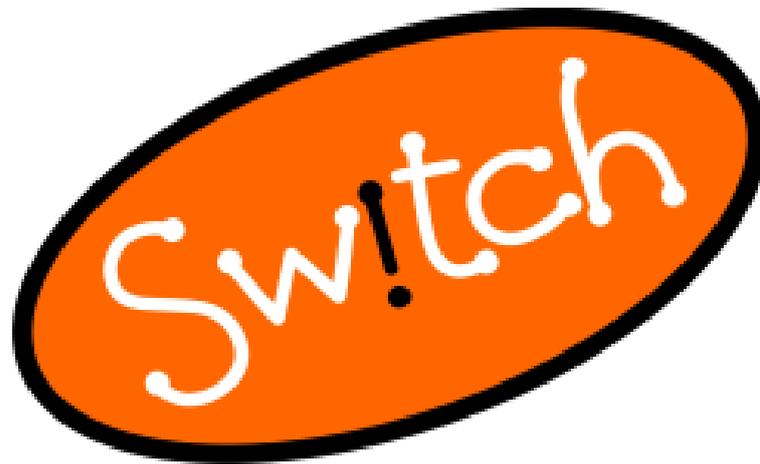


**Preventing obesity in young people  
attending primary dental care settings: an  
exploratory randomised controlled trial**



**Authors:**

Richard G. Watt, Marie Murphy,  
Antiopi Ntouva, Jessie Porter, Huda Yusuf



**NHS**  
*National Institute for  
Health Research*

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## Contents

Appendices .....	5
Executive Summary.....	6
<b>Chapter 1 Background and literature review .....</b>	<b>7</b>
1.1 Introduction .....	7
1.2 Trends for overweight and obesity .....	8
1.3 The role of sugar-sweetened beverages .....	8
1.4 Prevention of overweight and obesity .....	10
1.4.1 Obesity prevention in a primary care setting .....	11
1.4.2 Obesity prevention in a dental care setting .....	12
1.5 Motivational interviewing for health behaviour change .....	12
1.5.1 Motivational interviewing for obesity prevention in children and young people .....	13
1.5.2 Motivational interviewing in a dental care setting.....	14
1.6 Research proposal.....	14
1.6.1 Aims and objectives .....	15
1.6.2 Potential impact.....	15
<b>Chapter 2 Methodology .....</b>	<b>16</b>
2.1 Introduction .....	16
2.2 Ethics and R & D approval .....	16
2.3 Overview of study design .....	17
2.4 Study setting .....	18
2.4.1 Primary dental care practices.....	18
2.4.2 Population.....	18

2.5 Stage one: Exploratory development phase .....	18
2.5.1 Assessing dental teams' experience, motivation and training needs in prevention .....	18
2.5.2 Assessing the acceptability to young people and their parents of the proposed intervention .....	20
2.5.3 Development of a motivational interviewing intervention and training programme .....	21
2.6.2 Sample .....	22
2.6.3 Study participants .....	25
2.6.4 Outcomes.....	26
2.6.5 Measurement methods .....	26
2.6.6 Data collection methods .....	26
2.6.8 Data analysis .....	29
2.7 The SWITCH programme .....	30
2.7.1 Development process .....	30
2.7.2 Intervention development .....	30
2.7.3 Delivery of the intervention .....	34
2.7.4 Training and support.....	34
2.7.5 Control group .....	34
2.8 Process Evaluation .....	35
2.8.1 Intervention fidelity .....	35
<b>Chapter 3 Results</b> .....	<b>36</b>
3.1 Development phase .....	36
3.1.1 Questionnaire survey on prevention in general dental practice .....	36
3.1.2 Focus groups with dentists and dental care teams .....	38
3.1.3 Focus groups with parents and young people.....	39
3.2 Exploratory RCT of the SWITCH programme .....	40

3.2.1 Baseline characteristics of the trial sample .....	40
3.2.3 Clustering – Intra cluster correlation.....	51
<b>Chapter 4 Process Evaluation.....</b>	<b>53</b>
4.1 Introduction .....	53
4.2 Recruitment and participation .....	54
4.2.1 Participation rate .....	54
4.3 Intervention completeness .....	56
4.4 Fidelity / quality of the intervention .....	56
4.4.1 MITI results .....	56
4.5.1 Questionnaires with intervention participants .....	60
4.5.2 Interviews with participants in control and intervention groups .....	60
4.5.3 Interviews with dental team members .....	63
4.5.4 Interviews with the research team .....	69
<b>Chapter 5 Discussion, Conclusions &amp; Recommendations.....</b>	<b>77</b>
5.1 Introduction .....	77
5.2 Project aims and objectives .....	77
5.3 Summary of key findings.....	77
5.8 Dissemination of findings.....	84
Acknowledgements.....	85
Appendices .....	86
List of figures.....	87
List of tables.....	87
References .....	89

## Appendices

1. Trial protocol version 6
2. Gantt chart
3. Ethics approval confirmation
4. R and D approval
5. Survey of dentists questionnaire
6. Letter to dentists for survey participation
7. Information sheet for survey participation
8. Letter to dentists for FG participation
9. Information sheet for FG participation
10. Consent form FG Dentists
11. Topic Guide FG Dentist
12. Info sheet FG Parent
13. Info sheet FG Young Person
14. Consent form FG Parent
15. Consent form FG Young Person
16. Topic Guide FG Parent
17. Topic Guide FG Young Person
18. Randomisation of dental practices for SWITCH sample
19. Young person screening questionnaire
20. Young person participant information sheet
21. Parental participant information sheet
22. Consent form for parents
23. Consent form for young people
24. Protocol for anthropometric measurements
25. Dietary assessment protocol
26. Young person's baseline questionnaire
27. Young person's follow-up questionnaire (intervention)
28. Young person's follow-up questionnaire (control)
29. Parental questionnaire
30. Dietary data coding protocol
31. Dietary data coding sheet
32. SWITCH MI guidance
33. MI prompt sheet session 1
34. MI prompt sheet session 2
35. MI prompt sheet session 3-4
36. Agenda setting sheet
37. Decisional balance worksheet
38. Scale rulers
39. Sugary drinks visual aid
40. Effects of soft drinks
41. Dietary and physical activity guidelines
42. Drinks directory
43. Healthy eating leaflet
44. Protocol for post MI follow-up
45. Protocol Paper
46. Poster 1
47. Poster 2
48. Professional summary report
49. Lay summary report
50. Final NIHR RfPB report

## Executive Summary

The diets of adolescents are a cause of concern, with obesity rates rising and tracking from childhood through to adulthood. High intakes of sugary drinks have been highlighted as playing an important role in the development of obesity and can have a significant impact on a child's immediate and longer-term health, and contribute to broader health inequalities. Despite the public health significance of this area, there is a paucity of well-designed studies evaluating interventions aimed at reducing soft drinks in adolescents. The role of motivational interviewing interventions in obesity prevention has recently emerged with promising results; however it has yet to be tested in a dental care setting in the UK.

Between March 2011 and March 2013, a study was undertaken to develop, implement and pilot a Motivational Interviewing Intervention to reduce soft drink intakes in adolescents attending dental practices across Camden, Islington and Haringey. Outcomes included both anthropometric and nutrition measures. This exploratory randomised controlled trial followed the Medical Research Council's guidance for designing and evaluating complex interventions. The SWITCH programme (Smart Weight in Teenagers Choosing Health) was designed after a year of exploratory research, including the collection of qualitative and quantitative data which provided information on the nature of the problem, the setting and options for support. This was accompanied by a review of the background literature, as well as a process of consultation with a range of relevant stakeholders, dentists, dental nurses, other health professionals, and most importantly, parents of adolescents and young people themselves.

SWITCH was rolled out in dental practices between May 2012 and November 2012. In total 139 young people were recruited and had their anthropometrics taken, 39 were found to be eligible and of the 34 who received treatment, 1 was lost to follow up at 6 months (97.1% retention rate).

At the 6 month follow up, the intervention group had lower BMI z scores, lower mean daily consumption of sugary drinks and consumed unhealthy snacks less frequently than baseline. However, compared to the control group, none of the differences were statistically significant. These results although not statistically significant, show some positive changes, with young people in the intervention group strongly agreeing that the sessions were useful to them and all participants agreeing they would recommend SWITCH to a friend.

Data gathered from the comprehensive process evaluation indicated that the intervention was very acceptable with young people and dental staff, and that the trial methodology including recruitment methods, randomisation procedures and measurement tools were both satisfactory and feasible.

This study has comprehensively investigated the development, implementation and evaluation of a nutrition intervention in dental practices in North Central London. The results of the exploratory trial provide detailed insights valuable for the future planning and conduct of a large scale definitive randomised controlled trial of a nutrition intervention in adolescents.

# Chapter 1 Background and literature review

## 1.1 Introduction

Childhood obesity is a significant public health problem worldwide, including the UK. National data from the Health Survey for England (2011) suggest that among 2–15 year-olds, 17% of boys and 18% of girls are obese (Health survey for England 2011, 2012). Projecting these trends for the future, it is estimated that 23% of boys and 35% of girls could become obese by 2050 (Butland and Britain, 2007).

Obesity may result in a number of medical complications in addition to emotional, social and psychological problems, with long-term effects on individuals' health-related quality of life (Mossberg, 1989). Furthermore, evidence has shown that adiposity tracks from childhood to adulthood resulting in negative health outcomes, including cardiovascular disease, diabetes and psycho-social outcomes (Mossberg, 1989). This will not only have an impact on individuals but will also lead to increased costs to the NHS and society (Scarborough et al., 2011).

The rise in obesity has been attributed to sedentary lifestyles and the consumption of energy dense food. Epidemiological and intervention studies have highlighted the important role of sugars, particularly from soft drinks, on the development of obesity. Sugars consumption is also directly related to the development of dental caries (WHO, 2002). Given that obesity and dental caries are avoidable diseases, preventive interventions that tackle both would be beneficial in terms of both oral and general health, and in line with a common risk factor approach to prevention of chronic diseases (Watt and Sheiham, 2012). NICE guidance has highlighted the need for effective preventive interventions, especially in primary care, to tackle overweight and obesity (NICE, 2006). Evidence on effective ways of preventing overweight and obesity is urgently needed, as good quality research is limited (Summerbell et al., 2005). There is also a lack of intervention studies aimed at reducing sugars consumption among children and adolescents in primary care in the UK (Glenny et al., 1997).

Traditional health education has been used in primary care with limited success (Kay and Locker, 1996). Psychological interventions and more patient-centred techniques such as motivational interviewing (MI) are being widely used in health promotion including in smoking cessation, promoting changes in diet and physical activity and alcohol reduction (Rubak et al., 2005, Burke et al., 2004, Martins and McNeil, 2009). MI is an evidence-based, people-centred form of counselling, aimed at helping build and strengthen motivation for change (Rollnick and Miller, 1995, Dyer and Robinson, 2006).

Primary dental care services have been historically underutilised as a potential research setting for health promotion, yet a high proportion of young people use dental services, with 78% of 15-year-olds attending for check-ups in England (Morris et al., 2006).

Considering the gaps in the literature on effective dietary interventions targeting children in primary care, dental care settings provide an opportunity to promote health among this age

group. This exploratory trial aimed to develop an MI intervention for the purpose of reducing sugary drink consumption in adolescents, and assess the feasibility of delivering the intervention in a primary dental care setting in London.

## **1.2 Trends for overweight and obesity**

Obesity has no one agreed upon definition, with a range of measures used in the literature, including weight, body fat and adiposity (Linnan and Steckler, 2002, Cole et al., 2000). Body fat can be assessed by using anthropometric (indirect) measures of relative fatness including Body Mass Index (BMI), waist circumference (WC), and skinfold thickness. BMI is the internationally recommended indicator of overweight and obesity, and clinically relevant cut-offs have been defined (WHO, 1995).

There are a number of challenges in measuring fatness in children in particular. BMI varies with age, sex, maturation status, ethnicity and distribution of fat (Daniels et al., 1997), therefore adult definitions of obesity cannot be applied (Reilly et al., 2002). Instead, BMI adjusted for age and gender is recommended to estimate obesity in children by using centile curves with cut-off values for different ages (Reilly et al., 2002). A high BMI centile indicates meaningful risk of morbidity in children (Reilly, 2006). However, there is no universally accepted BMI-based classification system for childhood obesity, and there are differences in the way overweight and obesity are classified in clinical settings or for epidemiological research. In the UK, overweight and obesity is defined as BMI >85th and >95th centiles respectively for epidemiological purposes (SIGN, 2003) (Reilly et al., 2002).

The use of WC as a single measure of obesity in children is not recommended (NICE, 2006) but can provide useful information on risk of developing long-term health problems. Measuring change in WC can identify increases in visceral adiposity and centrally located subcutaneous fat, both of which are associated with a number of adverse metabolic outcomes (Cornier et al., 2011).

