

Top Tips on Chips: Can Local Fast Food Caterers in England Adopt Healthier Cooking Practices?

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Abstract Obesity is now recognised as a growing Public Health epidemic. National Health Service (NHS) costs attributable to overweight and obesity are projected to reach £9.7 billion by 2050 in the UK, with wider costs to society estimated to reach £49.9 billion per year. It is now well recognised that being overweight or obese will soon be the leading cause of premature death and disease in the UK. Obesity is a key risk factor for circulatory disease, cancer and diabetes. Evidence suggests that obesity prevention interventions does raise public awareness and contribute toward the reduction of obesity. We report on an intervention to encourage the adoption of healthier cooking practices among fast food caterers in a London Borough. Our results indicate an average decrease of 52 grams (12.2%) in portion weight of chips, an average decrease in total energy per portion of 144 kcals (14%), an average decrease in total fat per portion of 7.1 grams (15%), an average decrease in total saturated fat 2.84 grams (36%) and an average decrease in salt per portion 0.35 grams (22%). We also report an improvement of caterer's behaviour toward healthier cooking practices. Local fast-food caterers in England can adopt healthier cooking practices and may play an important role to address the obesity epidemic. The extent of what can be achieved through such intervention remains unclear and requires further investigation. The involvement of more fast food premises and sampling a wider range of fast foods will enhance the opportunity to develop healthier cooking interventions.

Keywords Obesity, Fast Food Caterers, Healthy Cooking and Fish and Chip Shops

1. Introduction

It is now well recognised that being overweight or obese is a major public health challenge and will soon be the leading cause of premature death and disease in the UK. [1] Almost two-thirds of adults and a third of children are either overweight or obese, and work by the Government Office for Science's Foresight programme suggests that, without clear action, these figures will rise to almost nine in ten adults and two-thirds of children by 2050. [1] This matters because being overweight or obese can have a significant impact on an individual's health – both being associated with an increasing risk of diabetes, cancer, heart and liver disease among others. [1] Social stigma, low self-esteem and a generally poorer quality of life are common experiences for many overweight and obese people. The resulting National Health Service (NHS) costs attributable to overweight and obesity are projected to reach £9.7 billion by 2050, with wider costs to society estimated to reach £49.9 billion per year. [1] The Cabinet Office Report estimates 70,000 premature deaths (more than 10% of current annual

mortality) in the UK could be avoided each year if UK diets matched nutritional guidelines. [2] The cost of diet related ill health equates to approximately six billion per annum. [2] The two year Health Profile for Bromley gives a modelled estimate of 21.8% (54,163) of those aged 16 years and above to be obese. [3, 4] Bromley is considered to be an affluent borough with pockets of deprivation with approximately 5% of the population living in the most deprived quintiles of the country [5].

What Causes Obesity?

Obesity develops when energy intake from food and drink consumption is greater than energy expenditure resulting in the gradual accumulation of excess fat [6].

In adults, obesity is commonly defined by a Body Mass Index (BMI) of 30 or more. For children in the UK, the British 1990 growth charts are used to define weight status. [6] The causes of obesity are complex and relate to a wide variety of societal and behavioural factors. The Foresight report identified seven cross-cutting themes (figure 1) [7].

a) Biology: an individuals starting point - the influence of genetics and ill health;

b) Activity environment: the influence of the environment on an individual's activity behaviour, for example a decision to cycle to work may be influenced by road safety, air pollution or provision of a cycle shelter and showers;

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Published online at <http://journal.sapub.org/fph>

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c) **Physical Activity:** the type, frequency and intensity of activities an individual carries out, such as walking or cycling vigorously to work every day;

d) **Societal influences:** the impact of society, for example the influence of the media, education, peer pressure or culture;

