, the steep increases in food prices resulting from the 2008 recession and the increases in consumers' price sensitivity are likely to maintain the direction of effect of promotions on consumer behaviour.

There is limited publically available data, and the available data is, in the majority of cases, set at a high level, making it difficult to interrogate the data beyond the wider HFSS category. In addition the majority of the purchase data comes from Kantar WorldPanel which is not published by age, sex or region, so cannot be disaggregated in this way.

The quality of the studies included in this review was variable. Most studies used purchase data as a proxy for consumption. The studies that actually measured consumption were mainly limited to experimental settings with small samples of populations such as students or a few select retailers who may have target demographics, which limits their application to a whole population.

Many of the studies used self-reported data to assess the impact of the promotion which tends to be prone to recall and reporting bias.

Due to the lack of evidence, we were unable to restrict the search to Scotland or the UK. The studies include other developed countries such as USA, South Africa and European countries, which may limit their relevance to the Scottish population.

Conclusion

The evidence in this review suggests both price promotions and positional promotions may increase consumer purchasing of HFSS foods, and identifies the specific context and challenges that Scotland faces.

This paper illustrates some of the complexities surrounding the impact of promotions in the retail environment on consumer behaviour. It also highlights the gaps in the evidence, in comparison to other areas such as advertising of HFSS foods.

Although the evidence linking the purchase of HFSS food and drink with consumption is still developing, the high levels of obesity in Scotland, and the consistent failure to meet the Scottish Dietary Goals, cannot be ignored. Therefore, proportionate action is required to reduce the amount of HFSS foods being purchased for consumption in households in Scotland.

Areas for potential action

Restrictions on the promotion of HFSS foods could be an effective policy to reduce the volume of unhealthy food purchased by households. In turn, this could deliver benefits to the quality of diets in Scotland and have broader implications for addressing the obesogenic environment. Regulation that is led by Government is likely to be most effective in creating a level playing field for retailers. Restrictions on multi-buy promotions may be a practical first step.

This paper also identifies emerging evidence to support individual retailers to reposition the placement of HFSS foods. This would include avoiding highly visible locations such as end of aisle displays, in favour of areas that people would have to visit intentionally if they wanted to purchase these products.⁷ Evidence on interventions to promote healthy foods have been shown to have some impact. This includes some evidence that price promotions increase the sales of healthy foods, although they are unlikely to have any impact if used in

isolation. Interventions require the promotion of unhealthy food to be restricted to generate the most significant outcomes. There are likely to be legal considerations for the Scottish Government to take into account in order to achieve this approach to promotions.

Appendix: Search strategy

The following databases were searched: IBSS, Sociological Abstracts, Proquest Public Health, ASSIA, Ovid MEDLINE(R) and MEDLINE In-Process.

The following search terms were used to identify relevant literature:

shop* OR supermarket*, consum*, purchase, obes*, sugar, fat, junk, salt, calorie, end adj aisle, sale*, promot*, price*, instore, online, display*, multi-pack* or multipack* or multi-buy or multibuy or multi-unit or multiunit, stockpil*, point adj1 purchase, consumer*.

Initial searches of six databases identified 437 potentially relevant references; following abstract screening for relevance and removal of duplicate references there was a total of 18 references. Following further screening a total of 11 papers focused on promotional activity have been selected for critical appraisal and synthesis. In addition hand searching of relevant journals identified a further 12 papers. Critical appraisal was conducted by one author.

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