The prevalence of obesity has been increasing in England. The Foresight Report (Butland et al., 2007) examined data from 1993-2004, and predicted that the proportion of those who are obese will increase to approximately 28% for girls and 18% for boys by 2020. However, a more recent report by the National Heart Forum (2009), which examined data from Health Survey for England between 1993-2007, suggested that the predicted rise in obesity will be much less (McPherson et al., 2009). By 2020, 9% of boys and 15% of girls in the 12-19 year old age group will be obese. Socioeconomic differences in obesity rates show a greater proportion of obese boys living in non-manual households than manual households. The reverse was true for girls (Zaninotto and Britain, 2006).

## **1.3 The role of sugar-sweetened beverages**

It is well established that dietary factors such as energy dense food, including fast food, sugars, and sugary drinks are associated with obesity and other related diseases such as diabetes (Ludwig et al., 2001, James and Kerr, 2005, Bray et al., 2004, 2013). Consumption of sugar-sweetened beverages (SSBs) is a contributor to the epidemic of obesity because of

their high sugar content, low satiety, high glycaemic load, and incomplete compensation for total energy (DiMeglio and Mattes, 2000). SSBs may encourage increased energy intake leading to excessive weight gain, since sugar is less satiating when provided in liquid when compared with the solid form (Striegel-Moore et al., 2006, DiMeglio and Mattes, 2000). Therefore, energy from liquids may not be fully compensated for, making it easier to over-consume energy when drinking liquids than when eating solids. This is in agreement with many studies in children and adolescents that report that the intake of SSBs increased the risk of becoming overweight (National Obesity Observatory, 2011, James et al., 2004, Ludwig et al., 2001, Malik et al., 2006, Bray et al., 2004, Striegel-Moore et al., 2006). A positive energy balance of 120 kcal per day (about one serving of an SSB) produces a 50-kg increase in body mass over 10 years (Ebbeling et al., 2002, Ebbeling et al., 2006).

There have been a number of systematic reviews on the role of SSBs in weight gain with some conflicting results. In a meta-analysis the authors found that there was a clear association between SSBs and weight gain (effect size 0.08;  $P < .001$ ) and that study design influenced the results; studies which were stronger methodologically had larger effect sizes (Vartanian et al., 2007). A separate systematic review on the relationship between SSBs and the risk of weight gain included 30 studies: 15 cross-sectional, 10 prospective, and 5 experimental (Malik et al., 2006). Most studies showed that increased SSB consumption leads to weight gain. In a separate meta-analysis of SSBs and BMI in children, 10 longitudinal studies and two randomised controlled trials (RCTs) found the association to be near zero (Forshee et al., 2008). However, there was a conflict of interest as the project was funded by the American Beverage Association and the review's methodology was questionable, as very few studies were eligible and exclusion and inclusion criteria were not stated (Forshee et al., 2008). A review of the literature (observational and experimental) specifically aimed at exploring the role of SSB consumption in adolescent obesity found positive and detrimental effects on BMI (Harrington, 2008).

There have been a number of short-term RCTs in this field. There are only four RCTs, which explored the relationship of SSBs and weight gain in children specifically, conducted in the US, the UK, Brazil and Chile. The RCT in the UK targeted children 7 -11 year olds in primary schools to reduce their SSB consumption (James et al., 2004). The intervention group received an educational package, focusing on a healthy diet and discouraging consumption of SSBs. On follow up, the consumption of SSBs decreased in the intervention group but increased in the control group, despite being comparable at baseline in terms of prevalence of overweight. At 12 months, the mean percentage of overweight and obese children decreased by 0.2% in the intervention group and increased by 7.5% in the control group (mean difference 7.7%, 2.2% to 13.1%).

The second RCT was carried out in the US targeting 13-18year olds (Ebbeling et al., 2006). The intervention group received weekly home deliveries of non-caloric beverages of their choosing for 25 weeks. Results showed that consumption of SSBs decreased by 82% in the intervention group and did not change in the control group. The overall change in BMI, adjusted for gender and age was  $0.14\text{kg/m}^2$  ( $\pm 0.21 \text{ kg/m}^2$ ), but was not significant overall. However, baseline BMI was a significant effect modifier.

In Brazil, 1140 9-12 year olds participated in a school based programme with intervention children receiving education on reducing SSB consumption. Sichieri and colleagues randomised 47 classes from 22 schools to control and intervention and delivered the programme, which consisted of simple messages including the importance of water and swapping water for SSBs, in the classroom. (Sichieri et al., 2009) The main outcome was BMI, measured at the beginning and end of the school year. Results showed a statistically significant reduction in the daily consumption of carbonated drinks in the intervention group compared to the control group (mean difference -56ml; 95% CI -119, -7ml) but a non-significant overall reduction in BMI (P=0.33).

In Chile, Albala et al, displaced SSB consumption in 98 children aged 8-10 years who were overweight and obese by delivering milk beverages to the homes of those randomised to intervention (Albala et al., 2008). Results showed an increase in milk consumption and a decrease in SSB consumption by  $-711.0 \pm 33.7\text{g/d}$  (P=0.0001) in the intervention group. For the control group, milk consumption did not change but SSB consumption increased. Changes in percentage body fat, which was the primary endpoint, did not differ between the groups.

The WHO reviewed the scientific evidence linking diet and nutrition to obesity and has recommended that children limit their consumption of SSBs to prevent obesity as well as dental caries (WHO, 2002). The totality of the evidence from human, epidemiological and systematic reviews confirms the association of sugar consumption with development of dental caries (Burt and Pai, 2001, Marthaler, 1990, Rugg-Gunn, 1990, Anderson et al., 2009), and the evidence linking SSBs to obesity and weight gain is mounting (James and Kerr, 2005, Ebbeling et al., 2006). Considering that obesity and dental caries are important public health problems, it would be advantageous to prevent both by delivering interventions aimed at reducing SSB consumption. However, the evidence base for interventions specifically aiming to reduce sugars consumption amongst children and adolescents is limited (Kay and Locker, 2006).

## **1.4 Prevention of overweight and obesity**

There is limited evidence on the effectiveness of treatment of overweight and obesity, hence options for prevention need to be investigated. Evidence has shown that prevention of obesity is more feasible and less expensive than its treatment, however evidence for effective obesity prevention remains elusive (Lobstein, 2004). A more reliable evidence base is needed in order to determine the most cost-effective strategies that are health promoting and have sustainable results (Lobstein, 2004).

Prevention of overweight and obesity is complex. There is no consensus about the optimal age to intervene at a population level, and what preventive measures need to be implemented (Livingstone et al., 2006). Many studies are short term, of poor quality and study design, with limited evaluation in order to draw meaningful conclusions (NICE, 2006). The majority of studies in children have focused on a school setting, with very few studies in primary care settings, or targeting solely adolescents, who are at high risk of weight gain (Katz et al., 2008, van Sluijs et al., 2007).

Although there have been numerous systematic reviews on obesity prevention in the literature, differences in outcome measures, intervention methods and length of follow-up periods between studies prevent any meta-analyses of the results. The focus of these systematic reviews have differed, with some incorporating both treatment and prevention (Reilly et al., 2002, Glenny et al., 1997), and others concentrating solely on prevention or reduction of weight gain (Hardeman et al., 2000, Summerbell et al., 2005). Most reviews have shown that, of the interventions that had significant effects, the effect sizes were small relative to the current increases in population levels of obesity, making it unlikely that these interventions could meaningfully influence recent obesity trends.

In the UK, two systematic reviews on the topic of obesity prevention in children have been conducted (Glenny et al., 1997, Summerbell et al., 2005). A Cochrane review of interventions for the prevention of obesity included 22 studies, 10 of which were long term (at least 12 months) and 12 short term (12 weeks-12 months); 19 were school-based, one community-based and two were family-based interventions. Study methodologies differed and hence combination of study findings using statistical methods could not be carried out. The reviewers concluded that combining physical activity and dietary interventions did not significantly improve BMI. However, studies which either focused on physical activity or dietary interventions had a positive impact on BMI although the reported changes were small. Nevertheless, most studies were effective in promoting a healthy diet and increasing physical activity (Summerbell et al., 2005).

The second review was carried out by the NHS Centre for Reviews and Dissemination (Glenny et al., 1997) and included RCTs for the treatment and prevention of obesity. It found family therapy and lifestyle modification to be effective in the prevention and treatment of obesity in children (Glenny et al., 1997). However, most of the research was done in North America. One study was conducted in the UK and none of the studies were in primary care.

A review conducted in Canada on obesity prevention reached similar conclusions to reviews in the UK (Thomas, 2008). The authors found that there was no evidence for specific approach to obesity prevention in children; however, behaviour as well as exercise was strongly associated with improved outcomes.

### **1.4.1 Obesity prevention in a primary care setting**

The reviews detailed above concluded that more interventions (particularly RCTs) are required in primary care in the UK (Glenny et al., 1997). Primary care can play a vital role in tackling the growth in obesity. Health care professionals (HCPs) can be a source of dietary advice, and primary care is considered an appropriate setting for weight management (SIGN, 2003).

There are many barriers to prevention being carried out in primary care, with many physicians feeling they don't have the time to carry out prevention, despite the evidence

suggesting the effectiveness of preventative services. Despite these barriers, prevention in Primary Care remains an important strategy in obesity prevention.

### **1.4.2 Obesity prevention in a dental care setting**

By using a common risk factor approach, improvements in oral health (prevention of dental caries) and general health (prevention of overweight and obesity) can be achieved (Sheiham and Watt, 2000). Interventions aiming to reduce SSB consumption are beneficial for both obesity prevention and oral health promotion. Furthermore, dental care professionals (DCPs) are in a unique position to engage with adolescent patients to promote health, considering that over 78% of children visit the dentist for regular check-ups (Morris et al., 2006). However, very little research has explored this topic with the dental practice being an underutilised setting for research and health promotion interventions. There is limited obesity prevention research carried out in the UK, with the majority being carried out in GP's and doctors surgeries rather than in General Dental Practices (GDPs) (Waters et al., 2011).

In summary, systematic reviews have emphasised the need for well-designed studies with adequate power, reliable outcome measures, sufficient duration and detailed evaluation. More importantly, they also underline significant gaps in evidence-based preventive interventions, particularly in primary care, that are applicable to children in the UK.

## **1.5 Motivational interviewing for health behaviour change**

Motivational Interviewing (MI) offers a therapeutic approach for helping individuals increase their motivation or 'readiness' to change (Rollnick and Miller, 1995). It is a client-centred counselling and could be a promising tool for HCPs in assisting individuals to move through the stages of change towards action and maintenance (Grimley et al., 1995). Miller and Rollnick (2012) conceptualise motivation as a state of readiness to change, which may fluctuate over time or from one situation to another, and can be influenced to change. Thus, a lack of motivation (or resistance to change) is not seen as inherent, but rather as something that is open to change. The main focus of MI is facilitating behaviour change by exploring and resolving ambivalence about behaviour change.

The main success of MI has been demonstrated in the addiction field, particularly in alcoholism and smoking cessation (Project MATCH Research Group, 1993, Stotts et al., 2002). However, MI has been used for a range of health behaviour change including diabetes, pain management, eating disorders, dietary change and oral health (Rollnick and Miller, 1995, Martins and McNeil, 2009, Brennan et al., 2008, Rubak et al., 2005, Britt et al., 2004).

A number of systematic reviews have been conducted, mainly in the US. A systematic review and meta-analysis of MI included 72 RCTs including diabetes, substance abuse, diet and exercise (Rubak et al., 2005). The results showed that MI had a moderate effect for combined effect estimates for BMI (effect estimate of 0.72,  $p=0.0001$ ). In studies where MI sessions lasted an hour, 81% (26 out of 32 studies) showed an effect whereas in those lasting less than 20 minutes, 64% (7 out of 11 studies) showed an effect. The likelihood of an

effect increased with the number of encounters and a prolonged follow-up. A follow-up period shorter than three months increased the risk of failure, probably due to lack of intervention. Overall, MI outperformed traditional advice in 75% of the studies and its effectiveness was not related to the counsellor's educational background. In a meta-analysis of 30 controlled trials including drug use, alcohol, HIV risk, diet and exercise, adapted MI interventions incorporating a feedback component were shown to have moderate effects (0.25-0.57) compared to the control group.

Based on these reviews, an opportunity exists for the delivery of an adapted MI brief intervention in healthcare settings, ranging from 5 to 20 minutes. Senft et al. (1995) developed a brief 10-minute intervention among heavy drinkers and Butler et al. developed a 5-to 10-minute smoking intervention which focused on quitting and confidence to succeed (Butler et al., 1999). This use of a brief version of MI may be more feasible in dental practices where time constraints are inherent to daily practice.

Traditionally, HCPs have promoted the reduction of health risk behaviours by providing patients with health advice. The effectiveness of these interventions has been questioned, with limited success rates. This is due to a number of factors. Studies on tackling childhood obesity and behaviour change have highlighted that HCPs lack confidence in counselling despite showing interest in behavioural counselling (Resnicow et al., 2006). MI may be a useful tool for improving counselling skills among HCPs.