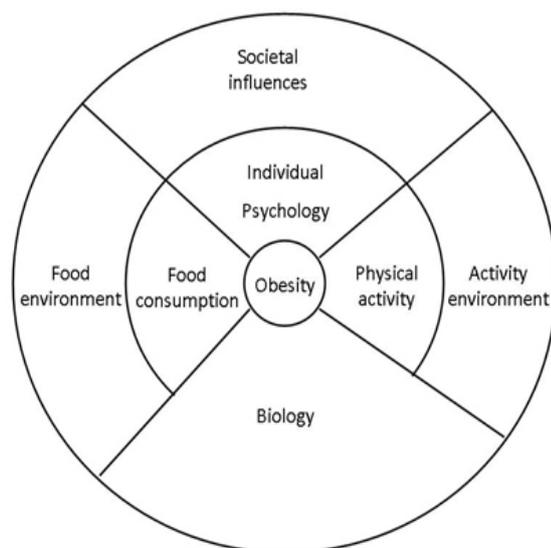
e) **Individual psychology:** for example, a person's individual psychological drive for particular foods and consumption patterns, or physical activity patterns or preferences;

f) **Food environment:** the influence of the food environment on an individual's food choices, for example a decision to eat more fruit and vegetables may be influenced by the availability and quality of fruit and vegetables near home; and

g) **Food consumption:** the quality, quantity (portion sizes) and frequency (snacking patterns) of an individual's diet.

Obesity is also not equally experienced across all sections of the population. Some communities have a higher risk of becoming obese, for example: [8]

- Black Caribbean and Pakistani women are more at risk of becoming obese than the rest of the population.
- Children and young people who have at least one obese parent.
- People with physical or learning difficulties.
- People in lower socio-economic groups, especially women.
- People who have recently stopped smoking.



Source: Foresight systems map, 2007

Figure 1. Factors that influence obesity

High Dense Energy Foods

Energy density is the amount of energy or calories in a particular weight of food and is generally presented as the number of calories in a gram (kcal/g). [9] Foods with a lower energy density provide fewer calories per gram than foods with a higher energy density. For the same amount of calories, a person can consume a larger portion of a food lower in energy density than a food higher in energy density.

[9] In addition, saturated fat levels can vary across the same food types depending on the method of preparation. Results of sampling surveys in England and Wales suggests that the saturated fat levels in a portion of fish and chips for example, varied from 4grams to 65grams. [10] High dense energy foods and saturated fats are therefore contributes toward obesity.

Transfats

Transfats are unsaturated fats that increase low density lipoprotein (bad cholesterol) and lower high density lipoprotein (good cholesterol). Transfats are mainly used to enhance the texture, flavour and extend the shelf life of many processed foods. Evidence indicates an association between trans-fats and an increased risk of cardiovascular disease and obesity. [11-14] The UK has seen recent progress in relation to the reduction of trans-fats across well-known high street corporate fast food franchises however; the policy is lacking across small medium size fast food caterers. Transfat foods are generally cheaper and as result there is a greater tendency for their consumption to be more prevalent among lower socio-economic groups. [15-17] In Bromley most adults consume an average of two take aways per week and an average of three portions of fruit and vegetables per day. [18] Given that fast food outlets contribute toward overall fat consumption (saturated and unsaturated) and obesity we sought to work with fish and chip shops (fast food caterers) in an attempt to improve their cooking practices. This approach is consistent with recommendations made by the Centre for Disease Control (CDC) and the National Institute for Clinical Excellence (NICE) [9-12].

2. Methods

Fifty fish and chip caterers were identified and invited to participate in the 'Top Tips on Chips Intervention'. All caterers were offered:

- Free nutritional analysis of the chips they sold (baseline)
- Free on-site advice from a nutrition specialist
- Free nutritional analysis of the chips they sold post intervention
- Free on-site advice from a nutrition specialist post intervention

We received interest from twelve caterers. Twelve portions of chips were purchased (11 anonymously). Eleven of the twelve portions were sold as the smallest weight advertised i.e. small or medium and one sample was advertised as large. Salt was added to all portions by the caterer at the request of the purchaser. All chip samples were sent to the Council's appointed Nutritional Analyst. Sampling results were then sent to the Environment Health Officer (EHO). The EHO then visited all caterers and issued each caterer their bespoke results along with advice from the Food Standards Agency's (FSA) "Tips on Chips" guidelines. All visits were ratified with written communication of their

sampling results and recommendations. The EHO telephoned all caterers three months post intervention to assess progress. One caterer sold their business and therefore was excluded in the post intervention analysis. Seven caterers claimed to have improved their cooking practices and/or portion size. A follow up food sampling analysis was undertaken anonymously with eleven remaining caterers. The samples were sent for a post intervention nutritional analysis. Due to funding restrictions, four samples were only weighed. Results of the remaining seven analysis were obtained and match to their baseline data. The EHO undertook further follow-up visits with advice and follow up was also ratified in writing. One caterer had left the country and the other proved difficult to contact. Post-intervention satisfaction questionnaires were issued during the post intervention visit or posted to each caterer.