### **1.5.1 Motivational interviewing for obesity prevention in children and young people**

Although MI has been successfully used among adults, the research opportunities among children have been limited. MI is regarded as particularly appropriate for adolescents in healthcare settings as it can overcome some of the challenges in working with young people to improve their health and dietary behaviours, with its collaborative, non-confrontational approach aimed at increasing intrinsic motivation and respecting autonomy (Berg-Smith et al., 1999, Brennan et al., 2008, Resnicow et al., 2006, Moyers et al., 2005, Moyers et al., 2010). Adolescents are at a vulnerable stage in their life where they are more likely to be engaged in risky health behaviours such as smoking, substance abuse, and unhealthy eating habits (Jessor, 1984).

A review of MI for childhood obesity found very few randomised controlled trials on the prevention of obesity using MI (Resnicow et al., 2006). There have been only three published studies which have utilised MI to target paediatric obesity.

The Healthy Lifestyles Pilot Study (a non-randomised trial), focused on prevention of overweight among children aged 3-7 years through a parental intervention (Schwartz et al., 2007). Parents of children in the minimal intervention group received one MI session and parents of children in the intensive intervention group received two sessions. At the six-month follow up, there was a decrease of BMI percentiles in the control, minimal, and intensive groups, of 0.6, 1.9, and 2.6, respectively.

The second study, “Go Girls”, was a multi-component intervention for overweight African-American adolescents (Resnicow et al., 2012). Ten churches were randomised to either a high-intensity MI intervention (20 to 26 sessions) or moderate-intensity MI intervention (6 sessions) delivered over 6 months. Participants in the high intensity group were more likely to have a lower BMI at follow-up, although this was not statistically significant.

Berg-Smith et al. (1999) conducted a pilot study using a brief motivational intervention model to improve and renew dietary adherence with adolescents in the Dietary Intervention Study in Children (DISC). The results showed that the mean proportion of calories from fat decreased from 27.7% to 25.6% ( $p < 0.001$ ); however there was no control group and this may be of little clinical significance. The study showed that compliance was high; action plans were made by 94% of the participants and successfully implemented by 89%.

In order to contribute to the evidence base regarding prevention of obesity using behavioural techniques among adolescents, there is a need for exploratory RCTs in testing and evaluating MI in primary care.

### **1.5.2 Motivational interviewing in a dental care setting**

MI has also been used recently in oral health settings. Weinstein et al. (2006) compared the effects of MI with traditional health education for Punjabi mothers of young children (6-18 months) at high risk of developing dental caries. The MI group received one MI session (by a trained community worker) followed by six telephone calls. At 2 years, children in the MI group had significantly fewer new caries (OR = 0.35, CI: 0.15, 0.83) than those in the control group. Harrison et al. (2007) also targeted South Asian Punjabi speaking mothers with healthy infants by giving participants leaflets, an educational video, and MI sessions, telephone calls and postcards. Children with mothers in the MI group had significantly fewer cavities (46% less) at follow up compared to the control group. MI has also been used among adolescents to test it as a suitable approach in reducing adolescents’ avoidance in receiving dental care. Adolescents found the MI intervention to be acceptable and it also had a positive perception of counsellors (Skaret et al., 2003). Hence, MI is a promising tool in improving general and oral health.

### **1.6 Research proposal**

Considering there have been very few RCTs targeting obesity prevention in adolescents in primary care, this study attempted to address some of the gaps in designing, conducting and evaluating this type of intervention. It is unique in that it used a brief MI intervention in a primary dental care setting in the UK and was aimed at reducing sugars consumption, especially of SSBs, among adolescents.

There are challenges to research and implementation of trials in primary dental care. NHS dental practices are inherently time constrained and there are logistical challenges to conducting research in this area. It is therefore important to pilot these types of interventions to ensure appropriate delivery in terms of time, training, and cost. As this is a largely unexplored area of research, it is important to initially conduct an exploratory trial

before proceeding to a larger definitive randomised controlled trial. This is required in order to assess the practicality, acceptability (to both participants and health providers) and feasibility of the trial, and confirm general methodological approaches. An exploratory trial also provides data to calculate a sample size required for a future definitive trial.

To our knowledge, this is the first pilot exploratory RCT aimed at reducing sugar consumption for obesity prevention using MI among adolescents attending primary dental practices in England.

### **1.6.1 Aims and objectives**

To assess the feasibility and acceptability of an obesity preventive intervention, using motivational interviewing among overweight 11-16 year olds attending primary dental care services in North Central London PCTs.

Objectives:

- To assess dental teams' experience, motivation and training needs in providing preventive care for both oral and general health improvement.
- To assess the acceptability to young people and their parents of the proposed intervention.
- To develop a motivational interviewing intervention and training programme specifically designed for dental practices working with young people to prevent obesity.
- To conduct an exploratory randomised controlled trial of the obesity intervention.
- To make recommendations on conducting a definitive randomised controlled trial of the obesity intervention.

### **1.6.2 Potential impact**

Treatment options for childhood obesity are limited and frequently fail to achieve long term success. Effective and innovative preventive interventions are therefore urgently required. This study provides detailed information on the feasibility, acceptability and practicality of implementing a theoretically innovative obesity intervention. Contractual and commissioning arrangements now enable dentists to become more actively engaged in health promotion activity. This study explored the potential role dental practices may play in preventing a significant public health problem. The findings from this study will be used to apply for funding for a definitive RCT. The outcome of the study could inform future research as well as having significant implications for delivery of preventive interventions in primary dental care.

## Chapter 2 Methodology

### 2.1 Introduction

The MRC Framework for Evaluating Complex Interventions (Medical Research Council, 2008) was used as a guide to designing the trial. Prior to conducting a definitive trial to evaluate the effectiveness of a complex intervention, appropriate preliminary research should be undertaken. This report considered these preliminary stages and includes:

- Developing the intervention through identifying the evidence base and appropriate theory and modelling the process and outcomes.
- Assessing feasibility and piloting methods.
- Evaluating the process and outcomes.

These preliminary phases allowed testing of procedures for acceptability, likely recruitment and retention rates, compliance and delivery of the intervention. It also provided useful information in order to predict the effect size and sample size required for a definitive RCT.

This study focused on the development, feasibility, piloting and evaluation of an exploratory RCT aimed at preventing obesity in adolescents through a motivational interviewing intervention delivered in NHS primary dental care settings. A trial protocol was developed (Appendix 1) and a Gantt chart was produced (Appendix 2). The following chapter provides details on the methodology of these stages.

### 2.2 Ethics and R & D approval

Full ethics approval was received from Camden and Islington Community Research Ethics Committee (Appendix 3). The study also received Research and Development approval from the North Central London Research Consortium (Appendix 4). The following major amendments were made over the course of the project:

- One of the study areas was changed from Hammersmith and Fulham PCT to Haringey PCT, as it is geographically closer and shares commissioning and public health arrangements with the other two PCTs involved.
- Focus groups with dental teams in Islington PCT were added to enhance the exploratory development stage.
- Professor Steve Rollnick was added as a consultant in the development of the MI intervention and training programme.
- BMI cut-offs for classifying participants as overweight were changed from the 91<sup>st</sup> centile to the 85<sup>th</sup> – 95<sup>th</sup> centile, to better reflect the accurate use of BMI growth charts in epidemiology and research.
- The mode of delivery of the MI intervention was changed from the dental teams to the research team, to ensure a greater level of intervention fidelity for the purpose of assessing efficacy.

- Dental teams were trained in research methods appropriate to the recruitment of participants, whilst the research team were trained in MI by Jeff Alison, a leading MI trainer.
- PCRN agreed costings were added as an incentive for dental practices' participation.
- The technical method of waist circumference (WC) measurement was changed to improve accuracy, on the advice of Professor David McCarthy, who was added to the steering group committee.
- 4 day dietary recalls were used instead of 3.
- Young people participating in the Young People's Research Forum did not receive book voucher incentives after consultation with the local Healthy Schools Team.
- The eligible age range was changed from 12-14 to 11-16 years and obese young people (above the 95<sup>th</sup> centile) were added to the inclusion criteria, to widen the population from which the sample can be recruited (due to poor initial recruitment levels).
- Jessie Porter was added as a member of the research team.
- An addition was made to process evaluation of a postal questionnaire for those declining to participate in the post-screening phase to identify barriers to involvement in the study.

## 2.3 Overview of study design

Based upon the MRC framework (Medical Research Council, 2008), this study utilised both qualitative and quantitative methods.

### Stage one: exploratory development stage

#### *Objectives*

- To assess dental teams' experience, motivation and training needs in prevention.
- To assess the acceptability to young people and their parents of the proposed intervention.
- To develop the MI intervention and training programme.

### Stage two: exploratory RCT of the SWITCH (Smart Weight in Teenagers Choosing Health) programme

#### *Objectives*

- To conduct an exploratory RCT to assess the feasibility and acceptability of the intervention and trial methods.
- To make recommendations on a definitive RCT.

## 2.4 Study setting

### 2.4.1 Primary dental care practices

The study took place in NHS primary dental care practices across three Primary Care Trusts (PCTs) in north central London; namely Islington, Camden and Haringey, three inner city areas with complex health needs. Levels of obesity amongst young people in these areas are higher than national figures with 21.4% of 10-11 year olds being obese in the North Central London PCT cluster (National Obesity Observatory, 2011). Previous research conducted across this area by the UCL team showed that dentists were changing the nature of their clinical practice and were interested in prevention (Watt et al., 2004).

### 2.4.2 Population

The study population were 11-16 year olds who were overweight or obese and registered patients at one of the study practices.

## 2.5 Stage one: Exploratory development phase

For the exploratory phase, the following methods were used:

- A quantitative survey of dentists across 3 London PCTs to assess their experience, motivation and training needs in prevention.
- Qualitative focus groups with dental teams in Islington PCT to understand their attitudes and beliefs towards preventive activities.
- Qualitative focus groups with young people and parents to determine the acceptability and salience of the proposed obesity intervention.
- Seeking expert advice to support the development of the intervention and training programme.
- Engagement with dental teams to establish a network of interested practices.
- Development of a Public and Patient Involvement (PPI) component to pilot test aspects of the intervention design.

### 2.5.1 Assessing dental teams' experience, motivation and training needs in prevention

Questionnaire survey of prevention in general dental practice

#### *Sample*

A questionnaire survey (Appendix 5) was sent to all practicing NHS dental performers in Islington, Camden and Haringey PCTs (n=300). Private, hospital and community dentists were excluded. The questionnaire was piloted on a small sample of dental performers from Westminster, Hammersmith and Fulham PCTs. All respondents were entered into a prize draw as an incentive.

### *Delivery*

The self-administered questionnaire was posted with a letter and information sheet (Appendices 6 & 7). Those who did not respond were followed up with telephone calls and sent a second questionnaire, and third questionnaire if required. Multiple non-responders in large practices were identified and questionnaires were delivered and collected in person. Finally, those who had not responded were encouraged to complete the questionnaire at a UCL-organised event. In the design stage, guidance was followed on increasing response rates for postal questionnaires, including hand-written addresses, coloured paper and freepost return envelopes (Nakash et al., 2006, Edwards et al., 2009, Dillman, 1978).

The questionnaire was designed using a variety of resources including validated questions from other research in the dental literature (Chestnutt and Binnie, 1995, Dyer and Robinson, 2006), and was based on the Theory of Planned Behaviour (Albarracin et al., 2005, Ajzen, 1985).

The questionnaire explored:

- The demography of dental performers.
- Current work patterns.
- Dental preventive activities provided.
- Attitudes and beliefs around prevention.
- Assessment of the team's confidence / ability in carrying out prevention.
- Identification of perceived barriers limiting preventive activity.
- Interest in potential future research activities.

### *Data analysis*

Questionnaires were entered into a Microsoft Access database and transferred to SPSS for data analysis. Data was cleaned for mistakes and missing values. Descriptive analysis was carried out and frequencies were tabulated for each question. Chi-squared tests were performed to assess differences in the provision of prevention and barriers by age group and by gender.

Focus groups with dentists and dental care teams

Four focus groups were carried out with dental teams working in NHS dental practices in Islington PCT: two with dental performers and two with dental care professionals (DCPs).

### *Sample*

A purposive sample was selected based on the following selection criteria:

- Size of the dental practice (number of dentists working in each practice).
- Size of the NHS dental contract.
- Engagement of dental practices in prevention.

Out of 22 practices in the PCT, 11 were chosen for the sample, and contacted to enquire if they wished to participate. A letter and an information sheet were sent out to the principals of each selected NHS dental practice inviting them to take part in focus groups (Appendices 8 & 9). This was followed by a telephone call a week later to arrange a convenient time for

the focus groups. The target number for each focus group was 6-8 people. Participants were reimbursed for their time as follows: dental performers at the Guild rate and DCPs at a rate of £100 per person.

### *Delivery*

For ease of access, focus groups were carried out in local community venues. Information sheets were given and written consent was obtained from all participants (Appendix 10). This included consent for a digital recorder to be used to record discussions. The focus groups lasted between 45 minutes to one hour. Two researchers carried out the focus groups with support from the research team. Recordings were transcribed.