3. Results

Portion weight (grams)

- Baseline portion sizes of 11 portions ranged from 337 g to 497 g with an average weight of 428 g.
- Post intervention, weights of 11 samples were taken and ranged from 310 g to 662 g with an average weight of 418 g. Of 11 samples (premises) re-sampled, 5 had decreased in weight by 5% or more, 3 had increased in weight by 5% or more and 3 had changed by less than 5%. Portion control at premises 3 was poor, as the second “regular” portion was 25% larger than the first “large” portion.

Results for premise 4 may have been skewed as the 1st portion was not taken anonymously. Most caterers were concerned of the impact a reduction of portion size would have on their customers, and felt that reductions should be made on a stepped approach. After the intervention, several caterers (i.e. premise 2, 3 and 4) expressed their interest to reduce portion weight and agreed to use weighing scales in the future. Caterers who had reduced portion size, reported to have not received any complaints or comments from their customers. Two caterers offered smaller portions for children. There was however; reluctance across majority of fish and chip shops to advertise smaller portions for adults due to concerns that this would have on their profit margins.

- For premise 1, 2, 5, 7, 9, 10 & 11 the results appeared to be more promising with an average weight decrease of 52 grams (12.2%).

The remaining results were compared across seven premises only given the availability of baseline and post intervention data for these premises (2, 5, 7, 9, 10 & 11)

Total energy per portion

- Average baseline total calories across seven premises were 1035.71kcal.
- At post the intervention, we report an average of 891.43kcal (144 kcal or 14% decrease).

- At baseline total energy represented 47% of the Guideline Daily Amount (GDA) of energy for 11-14 year olds. After the intervention this fell to 41% of GDA intake for 11-14 year olds.

Total fat per portion (grams)

- Average baseline total fat per portion across seven premises were 46.29 g
- At post the intervention, we report an average of 39.14 g (7.1 g or 15% decrease). These changes are very encouraging and decreases in total fat may reflect changes in portion weight, increases in frying temperatures, increases in banging and shaking chips-claimed by all, decrease in blanching (premise 7) and change of packaging from polystyrene to paper (premise 9). Differences in draining chips in the hot box prior to sale were also noted.

Total saturated fat per portion (grams)

- Average baseline total saturated fat per portion for seven premises were 7.87 g.
- At post the intervention, we report an average 5.03 g (2.84 g or 36% decrease). The largest decreases may have resulted largely from changes of oil from palm oil to groundnut oil (premise 5) and from soya oil to rapeseed oil (premise 2). Premises 5 changed oil type in four fish and chips shops in the same ownership, 3 of which were reporting to be in Bromley.

Total salt per portion (grams)

- Average baseline total salt per portion for seven premises of 1.61 g.
- At post intervention, we report an average salt per portion of 1.26 g (0.35 g or 22% decrease). Most caterers claimed that they simply tried to add less from the shaker. One added water to dampen the salt inside the shaker. Some were willing to try using a shaker with fewer holes.

Other Changes to Practices

- We report an increase in frying temperature between 3-10% (average % increase in frying temperature across 7 food premises was noted as 7%).
- Premise 9 changed packaging from polystyrene trays to paper trays.
- At baseline, 2 caterers advertised smaller portions (cones) of chips and many others offered smaller portions on request. After the intervention, no caterers advertised smaller portions of chips. Two premises (2 and 10), one of which was noted to be in close proximity to a secondary school sold cones of chips to children. There was reluctance to advertise smaller portions because of the possible impact on profit margins.
- Majority of premises were interested in utilising salt shakers with fewer holes.

Caterer satisfaction

We received written feedback from 5 of the 11 caterers. All had enjoyed taking part in the intervention, felt their understanding of healthier frying practices had improved and

were positive about implementing recommended changes. Caterers were keen to serve chips that were healthier whilst also maximise their profit margins. All expressed a desire to apply for a Healthier Catering Award, as and when the scheme was available at local level.

Our intervention suggests improvements in portion weight, total energy per portion, total fat per portion, total saturated fat and total salt across seven premises at follow up (table 1).