A topic guide (Appendix 11) was used which explored:

- Current roles and responsibilities in prevention.
- Current practice in prevention.
- Barriers to practicing prevention.
- Ways of developing preventive roles in dental practice.

### *Data analysis*

Thematic analysis was used, with data managed by themes and cases. Analysis was carried out by one researcher with discrepancies discussed with a senior colleague. The thematic analysis involved a number of stages: 1) becoming familiar with the data by listening to recordings and reading transcripts; 2) identifying emerging themes, sub-categories and codes; 3) examining the topic guide alongside the initial themes; 4) a thematic chart was developed with data organised beneath each theme; and 5) data was re-examined and codes were refined.

## **2.5.2 Assessing the acceptability to young people and their parents of the proposed intervention**

Focus groups with parents and young people

### *Sample*

Two focus groups were undertaken; one with young people aged 12-14 years, and one with their parents. Two dental practices in Islington and Camden PCTs were asked to recruit 10 pairs of young people and parents each. Dental practices were provided with £20 per pair to reimburse them for the time required recruiting patients. Young people who participated were provided with a £5 gift voucher upon attendance, and parents with a £10 gift voucher.

### *Delivery*

For ease of access, focus groups were carried out in local community venues. Information sheets were given, and written consent was obtained from all participants (Appendices 12-15). This included consent for a digital recorder to be used to record discussions. Focus groups lasted between 45 to 50 minutes. Two researchers carried out the focus groups with support from the research team. Recordings were transcribed.

Topic guides (Appendices 16 & 17) were used to explore the following issues with each group:

- Significance of obesity amongst young people locally.
- Causes of obesity amongst young people including the role of soft drinks consumption.
- Acceptability of dental practices as a setting to implement an obesity intervention.
- Suggestions on the best ways of helping young people to change their behaviours (dietary & physical activity).

### *Data analysis*

Transcripts were read and a narrative summary produced.

## **2.5.3 Development of a motivational interviewing intervention and training programme**

The development of the intervention was informed by the findings of the exploratory phase of the study and followed NICE guidance on the prevention of childhood obesity (NICE, 2006). The theoretical basis of the behavioural intervention was MI (Rotgers, 1993).

### Seeking expert advice

A steering group was set-up consisting of members representing a wide range of disciplines and expertise: statistics, nutrition, psychology, health services and research policy, an experienced MI practitioner, two public health strategists from North Central London PCTs (dental lead and obesity lead). The remit of this group was to advise on different aspects of the trial, including reviewing the measurement tools, the study outcomes and intervention design.

Professor Stephen Rollick was consulted on a number of issues regarding the intervention, including the design of the intervention: isolated (MI administered by a researcher) vs. integrated (a member of the dental team); the content; the number and duration of sessions; appropriate follow-up; and measuring intervention fidelity.

### Engagement with dental teams

The Directors of Public Health, Dental Commissioners and the Local Dental Committee were contacted to inform them of the proposed trial. A dental event, "Updates in Dentistry", was held at UCL with over 70 delegates, with the aim of engaging with local NHS dentists, introducing the impending implementation of the trial as well as providing Continuing Professional Development (CPD). A presentation was also given to dentists attending research evening meeting arranged by North Central London Research Consortium to introduce the study and raise awareness among dental performers.

## PPI component

It is essential that the development of any new intervention is informed by the public. This is even more important when the intervention focuses upon changing behaviours, is innovative in nature and deals with a potentially sensitive and difficult topic such as overweight and obesity amongst young people. PPI helps improve recruitment and the acceptability of research instruments by participants.

### *Young people's research forum*

A 'Young People's (YP) Research Forum' was established at a local secondary school in partnership with the local Healthy Schools Team, made up of approximately 20 Year 9 students (aged 13-14 years). The aim of the forum was to provide a platform for discussion on all aspects of the study, from the viewpoint of adolescents, to aid decision-making on the study design and enhance the intervention's effectiveness and relevance for participants. Consultation with the forum included questionnaire design, measurement methods, intervention structure and resources, and appropriate methods of engagement and communication with adolescents. A £200 voucher was offered to the school as an incentive to participate.

## Stage two: Exploratory RCT of the SWITCH programme

The Consort (CONsolidated Standards of Reporting Trials) Statement: extension to cluster RCT was used to report this study (Campbell et al., 2004). The trial started in March 2012 and ended in March 2013. The objectives of this stage were to assess the feasibility and acceptability of the proposed intervention and trial methods, and to make recommendations on a definitive RCT.

### Trial design

The aim of the stage two was to conduct an exploratory RCT to assess the feasibility and acceptability of the intervention and trial methods, and to make recommendations on a definitive RCT.

A cluster RCT design (where the dental practice was the unit of randomisation) was used to minimise treatment group contamination. In control practices, participants received routine dental care, whilst in the intervention practices the participants received the intervention programme (SWITCH) in addition to routine dental care.

## **2.6.2 Sample**

### Selection and randomisation of dental practices

Dentists who indicated their willingness to participate in the trial in the first phase of the study were initially identified. Those fitting the following criteria, based on their answers to the dental survey, were included in the sample:

- A client base of >40% NHS patients.

- A client base of >5% child patients.
- Practice is located in an area of high obesity or high deprivation (based on Index of Multiple Deprivation score).
- Practice has demonstrated prior interest in prevention activities.

Appendix 18 gives a breakdown of each stage of the randomisation process.

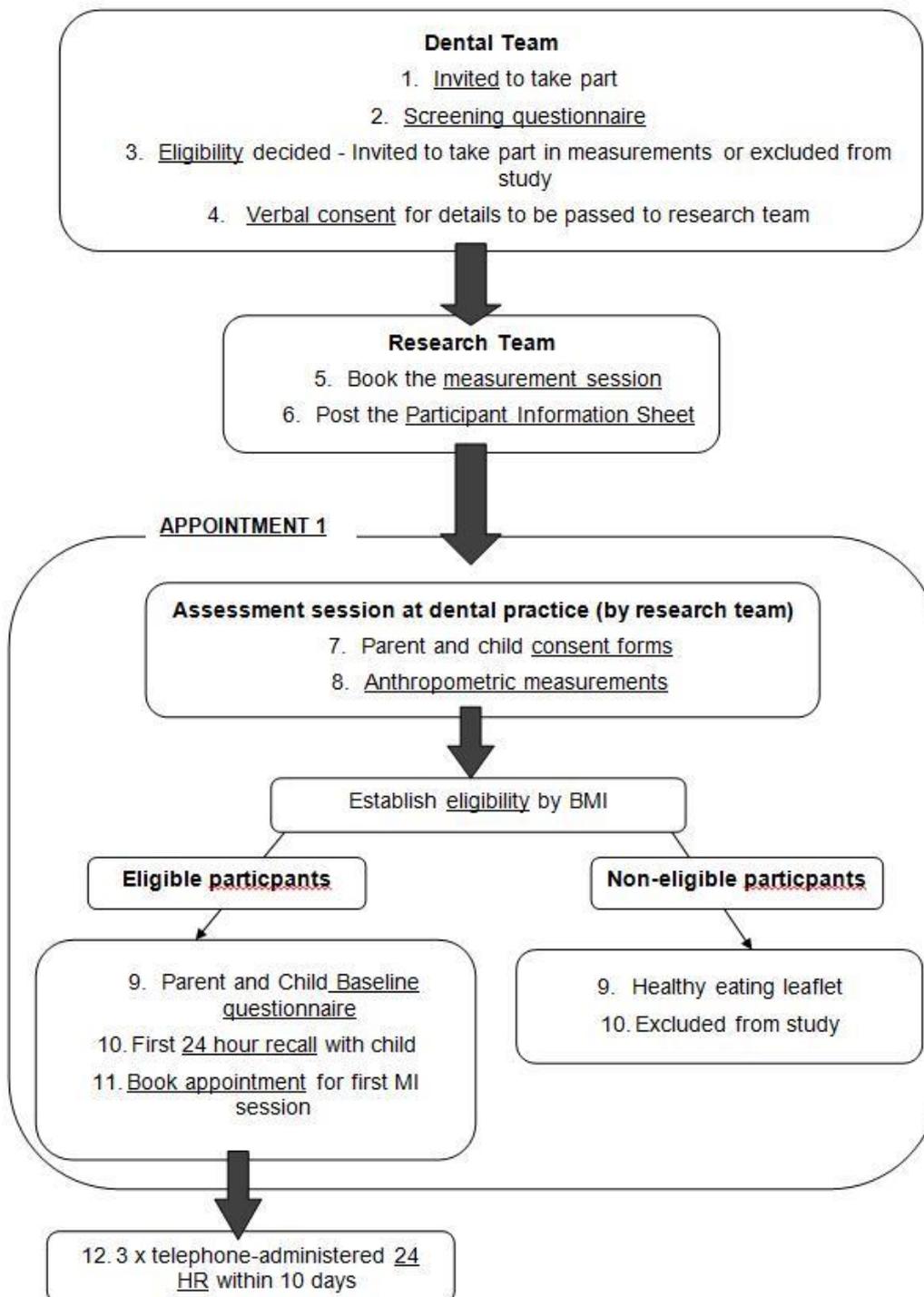
Incentives to encourage participation included payment at the Guild rate for attending training sessions and Primary Care Research Network (PCRN) agreed costings to cover room usage, staff costs and any other associated costs within dental practices.

#### Recruitment of subjects

Figure 1 outlines the process of recruitment through to baseline measurement.

Dental teams initiated contact with patients in the eligible age group (or a parent), gave a brief introduction to the study and administered a screening questionnaire (Appendix 19). This was done through a variety of methods, described in Chapter 4. Patients meeting the first set of eligibility criteria based on the screening questionnaire (age, soft drink consumption and absence of a medical condition) were asked for verbal consent for the research team to make contact.

Figure 1 Flow diagram of recruitment and baseline measurement of participants



The research team made contact with potential participants primarily by telephone, to arrange an appointment for a screening and baseline measurement session at the dental practice. Patients agreeing to attend a measurement session were posted a young person and parental Participant Information Sheets (PIS) (Appendices 20 & 21). A PIS was also available at the appointment. Written consent was requested from both the young patient and a parent or guardian (Appendices 22 & 23).

The aim of the measurement session was initially to determine eligibility based on BMI. If the patient was eligible on the basis of BMI, they continued on to provide baseline measurements in addition to BMI (see below sections). If the patient was not eligible, they were thanked for their time and excluded from the study.

All patients attending the screening measurement session received a £5 gift voucher regardless of eligibility, in reimbursement for their time. Patients who were excluded from the study received a healthy eating advice leaflet in addition.

### *Training of dental teams*

Dental teams in control and intervention practices were given training on site in research methodology and specifically RCTs, effective recruitment strategies and communication skills, obtaining consent and maintaining confidentiality.

### **Sample size**

As this was an exploratory trial it was not necessary to undertake an exact power calculation. However based on a previous similar pilot obesity intervention with young people it was estimated that 140 subjects would be needed in this pilot study (Ebbeling et al., 2006). Based upon the assumption that the average dental practice list consists of 2,500 patients, it was estimated that each practice had approximately 300 patients aged 11-16 years on their list. Assuming 20% of this age group were overweight and 40% of those approached agreed to participate the involvement of 10 dental practices was considered sufficient to meet the target sample size.

## **2.6.3 Study participants**

Participants were recruited from practices between March 2012 and August 2012. Young people were eligible to take part based on the following inclusion and exclusion criteria.

### **Inclusion criteria**

- Aged 11-16 years.
- Classified as overweight or obese (BMI at or above 85th centile).
- Consumed at least the equivalent of 1 soft drink per day.
- Full parental consent given.
- Young person interested in intervention.

### **Exclusion criteria**

- Classified as healthy weight (BMI below the 85<sup>th</sup> centile).
- Had serious medical condition or eating disorder.
- On a special diet.
- Unable to communicate effectively in English.

## 2.6.4 Outcomes

### Primary outcomes

The primary outcome measures were BMI ( $\text{kg}/\text{m}^2$ ) and WC (cm). BMI-for-age z-scores were calculated according to UK 1990 charts (Cole et al., 1995) and WC z-scores were calculated according to national percentiles (McCarthy et al., 2001). BMI is the most widely used and accepted index for measuring overweight and obesity (Reilly et al., 2002). Increases in WC reflect both increases in visceral adiposity and increases in centrally located subcutaneous fat, both of which are associated with a number of adverse metabolic outcomes (Cornier et al., 2011).

### Secondary outcome

The secondary outcome measure was consumption of sugary drinks. This was defined as daily total volume (ml) and frequency of consumption (number/day). Sugary drinks included carbonated and still soft drinks containing sugar, hot beverages containing sugar, and any fruit juice consumed above the threshold of 150ml. Carbonated and still soft drinks containing artificial sugars only were considered separately.

## 2.6.5 Measurement methods

Baseline measures were taken in person by the research team at the dental practice in an available private room between April 2012 and September 2012, prior to administering intervention or control treatments. Dietary assessment continued through phone calls. Follow-up measures were taken 6-months after the baseline measures from November 2012 to March 2013 in the same way. Parents were requested to attend the baseline appointment where possible to provide consent and complete a parental questionnaire. Where this was not possible, consent forms and questionnaires were sent by post following a telephone conversation.