Table 1. Distribution of cases pre and post intervention of chips sampling

| | 95% CI | | | | 95% CI | | | | P-value |
|--|------------------|-------|--------|-------|-------------------|-------|--------|-------|---------|
| | Mean | SD | UL | LL | Mean | SD | UL | LL | |
| Category | Pre intervention | | | | Post intervention | | | | |
| Portion weight | 423.1 | 59.9 | 478.5 | 367.7 | 371.1 | 58.6 | 425.3 | 317.0 | |
| Energy per portion | 1035.7 | 169.9 | 1193.0 | 878.6 | 891.4 | 200.4 | 1077.0 | 706.1 | |
| Total fat per portion | 46.3 | 8.1 | 53.8 | 38.8 | 39.1 | 10.3 | 49.0 | 30.0 | |
| Total saturated fat per portion | 7.9 | 5.6 | 13.1 | 2.7 | 5.0 | 1.5 | 6.38 | 3.6 | *<0.05 |
| Total salt per portion | 1.6 | 0.6 | 2.2 | 1.0 | 1.3 | 0.8 | 2.04 | 0.56 | |

**(There is a significant difference between the mean pre and post intervention in these two groups)*

4. Discussion

The Consensus Action on Salt and Health (CASH) Survey (2010) found that many kebab shops and burger caterers in London had higher levels of salt compared to those of known fast food brands. [19, 20] The survey indicated that takeaway meals sold near schools could contain one and a half times more salt and three times more saturated fat than an adult's maximum recommendations per day. [20] The survey highlighted the hidden risks teenagers are exposed to within the immediate vicinity of their schools. The survey also noted a high degree of variability even when the same foods were sampled. Figure 2 illustrates the CASH survey findings for the London Borough of Bromley.

Consensus Action on Salt and Health (CASH) highlights the food danger for teenagers hidden just outside the school gates.

| Location | Outlet | Product | Portion Size (grams) | Salt per portion (grams) | Calories per portion (Kcal) | Sat fat per portion (grams) | Trans fat per portion (grams) | Notes |
|---------------------------|--------|-------------------------|----------------------|--------------------------|-----------------------------|-----------------------------|-------------------------------|-------|
| London borough of Bromley | 1 | Chicken and Bacon Slice | 196 | 2.1 | 547 | 33.1 | 15.7 | |
| London borough of Bromley | 2 | Large Kebab and Chips | 6486 | 6.8 | 2255 | 149.7 | 60.3 | |

Traffic light figures

| | Green (low) | Amber (medium) | Red (high) | |
|-----------|-------------|------------------------|-------------|----------------|
| Fat | ≤3.0g/100g | >3.0 to ≤20.0g/100g | >20.0g/100g | >21.0g/portion |
| Saturates | ≤1.5g/100g | >1.5 to ≤5.0g/100g | >5.0g/100g | >6.0g/portion |
| Sugar | ≤ 5.0g/100g | >5.0 to ≤12.5g/100g | >12.5g/100g | >15.0g/portion |
| Salt | ≤0.30g/100g | > 0.30 to ≤ 1.50g/100g | >1.50g/100g | >2.40g/portion |

Figure 2. CASH Survey findings for Bromley (2010)

Salt reduction has been a priority in the UK since 1991. In 2006, salt reduction targets were set across 85 foods in an attempt to reduce daily salt intake to 3 grams per day and reduce associated hypertensive diseases. [21- 24] This was based on a model to reduce salt content in food by 40% and for consumers to reduce their salt intake by 40%. However the targets failed to recognise salt intake from local fast-food caterers and salt from imported foods. In 2008, salt consumption was reported to have been reduced from 9.5grams to 8.6 grams/day. In 2010, NICE made recommendations to reduce salt intake to 3 grams/day by 2025. [12] In 2011, the government set out to encourage food manufacturers to reduce salt intake by 1 gram (15%) through the Public Health Responsibility Deal. [23] Salt reduction is arguably one of the most important targets when discussing food consumption. Research suggests that reducing salt consumption to 3grams/day would prevent 20,500 deaths from stroke and 31,400 deaths from ischemic heart disease every year in the UK alone. [23] People with high blood pressure are three times more likely to develop heart disease and stroke. In England, high blood pressure contributes to more than 170,000 deaths and 22, 000 in Scotland. [24] Although the average salt consumption in the UK decreased to 8.6g in 2008; remains higher than the recommended daily intake levels. [24] Making significant progress on salt intake in our intervention proved difficult given that caterers claimed to only add salt on customer request.