## 2.6.6 Data collection methods

### Anthropometric measurements

An anthropometric measurement protocol was developed by the research team and reviewed by members of the steering group (Appendix 24). The protocols were based upon the Seca scales manual, Low Income Diet and Nutrition Survey (LINDNS) (Nelson et al, 2007) and Scottish Health Survey protocols (SIGN, 2003)

Height without shoes was measured to the nearest 0.1cm using the portable Leicester height measure. Weight in light clothing was measured to the nearest 0.1kg on calibrated portable electronic scales (Seca 770), and 1kg was deducted to account for clothing. WC was measured to the nearest millimetre with one layer of clothing (a t-shirt or a school shirt) using a Seca anthropometric tape. The participant was asked to point to their naval and a

measurement was taken 2cm above that point. In order to account for clothing, 0.5 cm was deducted.

The mean of two measurements was used for each participant, and z-scores were calculated for BMI and WC using the LMS method (Cole and Green, 1992). According to epidemiological cut-offs, any child at or above the 85<sup>th</sup> centile was assessed as overweight (Reilly, 2006), therefore overweight was defined as BMI-for-age > +1.03 SD.

### *Training and validation*

A team of four researchers were trained and calibrated in BMI and WC measurements by Professor David McCarthy, an expert in the field from London Metropolitan University. Researchers were validated for inter and intra-rater reliability of measurements of BMI and WC, which was assessed using intra-class correlation coefficients (ICC). The measurers maintained a low level of inter-observer variability, with an intra-class correlation coefficient of 0.986 for measures of height and 0.972 for measures of WC.

### **Dietary measurements**

There is little consensus on the most appropriate method of dietary assessment for adolescents and self-reported measures of diet can lead to misreporting of dietary intake (Collins et al., 2009). The 24 hour dietary recall (DR) method has relatively high validity (Burrows et al., 2010) and has a lower burden on participants than other methods (Biro et al., 2002), which is important in this age group in which participants are less motivated and less cooperative compared to younger children (Collins et al., 2009).

A dietary assessment protocol was developed by the research team (Appendix 25) based on the LINDNS method (Nelson et al., 2007), which has been validated for use in low-income households (Holmes et al., 2008). Four non-consecutive 24 hour DRs were taken using the multiple-pass method, with at least one weekend day. The DRs were conducted by four trained researchers, with young people asked about their own consumption, and clarification from a parent if required.

### **Additional data**

Young people completed an interview-administered Young Person's Baseline Questionnaire (Appendix 26) and Young Person's Follow-Up Questionnaire (Appendices 27 & 28) during the baseline and follow-up appointments. Both questionnaires collected the following data:

- Physical activity and sedentary activity based on validated questions from the WHO Health Behaviour for School-Aged Children survey (Booth et al., 2001).
- Readiness to change eating and drinking habits (on a scale of 1 to 10).
- Confidence to change eating and drinking habits (on a scale of 1 to 10).
- Social support (on a scale of 1 to 10) based on questions from the 'Friend/Family Support for Heart Healthy Behaviours Scale' (Sallis et al., 1987).

In addition to the above, the baseline questionnaire collected data on age (difference between the date of measurement and date of birth), sex (M/F), ethnicity (Office for

National Statistics, 2003), contact details and preferred method of contact. The follow-up questionnaire collected qualitative data on attendance at weight management programmes, changes that were made to health behaviours, and the effectiveness of the for intervention participants (“how much do you feel the MI sessions helped you to change the way you eat and drink on a scale of 1 to 10?”).

### **Parental data**

Parents completed a self-administered Parental Questionnaire (Appendix 29) at baseline only, collecting data on their age and gender as well as indicators of socioeconomic status (employment status, receipt of benefits, qualifications and home ownership). Contact details were also collected should the research team be unable to contact the young person.

### **Data preparation**

BMI-for-age and WC z-scores were automatically calculated for each participant ID (along with sex and age) at the point of measurement using the LMS Growth Microsoft Excel add-in.

A protocol for the coding of dietary data was developed by the research team and tested on a small sample of DRs for functionality (Appendix 30). Data was double-coded by two researchers for accuracy, with discrepancies or omissions checked by a third researcher. Coding sheets were developed (Appendix 31) which collected the following data from the original DR, and were entered by the third researcher into Microsoft Excel:

- Number of drinking occasions for 16 types of drinks (carbonated sugary; carbonated no sugar; pure fruit juice; juice drinks; sugary squash; no sugar squash; sugary flavoured water; no sugar flavoured water; water; fruit smoothies; fruit smoothies with added sugar; milkshake/yoghurt drinks; milkshake/yoghurt drinks with no added sugar; milk; tea or coffee; hot drinks with sugar).
- Total volume per drink type.
- Number of snack occasions.
- Number of snacking occasions for 3 types of snack group (category A, B and C).
- Total number of portions per snack group.
- Whether the participant was fasting (Yes/No).
- Whether this was the participant’s usual dietary intake (Yes/No).
- Day recalled.
- Recall number.

Data from the Young Person’s Questionnaires and Parental Questionnaire was entered into a Microsoft Access database by the research team.

Following data entry, recoding was undertaken by a fourth researcher responsible for data analysis. The recoding included:

Recoding the fruit juice group into volumes <150ml and volumes >151ml

Recoding of all drinks into two groups:

- Sugary drinks (carbonated sugary; pure fruit juice >151ml; juice drinks; sugary squash; sugary flavoured water; fruit smoothies with added sugar; milkshake/yoghurt drinks; hot drinks with sugar).
- Non-sugary drinks (carbonated no sugar; pure fruit juice <150ml; no sugar squash; no sugar flavoured water; water; fruit smoothies; milkshake/yoghurt drinks with no added sugar; milk; tea or coffee).

Recoding of moderate and vigorous physical activity into:

- <1time a week / >2-3 times a week.
- <1 hour a week / >2-3 hours a week.

## 2.6.8 Data analysis

Descriptive analyses were used to describe baseline and follow-up characteristics of study participants. Means, medians, 25<sup>th</sup> and 75<sup>th</sup> centiles are presented for continuous variables and proportions and numbers are presented for categorical variables as appropriate.

We carried out analyses on an intention-to-treat basis and missing outcome data was substituted by baseline observations carried forward. Dietary data was included for participants with a minimum of two dietary recalls at baseline or follow-up. For dietary data not meeting this criterion at follow-up, values were again substituted by baseline observations carried forward. The mean of all available dietary recalls was taken to give daily consumption.

Chi-squared tests or Fisher's exact tests were used to detect differences in socioeconomic characteristics and other categorical variables between the control and intervention groups at baseline and follow up. Independent samples t-tests were used to test differences between anthropometric, dietary and other continuous outcomes between the control and intervention groups at baseline and follow up. Where data was not normally distributed a two-sample Wilcoxon rank-sum test was performed. However for ease of interpretation, means and t-test derived P values are presented in the Tables, as there were no differences in significance levels between parametric and non-parametric tests. Linear regression analysis was performed to account for any differences in the outcomes between the two groups. Mean differences and 95% confidence intervals in BMI and waist circumference z scores, sugary and non-sugary drinks daily consumption and snacking occasions and portions were also calculated. Data analysis was carried out using Stata<sup>TM</sup> version 12.0.

ICC was calculated for primary outcomes using the mean difference between control and intervention at baseline and follow-up. The ICC was also calculated for the secondary outcome of sugary drink consumption in order to estimate sample size for a full-scale definitive trial.

## 2.7 The SWITCH programme

### 2.7.1 Development process

The research team designed the intervention between January and February 2012, making use of the findings from the exploratory phase.

A brief form of a MI intervention was recommended, given the time constraints upon primary dental care settings and consideration of the target age group, who requested short sessions. As an exploratory trial, it was recommended that the intervention be delivered by dedicated practitioners receiving intense training and support, hence members of the research team were chosen as the mode of delivery whilst dental teams focused on the recruitment of participants. Use of a MI approach was supported by YP, who described characteristics that an effective intervention practitioner should have, which matched MI-consistent characteristics. Feedback from the YP Research Forum suggested that the intervention should make use of interactive resources and visual aids to better engage the age group. At the recommendation of YP, mobile technology was utilised for appointment reminders and the maintenance phase.

### 2.7.2 Intervention development

Intervention guidance was produced by the research team (Appendix 32). This was based on training sessions with a MI expert and relevant literature.

#### Theoretical basis

In its broadest sense, MI is a collaborative conversation to strengthen a person's own motivation for and commitment to change. It explores a person's own reasons for change, with the philosophy that people are better persuaded by their own arguments than those of others. The practitioner helps to evoke the case for change from within the person, with the 'language of change' key to increasing motivation and commitment (Miller and Rollnick, 2012).

MI is a goal-oriented technique (Rollnick and Miller, 1995). The aim of SWITCH was to strengthen the young person's motivation to reduce their consumption of sugary drinks.

The spirit of MI can be defined as collaborative, autonomy-supporting and evocative. The guiding principles of practice are:

- *Expressing empathy*; listening to and understanding your client's dilemma and motivations.
- *Developing discrepancy* between client goals and current behaviour problem; treating ambivalence as normal.
- *Rolling with resistance* rather than confronting it; resisting the righting reflex. It is suggested that rather than trying to convince clients to change, counsellors would be

more effective if they elicited the arguments for change from the client themselves. (Emmons and Rollnick, 2001).

- *Supporting self-efficacy*; empowering the client, accepting them as the active decision maker / expert in their own lives.

### Practitioner skills

The emphasis is on the practitioner becoming competent in a number of core communication skills, to support the client to articulate what is in their own true best interests (Anstiss, 2009). In SWITCH, practitioners based their sessions with participants on core communication skills using open-ended questions, affirmations for desirable behaviours, reflective listening and summaries. Based on the concept that verbalisation of client intentions predicts subsequent behaviour change (Anstiss, 2009), practitioners were expected to recognise and elicit ‘change talk’.

The practitioners also used a number of tools and techniques that are often used in brief primary care interventions of MI (Anstiss, 2009), where time is limited. These included agenda-setting, exploring a typical day, importance and confidence rulers, ‘ask-tell-ask’, exploring two possible futures, route planning, a ‘decisional balance’ exercise and agreeing upon goals (Figure 2).

Figure 2 MI brief intervention tools and techniques.

<b>Tool</b>	<b>Aim</b>
<b>Agenda setting</b>	Presents a series of topics that the practitioner feels would be useful to address, and gives the young person control over which of these topics they would like to discuss.
<b>A typical day</b>	Encourages the young person to provide more detail on how their issue fits into their day-to-day life, to improve the practitioner’s understanding. This places the behaviour under focus in a realistic context. It is important to avoid an ‘interrogation’ approach when using this tool.
<b>Importance and confidence</b>	Explores the factors behind the behaviour that are encouraging and restraining change. It also helps to establish readiness.
<b>Ask-Tell-Ask</b>	Provides information and advice to the young person in a more acceptable manner, which is less prone to resistance. It provides a collaborative approach to exchanging and building knowledge.

Tool	Aim
<b>Two possible futures</b>	Helps the young person to appreciate the consequences of their current behaviour by encouraging them to articulate these themselves.
<b>Route planning</b>	Uses a collaborative approach to coming up with solutions.

### Overview of the intervention

In the philosophy of MI, an intervention manual was not produced. Studies using this approach have shown to be less effective than those without a manual (Hettema et al., 2005). Instead, an overview of steps was provided with practitioners responsible for directing the conversation in a focused manner and using a flexible approach depending on the individual participant's situation. The steps are summarised below:

#### *Establishing rapport*

Builds the relationship, outlines the intervention and establishes their understanding of the intervention.

#### *Setting the agenda*

Focuses the conversation whilst giving the young person a sense of choice.

#### *Exchanging information (focus and evoke)*

Improves the young person's knowledge and understanding of their behaviour and its consequences in a way that is acceptable to the young person and does not elicit resistance.

#### *Assessing importance and confidence / developing discrepancy*

Encourages the young person to explore their reasons for sustaining or changing the behaviour.

#### *Planning for change (setting goals)*

Establishes client's own solutions for behaviour change, develops commitment to change and builds in coping strategies for relapses.

### **Intervention resources**

A series of resources were developed to support the intervention, and were tested with the YP Research Forum for acceptability.

### **Practitioner prompt sheets**

Prompt sheets were designed for each session pointing to possible questions and tools that may be appropriate at certain stages (Appendices 33-35). Examples of prompt questions are given in Figure 3.

Figure 3 Examples of prompt questions

*“Why do you think you had [soft drinks] in those particular situations?”*  
*“On a scale of 1 to 10, how important is it to you to change your drinking habits at the moment?”*  
*“Why give yourself a 7 and not a 1?” “What would have to happen for it to become more important?”*  
*“If things continue as they are, what do you think will be the likely effects on your health?”*  
*“What are some reasons for keeping things the way they are?”*  
*“What are some reasons for making a change?”*  
*“The choice will always be yours, but if you make the changes, what do you think could improve for you?”*  
*“What are your ideas for making a change” “What is your goal?”*  
*“What is the first step for you?”*

### **Brief tactic worksheets**

A number of sheets were designed for delivery of the MI tools: an ‘agenda setting’ image sheet, a ‘decisional balance’ worksheet and visual rulers for assessing importance and confidence (Appendices 36-38)

### **Visual aids**

Two aids were developed; firstly, images of common drinks with their sugar content displayed, and secondly, a list of the effects of over-consumption of soft drinks (Appendices 39 & 40). These were used only in the context of ‘ask-tell-ask’ i.e. permission is sought from the participant before providing any information followed with a discussion of their understanding of that information and how it influences them.

### **Dietary resources**

Dietary and physical activity guidelines were produced (Appendix 41), based on the Department of Health’s ‘8 tips for healthy eating’. Alongside this, a ‘drinks directory’ was produced in collaboration with the Young People’s Research Forum – this is a reference file of common drinks consumed by adolescents along with their nutritional information (Appendix 42).

### **Take-home materials**

A leaflet was produced by the research team consisting of dietary and physical activity advice and useful websites (Appendix 43). Feedback was sought from nutrition professionals

on the steering group and the leaflet was adapted accordingly. This leaflet was offered to all intervention participants during the intervention, and to all control participants at the follow-up measurement appointment.

### **2.7.3 Delivery of the intervention**

A systematic review of MI support found that the majority of brief MI interventions (defined as 15 minutes or more) had an effect on outcomes, and that likelihood of an effect increased with more than one encounter (Rubak et al., 2005). A prolonged follow-up period also increased likelihood of an effect, as did individual interviews in person.

The SWITCH programme was delivered as a brief intervention in three or four 15 minute appointments, preferably one week apart. Sessions were delivered on an individual face-to-face basis, usually in a clinic room or another quiet room within the practice.

A protocol was developed for the maintenance phase (Appendix 44). This consisted of text message or email support at 2 weeks and 12 weeks post-intervention, and a follow-up MI session delivered over the telephone four weeks after the final face-to-face session. Guidelines for effective use of mobile technology with adolescents were followed when designing appropriate text messages and emails. These included positive, encouraging messages without the use of informal acronyms (Woolford et al., 2011). The SWITCH programme used a mobile communication system (AIA8) provided by the UCL Centre for Health Informatics & Multi-professional Education.

Participants were provided with reminder text messages or phone calls in-between appointments, detailing their upcoming sessions.

### **2.7.4 Training and support**

A 2-day tailored MI workshop was conducted by a qualified and experienced trainer and was delivered to the MI practitioners. The training programme used brief lectures, small group exercises, and role play as well as recorded demonstrations of MI counselling sessions. In addition, development of the framework for the SWITCH programme was also discussed. The research team continued to have support through on-going supervision and follow-up training, as recommended by guidelines on MI brief interventions for weight management from the National Obesity Observatory (Cavill et al., 2011). A series of distance tuition sessions were carried out featuring role play sessions to practice the skills and tactics used in MI, and feedback on digital audio recordings of real intervention sessions with study participants. The practitioners also met regularly for peer support.

### **2.7.5 Control group**

Participants in the dental clinics randomised to the control group did not receive any components of the intervention. The young people attending these surgeries received usual dental health care advice from their dentist, and received a healthy eating leaflet at the 6 month follow-up.

## 2.8 Process Evaluation

An essential component of an exploratory trial is the process evaluation, in order to assess how the intervention was delivered and its acceptability to key stakeholders. As there is no standardised protocol for process evaluation of exploratory RCTs, a number of frameworks were utilised, including one proposed by Linnan and Steckler (2002). Therefore, the evaluation took into account:

- Recruitment and participation.
- Intervention completeness.
- Fidelity / quality of the intervention.
- Satisfaction.
- Contextual aspects.

Process evaluation data were collected using a variety of methods throughout the implementation and evaluation phase of the trial, including questionnaires and one-to-one interviews. As the process evaluation also incorporates fidelity / quality of the intervention delivery, intervention fidelity was also reported as part of the process evaluation.

### 2.8.1 Intervention fidelity

The purpose of fidelity testing is to provide an insight into the adequacy of training and support provided to the practitioners delivering the intervention. A failure to take into account the treatment fidelity can result in a type III error, where negative results are wrongly attributed to an ineffective intervention, rather than the standard of its delivery (Resnicow et al., 2006).

Fidelity of the intervention was based on the practitioner's consistency with the MI approach, and has been tested via the Motivational Interviewing Treatment Integrity (MITI) code version 3.1 (Moyers et al., 2010), which is recommended as a reliable method of evaluating fidelity (Moyers et al., 2005). This is a systematic technique testing a practitioner's adherence to the primary concepts of MI; evocation, collaboration, autonomy, direction and empathy.

Sessions were coded and assessed by an external MITI assessor. A sample of 10% of all fully recorded MI sessions with a duration of 10 minutes or longer were selected for each practitioner, using a purposive sampling method in order to ensure a representative proportion of males and females. Suggested thresholds for proficiency and competency are detailed in the MITI code, but are based on expert opinion only (Moyers et al., 2010).

## Chapter 3 Results

### 3.1 Development phase

This chapter will report the findings from the developmental phase of the study, which included a questionnaire survey with dentists across Camden, Islington and Haringey PCTs as well as focus groups with dentists and their teams, parents and young people in Islington PCT.

Baseline demographic characteristics and primary and secondary outcomes will be described stratified by control and intervention groups.

#### 3.1.1 Questionnaire survey on prevention in general dental practice

Prior to the commencement of the trial, a survey was conducted among dental practitioners across Camden, Islington and Haringey PCTs to assess current views in prevention in general dental practice.

##### Sample characteristics

Out of 300 eligible respondents 164 completed and returned the questionnaire (55% response rate). Overall, 60% of the sample was male and their age distribution varied across the working life age groups. The majority (62.9%) qualified in the UK, 21.4% in the EU and 15.7% in other countries (Table 1).

**Table 1** Characteristics of the study sample who completed the Prevention Questionnaire in the three PCTs

Characteristics	Proportion (%)
<b>Gender (n=160)</b>	
Male	60.0
Female	40.0
<b>Age Groups (n=161)</b>	
Under 30	17.4
30-39	32.9
40-49	24.8
50-59	17.4
60+	7.5
<b>Place of qualification (n=140)</b>	
UK	62.9
Europe	21.4
Other	15.7

### Dentists' attitudes toward prevention

The vast majority of dentists agreed that the general dental service had a role to play in smoking cessation counselling (81%), diet advice (93.3%), and to a lesser extent alcohol advice (65.6%).

### Current preventive activity

Oral hygiene provision was almost universal with 95.7% of dentists reporting that they provided it always or frequently. Diet advice and smoking cessation advice was also provided routinely by the majority of dentists (85.4% and 76.7% respectively). On the other hand, frequent provision of topical fluorides, fissure sealants and alcohol advice were less prevalent (52.1%, 47.2% and 38% respectively reported "always" or "frequently"; Table 2). Younger dentists (below the age of 40 years) were significantly more likely to give oral hygiene (72.8% versus 52.5%,  $p=0.008$ ) and tobacco (85.0% versus 67.5%,  $p=0.009$ ) advice compared to their older colleagues, but other preventive activities were not significantly associated with age. Female dentists were also more likely to provide fissure sealants ( $p=0.041$ ) and give smoking cessation advice ( $p=0.03$ ) than male dentists (Table 3).

**Table 2** Current preventive activities among respondents

Preventive Actions	Always /Frequently %	Sometimes %	Rarely/ Never %
Fissure sealants (n=163)	47.2	38.0	14.8
Topical fluoride (n=163)	52.1	30.1	17.8
Oral hygiene instructions (n=164)	95.7	3.0	1.2
Diet advice (n=164)	85.4	12.8	1.8
Tobacco advice (n=163)	76.7	17.8	5.5
Alcohol advice (n=163)	38.0	37.4	24.5

**Table 3** Proportion of dentists undertaking preventive activities, by age groups and gender (n=164)

Always/frequently providing...	Age Groups			Gender		
	≤39 years	40+ years	P	Male	Female	P
Fissure sealants	48.8%	46.3%	0.75	46.3%	57.1%	0.04
Topical fluoride	52.5%	51.3%	0.87	45.8%	60.3%	0.07
Oral hygiene instructions	72.8%	52.5%	0.008	57.9%	70.3%	0.10
Diet advice	46.9%	32.5%	0.06	37.5%	43.8%	0.43
Tobacco advice	85.0%	67.5%	0.009	70.8%	85.7%	0.03

### Barriers to providing prevention

The main barriers identified by dental teams in providing prevention were lack of time, inadequate remuneration and lack of patient compliance. Compared to their older counterparts, a significantly higher proportion of younger dentists thought that poor patient compliance was a significant barrier ( $p=0.01$ ). However, no other perceived barrier for the provision of preventive care was associated with neither the age nor the gender of the dentist (Table 4).

**Table 4** Associations between barriers to the provision of prevention, with age groups and gender (n=164)

Strongly agree/agree	Age Groups			Gender		
	<39 years	40+ years	P	Male	Female	P
Lack of time	87.5%	82.3%	0.36	83.3%	87.1%	0.52
Lack of remuneration	89.7%	83.5%	0.24	84.3%	90.2%	0.30
Lack of motivation	8.8%	17.7%	0.09	16.6%	8.1%	0.12
Poor patient compliance	75.0%	57.0%	0.01	63.5%	69.3%	0.45
Likely to alienate patients	20.2%	21.5%	0.84	21.8%	19.7%	0.74
Lack of knowledge	1.3%	6.4%	0.09	4.2%	3.3%	0.78
Lack of confidence	1.3%	5.1%	0.17	3.1%	3.2%	0.97
Lack of training	10.0%	14.2%	0.17	14.9%	8.0%	0.20

### 3.1.2 Focus groups with dentists and dental care teams

Four focus groups (two with dentists and two with DCPs) were conducted in North London in June 2011. Overall 12 dentists and 13 dental care professionals took part.

#### Participant characteristics

The focus groups had a diverse composition of participants; two of the focus groups (one comprising of dentists and one of DCPs) consisted of younger practitioners the majority of whom had qualified abroad and were working in larger practices, whereas the other two focus groups consisted of older, more experienced professionals from smaller practices. The key themes of the discussions are summarised below.

#### Roles and responsibilities of the dental team

As expected, prevention was found to be important by all participants and it was considered to be part of the responsibility of the dental team. Dentists felt a strong sense of professional, ethical and legal obligation to provide prevention for their patients even if they weren't financially reimbursed for it. They also felt that prevention should be the responsibility of the entire dental team, not just them.

On the other hand, there was a clear division in the views of the DCPs. The less experienced DCPs believed that the responsibility of prevention should fall mainly with the dentist or dental hygienist, and their role was mainly supportive. The more experienced DCPs however felt that, because they were more approachable to patients, they were in a position to contribute to providing prevention to them. Both groups acknowledged that the patients had the ultimate responsibility of making behaviour changes and felt that the dental team had limited influence on this process.

#### Barriers to providing prevention

A number of barriers to providing prevention were identified by the participants.

The majority of dentists felt that the current contract failed to recognise the importance of prevention and that there was a lack of financial incentives for providing prevention. The DCPs also noted that lack of time was an important barrier. Dentists felt a conflict between the ethical and professional obligation to provide prevention. Some dentists also felt that setting up and providing tailored advice was very time consuming under the current contract and could potentially alter the patient-dentist relationship. Lack of suitable private space and facilities was another barrier in providing prevention especially in single surgery practices. A minority of dentists also expressed apprehension about the current dental system, which they felt was in control of their clinical decisions and was interfering with patient care.

Dentists felt that patients had their own beliefs and understanding of oral health and that ultimately they had little control over prevention as patients had the ultimate responsibility in practicing healthier behaviours. Other important barriers included lack of knowledge and understanding from patients as well as cultural differences. DCPs also highlighted language barriers as an issue, which required extra time for effective communication.

Some dentists felt that they would have like to be linked with other health professionals as well as local services such as children's centres and nurseries in order to be able to promote oral health, however this has not been successful so far leading to a sense of isolation and lack of integration with the wider NHS.

A lot of dentists reposted lack of training as a barrier in providing prevention in certain areas such as smoking cessation. Although the knowledge may exist they were keen on more training in the mode of delivery of such interventions. Finally dentists identified bigger factors beyond their control that influenced behaviours in their patients such as the food industry and advertising.

#### **Future opportunities for providing prevention**

Most of the dentists agreed that training in prevention would help their skills and confidence. There was a continuous dilemma between their ethical obligation and the lack of financial incentives. Provision of practical education resources was also deemed very important. It was felt that prevention in practice should be a team activity involving DCPs as well as dentists. Some DCPs felt that establishing links with other services such as the Community Dental Service, GPs maternity services and community nurses would be helpful although ethical dilemmas were raised about sharing good practice with other dental colleagues who were in competition for business. It was also raised that a more upstream preventive approach is needed such as societal changes, greater corporate responsibility and the use of role models for children. Another suggestion would be to make sugar an unpopular and less desirable habit, similar to smoking.