A key issue for caterers was cost of oil and loss in profit margin for their business. Identifying alternative cooking oils that are affordable in this case needs careful consideration given that these contribute toward coronary heart disease [25] Our results were dependant on the caterer's commitment to implementing the Food Standard Agency's (FSA) recommendations. Influencing catering franchises will have a significant impact across the borough and provide a greater return on investment if such interventions were to target small and medium size caterers.

The Food Standard Agency's (FSA) Tips on Chips guidance issued by the EHO was well received by caterers. This information should routinely be included during food health and safety inspections to encourage caterers to make small practical changes to reduce fat, calorific value and salt in foods they sell. Portion sizes in deprived neighbourhoods appeared to be larger than those bought in affluent neighbourhoods. This is supported by evidence that obesity is linked to deprivation, in particular among women and children and therefore needs to be considered with future interventions [26-28].

Baseline results were only available from approximately 25% of available fast food caterers invited to participate in the intervention. This fell to 14% at post intervention analysis. Greater participation of local caterers would have provided a greater understanding of cooking practices and nutritional value of chips across the borough. Although our findings indicate an improvement among the number of participating caterers (premises) at post intervention the numbers were small and only total saturated fat was

statistically significant therefore engagement of more caterers would have been beneficial to understand the extent of the improvement. It is reasonable to assume that calorific content, portion weight, fat and salt levels would be greater if chips were sold together with other available foods sold at each premise. In addition, sampling a wider range of foods would increase our understanding of cooking practices and enhance the opportunities for health education and development of interventions across a range of foods sold at these premises.

Possible Policy Implications

- Given the rising trend of childhood obesity in the UK increasing the uptake of school meals should be pursued with more vigour. This is to ensure children diets at school are not heavily influenced by the number of fast food caterers in the nearby vicinity. Engagement of school head teachers will also be key to ensure healthy cooking forms an integral part of The Personal Social Health and Economic Education (PSHE) curriculum. Youth champions in school should be encouraged to act as health advocates for their peers.

- Educating parents and children on healthier cooking practices should be incorporated into community health education and promotion interventions. This is especially true for families who either cook high fat and salt diets at home or resort to regular take away foods during or after school hours. Local Authorities should continue to work with caterers and schools to ensure healthy eating forms part of school enrichment days supported by School Nurses, EHO and Public Health staff.

- Environmental Health and Public Health should continue to work together to develop local schemes utilizing known brands such as Change 4 Life to support Healthier Catering Commitment Awards (supported by the FSA) and assist caterers to identify the most cost effective way to implement and maintain healthier cooking practices. EHOs can utilize the established relationship with fast food caterers to influence change by offering practical alternatives during food health and safety inspections. This approach would require additional resources, staff training and the establishment of performance metrics to monitor and evaluate the short, medium and long term impact.

- Local Authority Planners should consider the number and type of fast food business applications in the borough in particular, applications near schools. Clear guidelines supported by local Councillors would assist in determining which applications are more likely to have a negative health impact on crucial programmes such as the National Child Measurement Program (NCMP) and local weight management interventions.

- The Public Health Responsibility Deal needs to filter down to local fast-food caterers with tangible incentives to encourage the adoption of healthier cooking practices.

- Caterers share a responsibility to try where practical to cook healthier foods. Offering a wide range of portion

sizes with fresh salad for example; may help shift public attitude that 'big is more'.

- The UK should pursue a ban of trans-fats as per NICE recommendations.

- The national policy to address obesity needs to shift more toward addressing the societal and behavioural factors at local level given that these very issues contribute toward the UK wide obesity epidemic.

5. Conclusions

Local fast-food caterers in England can adopt healthier cooking practices and may play an important role to address the obesity epidemic. The extent of what can be achieved through such intervention remains unclear and requires further investigation. The involvement of more fast food premises and sampling a wider range of fast foods will enhance the opportunity to develop healthier cooking interventions.

ACKNOWLEDGEMENTS

We would like to thank the London Borough of Bromley and Members of the Bromley Staying Healthy Group for their support and funding for this intervention.

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