### **3.1.3 Focus groups with parents and young people**

Two focus groups (one with parents and one with young people) were conducted in June 2012 in Islington.

### **Focus groups with parents**

Participants had not considered the idea of dentists providing health advice to young people. They thought it was appropriate for the dentist to give healthy eating advice as they can observe the effects of diet on the teeth. It would also demonstrate that the dentist cares about the young person. Young people are more likely to see a dentist than a GP and are likely to listen to them, as they already provide some diet advice. However parents felt that the dentist would need to approach the subject of weight very sensitively and that the young person may be offended if he/she does not deliver the advice in an appropriate manner. They agreed that it's very hard to find the right terminology when talking to young people about weight because the young people may take it the wrong way. It would however be helpful if they saw the same dentist every time so that they build trust and develop a relationship with them. The Department of Health was considered to have an important role to play in prevention and integration with other health services, schools and children's centres was deemed important.

### **Focus groups with young people**

There were mixed opinions about the idea of a dentist giving information and support about weight. Some young people thought it was strange but fascinating, others were unsure about the idea. They thought it would be surprising if the dentist talked about weight, however mentioning food would be more sensible as it is directly related to teeth health. Interesting ways of giving advice about food and drink would be to give practical examples of what could happen (effects of having too much food/drink) or showing examples of drinks and how much sugar is contained in each can. Mixed views were also expressed on having one-to-one sessions; some thought it would be interesting and some found it boring, especially if the session is a one way conversation. There was agreement however that it is not necessary for parents to be present during sessions and that the outcome would be different if parents were present.

## **3.2 Exploratory RCT of the SWITCH programme**

The results of the main trial are presented below. Demographic and socioeconomic characteristics are shown at baseline. Anthropometric, dietary and other outcomes (physical activity, sedentary behaviour and readiness to change) are described at baseline and follow up. Crude and adjusted mean differences between baseline and follow up in anthropometric and dietary measures are also reported. All variables are presented initially for the sample as a whole, and then stratified by control and intervention groups at both time points.

### **3.2.1 Baseline characteristics of the trial sample**

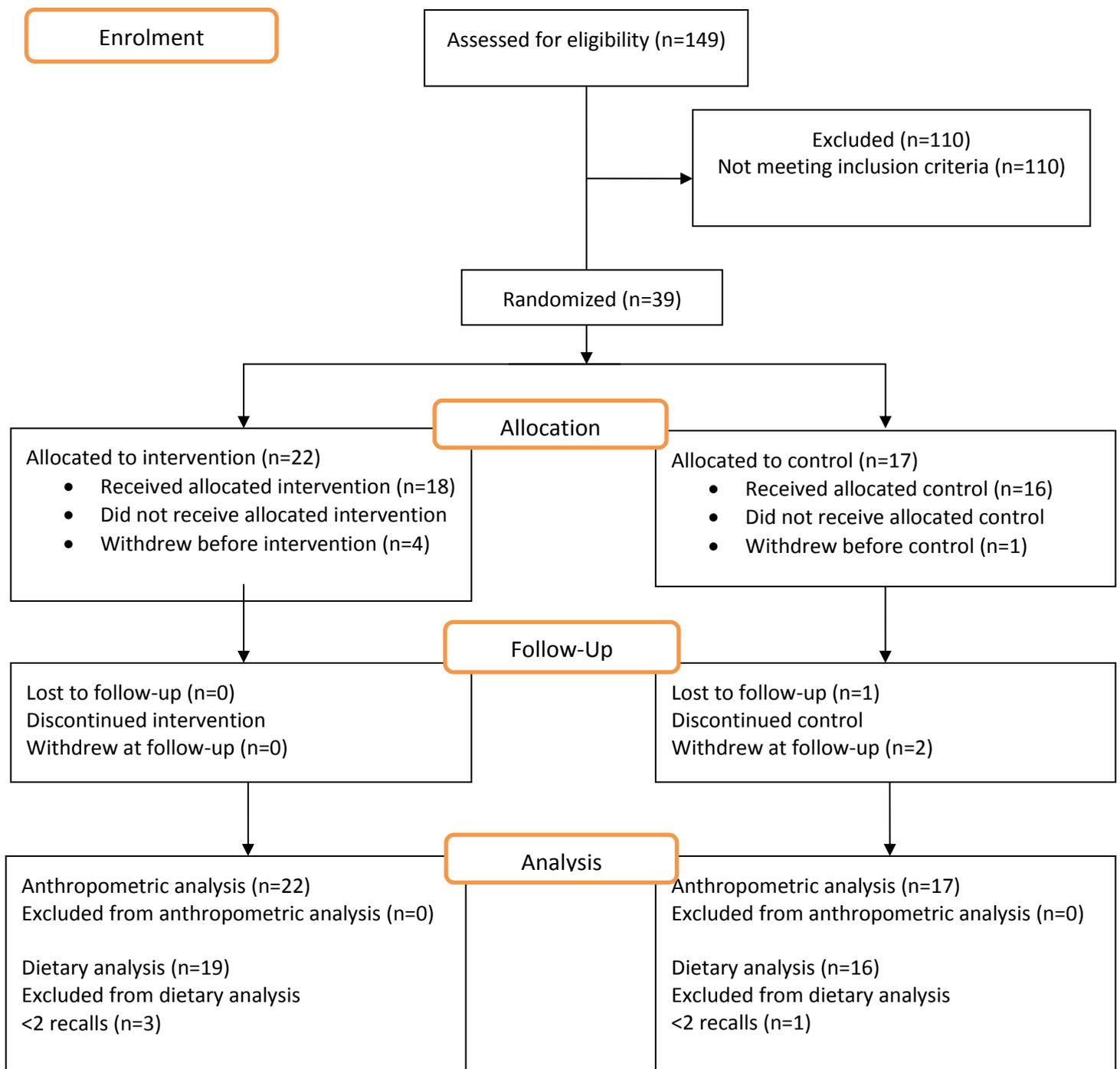
Recruitment of dental practices

22 practices met the recruitment criteria and were stratified by practice size to ensure a balanced sample. A total of 10 practices (4 small practices and 6 large practices) were then randomly selected and allocated to control or intervention sites.

### **Recruitment of young people**

A total of 264 screening questionnaires were returned to the research team by the dental teams (143 forms from the control practices and 121 from the intervention practices) between April and July 2012. Out of these, 62 participants declined to participate when contacted to arrange a measurement screening appointment (29 from control and 33 from intervention practices) and 53 could not be contacted because their contact details were no longer valid or they were because they were not responding to phone calls and/or letters from the research team (29 from control and 24 from intervention practices). The remaining 149 young people provided written consent to be measured in order to establish eligibility to take part in the study. After screening for the anthropometric eligibility criteria, 39 participants were selected from both control and intervention practices (recruitment rate of 26.2%). A flow diagram provides more details on enrolment, allocation follow up and analysis participant numbers (Figure 4).

**Figure 4** Consort flow diagram for the main phase of the exploratory trial



## Demographic characteristics of whole sample

### Parents

Thirty six parental questionnaires were collected, whilst the remaining three were not returned. This was due to lack of time on the parents' behalf to complete the questionnaire during the measurements' session or the parent failed to return the questionnaire by post (in cases where the young person was accompanied by an adult older sibling and therefore the parental questionnaire had to be posted). The majority of parents were female (84.6%) with almost half (46.2%) in employment (full-time, part-time or self-employed). Most of them were receiving benefits (82.1%) and lived in rented accommodation (71.8%). Just under a third of the sample was educated to a graduate/postgraduate level. Table 5 provides an overview of the parental sample.

**Table 5** Demography of parents for the whole sample, at baseline (n=39)

Parental Demography	n	%
<b>Gender</b>		
Female	33	84.6
Male	6	15.4
<b>Parental Employment status</b>		
Employed (full-time/ part- time/self-employed)	18	46.2
Not Employed	7	17.9
Unemployed- looking for work	3	7.7
Student (full-time/ part-time)	3	7.7
Long term ill/ disabled	2	5.1
Carer	2	5.1
Not working	1	2.6
Missing	3	7.7
<b>Benefits</b>		
In Receipt of Benefits	32	82.1
No Benefits	4	10.3
Missing	3	7.7
<b>Parental Education</b>		
No qualifications	8	20.5
BTEC/NVQ Level /GCSE/O Level	11	28.2
University Degree/ Postgraduate	12	30.8
Qualified overseas	3	7.7
Other	1	2.6
Not answered	1	2.6
Missing	3	7.7
<b>Home Status/Ownership</b>		
Owned outright /Mortgaged	7	17.9
Rented	28	71.8
Not answered	1	2.6
Missing	3	7.7
<b>Total</b>	<b>39</b>	<b>100</b>

### Young people

Young people's ages (n=39) ranged from 11.2-15.3 years [mean 13.6 years, (SD 1.1)]. The majority of the sample were male (59%, n=23), 43.6% (n=17) described their ethnicity as

White, 20.5% (n=8) as Black /Black British, 20.5% (n=8) as Asian/Asian British, 10.3% (n=4) as Any Other Asian and 5.1% (n=2) as Any Other Mixed.

## Outcome measures at baseline for the whole sample

### Anthropometric and diet measures

BMI z scores ranged from 1.46 to 3.35 with a mean value of 2 (standard deviation – sd: 0.45), whilst WC z scores ranged from 1.22 to 3.90 with a mean value of 2.46 (sd: 0.66). On average, young people consumed 447 ml (sd: 309) of sugary drinks and 701 ml (sd: 402) of non-sugary drinks per day. In terms of snacking, there were on average 1.4 snacking occasions per day of which almost one occasion consisted of unhealthy snacks (Snack A category) whereas healthier snacks (Snack B category) were consumed less frequently (Table 6).

**Table 6** Outcome measures across the whole sample, at baseline (n=39)

	Mean	95%CI		25 <sup>th</sup> centile	Median	75 <sup>th</sup> Centile
		Lower	Upper			
BMI z score	2	1.86	2.15	1.72	1.83	2.33
WC z score*	2.46	2.24	2.68	2.02	2.25	3.08
Mean daily sugary drinks (ml)*	447	341	553	198	437	579
Mean non sugary drinks (ml)*	701	562	839	405	659	838
Total mean snacking occasions*	1.43	1.12	1.74	1	1.33	2
Mean snack A occasions*^	0.9	0.67	1.14	0.25	0.75	1.5
Mean snack A portions*	1.24	0.84	1.64	0.38	0.93	1.76
Mean snack B occasions*^	0.35	0.22	0.47	0	0.25	0.5
Mean snack B portions*	0.68	0.35	1	0	0.41	1

\*Due to missing data, WC z scores are based on 37 participants and all dietary outcomes are based on 35 participants

^ Snack A: Unhealthy snack, Snack B: Healthy snack

### Physical activity and sedentary behaviour

Young people were active for 60 minutes or more on an average of 3.1 (sd: 2.2) days in the previous week. In their free time, just over half of the sample (51.3%, n=20) exercised more than 2-3 times per week, whereas the remaining 48.7% (n=19) exercised once a week or less. 51.3% exercised for an hour or less per week, whilst 48.3% exercised for more than 2-3 hours per week. The median number of hours spent using TV, computers and games consoles was 2.5 hours on weekdays and 6 hours on weekends (Table 7).

**Table 7** Physical activity and sedentary behaviour across the whole sample, at baseline (n=39)

	Mean	95%CI		25 <sup>th</sup> centile	Median	75 <sup>th</sup> Centile
		Lower	Upper			
Activity in the past week (days)	3.1	2.3	3.8	1	3	5
Screen viewing: weekdays (hours)	3.1	2.4	3.8	1.5	2.5	4
Screen viewing: weekends (hours)	6.1	5.2	7	4	6	8

### Readiness to change and social support

Table 8 describes the distribution of the variables on readiness to change eating and drinking habits across the whole sample. In summary, the majority of young people reported that they were either ready or even trying to change their eating and drinking

habits. Very few participants were unsure about readiness to change eating habits and none reported not being ready, while there were larger proportions of young people unsure or not ready to change their drinking habits.

**Table 8** Readiness to change eating and drinking habits across the whole sample, at baseline (n=39)

<b>Readiness to change behaviour</b>	<b>n</b>	<b>%</b>
<b>Readiness to change eating habits</b>		
Not ready to change (1-3) / Unsure (4-5)	4	10.3
Ready to change (6-8) /Trying to change (9-10)	35	89.7
<b>Readiness to change drinking habits</b>		
Not ready to change (1-3) / Unsure (4-5)	11	28.2
Ready to change (6-8) /Trying to change (9-10)	28	71.8
Total	39	100

The next section will explore differences in socioeconomic, anthropometric, dietary and other outcomes between control and intervention groups at baseline.

#### Demographic characteristics by control and intervention groups

There were no statistically significant differences in parental socio-demographic characteristics between participants in the control and intervention groups (Table 9). The two groups were also fairly similar in the young people's demographic characteristics apart from gender, where there was a significantly higher proportion of females in the intervention group (P=0.009) (Table 10).

**Table 9** Parental socio demographic characteristics, by control and intervention groups, at baseline (n=39)

<b>Parental Demography (%)</b>	<b>Control</b>	<b>Intervention</b>	<b>P</b>
<b>Gender</b>			
Female	16 (94.1)	17 (73.3)	0.21 <sup>1</sup>
Male	1 (5.9)	5 (26.7)	
<b>Parental Employment status<sup>2</sup></b>			
Employed	9 (52.9)	9 (47.4)	0.74
Not employed	8 (47.1)	10 (52.6)	
<b>Benefits<sup>2</sup></b>			
In Receipt of Benefits	1 (5.9)	3 (15.8)	0.61 <sup>1</sup>
No Benefits	16 (94.1)	16 (84.2)	
<b>Parental Education<sup>2</sup></b>			
No qualifications	3 (18.8)	5 (26.3)	0.68 <sup>1</sup>
Below University	7 (43.8)	4 (21.1)	
University and Postgraduate	6 (37.5)	10 (52.6)	
<b>Home Status/Ownership<sup>2</sup></b>			
Owned outright /Mortgaged	3 (18.8)	4 (21.1)	1 <sup>1</sup>
Rented	13 (81.3)	15 (79)	
Total	17 (100)	22 (100)	

<sup>1</sup>Fisher's exact Test

<sup>2</sup>Due to missing data sample size for these categories are n=17 for controls and n=19 for intervention

**Table 10** Young people’s demography, by control and intervention groups, at baseline (n=39)

Parental Demography (%)	Control	Intervention	P
Age (mean, 95% CI)	13.3 (12.7, 13.9)	13.7 (13.2, 14.2)	0.28
<b>Gender</b>			
Female	3(17.7)	13 (59.1)	0.009
Male	14 (82.3)	9 (40.9)	
<b>Ethnicity</b>			
White	10 (58.8)	7 (31.8)	0.09
Other	7 (41.2)	15 (68.2)	
Total	17 (100)	22 (100)	

Other characteristics at baseline by control and intervention groups

#### Physical activity and sedentary behaviour

Young people in the control group were exercising significantly more days per week than the intervention group (P=0.018). There were no significant differences in sedentary behaviour (TV viewing time) between the two groups (Table 11). There were no significant differences in the proportion of young people in the control and intervention groups who exercised 2-3 times a week (52.9% versus 50%) and those who exercised once a week or less (47.1% versus 50%) (P=0.856). The same was true for the hours spent exercising per week with 41.2% (control group) versus 59.1% (intervention group) exercising for an hour or less per week and 58.8%(control group) versus 40.9% (intervention group) for more than 2-3 hours per week (P=0.267).

**Table 11** Physical activity and sedentary behaviour, by control and intervention groups, at baseline (n=39)

	Control	95%CI		Intervention	95% CI		P
		Lower	Upper		Lower	Upper	
Activity in the past week (days)	4	2.8	5.2	2.3	1.5	3.1	0.02
Screen viewing: weekdays (hours)	3.2	2.1	4.3	3.1	2.1	4	0.84
Screen viewing: weekends (hours)	6.7	5.6	7.9	5.6	4.2	7	0.23
Total (n)	17			22			

#### Readiness to change

There were no significant differences between the two groups in their readiness to change their eating and drinking habits (Table 12).

**Table 12** Readiness to change eating and drinking habits, control and intervention, at baseline (n=39)

Readiness to change behaviour	Control	Intervention	P
Readiness to change eating habits			
Not ready to change (1-3) / Unsure (4-5)	3 (17.7)	1 (2.3)	0.3 <sup>1</sup>
Ready to change (6-8) /Trying to change (9-10)	14 (82.4)	21 (19.7)	
Readiness to change drinking habits			
Not ready to change (1-3) / Unsure (4-5)	6(55.3)	5 (22.7)	0.4
Ready to change (6-8) /Trying to change (9-10)	11 (64.7)	17 (77.3)	
Total	17	22	

<sup>1</sup>Fisher's exact Test

#### Outcome measures at baseline by control and intervention groups

The two groups differed at baseline in waist circumference (WC) (the control group had a lower WC than the intervention group,  $p=0.018$ ) and the mean daily consumption of non-sugary drinks (the control group had a higher consumption of non-sugary drinks than the intervention group,  $p=0.034$ ). However, there were no other differences in the remaining outcomes (BMI z scores, mean daily consumption of sugary drinks and snacks) between the two groups (Table 13).

**Table 13** Outcome measures (unadjusted), by control and intervention, at baseline

	Control	95% CI		Intervention	95% CI		P
		Lower	Upper		Lower	Upper	
BMI z score	1.85	1.66	2.04	2.12	1.91	2.33	0.06
WC z score*	2.18	1.88	2.49	2.69	2.39	3	0.02
Mean daily sugary drinks (ml)*	430	288	573	461	294	628	0.78
Mean non sugary drinks (ml)*	855	624	1087	570	411	729	0.03
Total mean snacking occasions*	1.36	0.94	1.78	1.49	1.01	1.98	0.66
Mean snack A occasions* <sup>^</sup>	0.88	0.49	1.27	0.92	0.61	1.24	0.85
Mean snack A portions*	1.1	0.46	1.75	1.35	0.80	1.91	0.54
Mean snack B occasions* <sup>^</sup>	0.3	0.09	0.50	0.39	0.22	0.56	0.47
Mean snack B portions*	0.666	0.11	1.21	0.69	0.24	1.14	0.92

\*Due to missing data, WC z scores are based on 37 participants and all dietary outcomes are based on 35 participants

<sup>^</sup> Snack A: Unhealthy snack, Snack B: Healthy snack

#### Follow up outcomes at 6 months

##### Response rate at follow up

Out of the 34 participants who received treatment (control or intervention) at baseline, 1 participant was lost to follow-up (97.1% retention rate). Additionally 2 participants from the control group withdrew at follow up (5.9% of the sample). None of the participants in the intervention group withdrew at follow-up.

## Outcome measures of whole sample at follow up

### Anthropometric and diet measures

At the 6 month follow up, BMI z scores ranged from 0.97-3.36 with a mean value of 1.95 (SD 0.48), whilst waist circumference z scores ranged from 1.08-4.17 with a mean value of 2.42 (SD 0.65). Mean daily intakes were around 351 (SD 252) ml for sugary drinks and 583 (334) ml for non-sugary drinks. Anthropometric data as well as drinks consumption was lower at follow up compared to baseline, however snacking occasions and portions of healthy and unhealthy snacks remained fairly similar to the baseline time point (Table 14).

**Table 14** Outcome measures across the whole sample, at follow up (n=39)

	Mean	95%CI		25 <sup>th</sup> centile	Median	75 <sup>th</sup> Centile
		Lower	Upper			
BMI z score	1.95	1.79	2.11	1.72	1.88	2.22
WC z score*	2.39	2.18	2.60	1.92	2.28	2.82
Mean daily sugary drinks (ml)*	351	264	437	175	294	492
Mean non sugary drinks (ml)*	583	469	69	323	479	828
Total mean snacking occasions*	1.37	1.06	1.68	0.75	1.25	2
Mean snack A occasions*	0.90	0.62	1.17	0.25	0.75	1.25
Mean snack A portions*	1	0.64	1.37	0.23	0.73	1.35
Mean snack B occasions*	0.34	0.20	0.48	0	0.25	0.5
Mean snack B portions*	0.66	0.32	1	0	0.38	1

\*Due to missing data, all dietary outcomes are based on 35 participants

^ Snack A: Unhealthy snack, Snack B: Healthy snack

### Physical activity and sedentary behaviour

On average, in the previous week young people at the 6 month follow up were active for 2.9 (SD 1.97) days. The median frequency of exercise was 2-3 times a week and the duration median was 2-3 hours of exercise per week, in their free time.

The mean number of hours spent using TV, computers and games consoles was 4.5 hours on weekdays and 6.3 hours on weekends (Table 15). These figures didn't include time spend on active gaming such as using Nintendo Wii or Xbox Kinect.

**Table 15** Physical activity and sedentary behaviour across the whole sample, at follow up (n=39)

	Mean	95%CI		25 <sup>th</sup> centile	Median	75 <sup>th</sup> Centile
		Lower	Upper			
Activity in the past week (days)	2.9	2.3	3.5	1	3	4
Screen viewing: weekdays (hours)	4.5	3.6	5.4	3	3.5	6.5
Screen viewing: weekends (hours)	6.3	5.3	7.4	4	6	8

### Readiness to change

Table 16 describes in detail some of the behavioural characteristics across the whole sample at the 6 month follow-up. In summary, on a scale of 1-10 (1 being "not ready to change" and 10 being "trying to change") over half of the sample of the young people (56.4%) felt fairly ready to change their eating habits and 30.8% of them had already made changes to their drinking habits.

**Table 16** Readiness to change eating and drinking habits across the whole sample, at follow up (n=39)

Readiness to change behaviour	n	%
<b>Readiness to change eating habits</b>		
Not ready to change (1-3) / Unsure (4-5)	5	12.8
Ready to change (6-8) /Trying to change (9-10)/Already made changes (11)	34	87.2
<b>Readiness to change drinking habits</b>		
Not ready to change (1-3) / Unsure (4-5)	9	23.1
Ready to change (6-8) /Trying to change (9-10) /Already made changes (11)	30	76.9
Total	39	100

## Outcome measures by control and intervention groups at follow up

### Anthropometric and diet measures

At the six month follow up the control group had lower BMI z scores ( $p=0.08$ ) and significantly lower WC z scores than the intervention group ( $p=0.04$ ). The intervention group however had consistently lower mean daily intakes of sugary and non-sugary drinks and unhealthy snacks than the control group, however these differences were not statistically significant. Both groups had similar patterns in consumption of healthy snacks. Details are shown in Table 17.

**Table 17** Outcome measures (unadjusted), control and intervention, at follow up (n=39)

	Control	95% CI		Intervention	95% CI		P
		Lower	Upper		Lower	Upper	
BMI z score	1.79	1.58	2	2.07	1.85	2.3	0.08
WC z score	2.15	1.86	2.43	2.57	2.28	2.87	0.04
Mean daily sugary drinks (ml)*	363	202	525	340	240	440	0.79
Mean non sugary drinks (ml)*	696	495	896	489	360	618	0.07
Total mean snacking occasions*	1.52	0.97	2.07	1.23	0.86	1.61	0.36
Mean snack A occasions*^	1.09	0.59	1.60	0.73	0.44	1.03	0.18
Mean snack A portions*	1.22	0.57	1.86	0.82	0.38	1.25	0.27
Mean snack B occasions*^	0.35	0.13	0.57	0.33	0.13	0.53	0.90
Mean snack B portions*	0.80	0.12	1.48	0.54	0.13	0.52	0.45
Total (n)	17			22			

\*Due to missing data all dietary outcomes are based on 35 participants (16 in the control and 19 in the intervention group)

^ Snack A: Unhealthy snack, Snack B: Healthy snack

## Other characteristics at baseline by control and intervention groups

### Physical activity and sedentary behaviour

Although young people in the control group were still exercising more days per week than the intervention group the difference at follow up was not significant ( $p=0.21$ ). There were no significant differences between the two groups in viewing times at weekdays or weekends (Table 18). There were no significant differences in the proportion of young people in the control and intervention groups who exercised 2-3 times a week (58.8% versus 63.6%) and those who exercised once a week or less (41.2% versus 36.4%) ( $P=0.76$ ). The same was true for the hours spent exercising per week with 52.9% (control group) versus

36.4% (intervention group) exercising for an hour or less per week and 47.1% (control group) versus 63.6% (intervention group) for more than 2-3 hours per week (P=0.3).

**Table 18** Physical activity and sedentary behaviour (unadjusted), control and intervention groups, at follow up (n=39)

	Control	95% CI		Intervention	95% CI		P
		Lower	Upper		Lower	Upper	
Activity in the past week (days)	3.4	2.1	4.6	2.6	1.8	3.3	0.21
Screen viewing: weekdays (hours)	5.1	3.5	6.7	4	2.9	5.2	0.27
Screen viewing: weekends (hours)	6.4	5.1	7.8	6.3	4.6	7.9	0.88
Total (n)	17			22			

#### Readiness to change

There were no significant differences between the two groups in their readiness to change their eating and drinking habits. Both groups fared similar scores in their readiness to change their eating and drinking habits as in baseline. In the readiness to change section, the score was also recalculated using the additional category “I have already made changes to my drinking habits” which was coded as 11 on the scale. Lower scores in the ready to change category in the intervention group at follow up can be explained by the number of young people who had already made changes to their habits. There were still no significant differences between control and intervention at follow up for readiness to change drinking habits which included the extra category (p=0.983) (Table 19).

**Table 19** Readiness to change eating and drinking habits (unadjusted), control and intervention (n=39), at follow up

Readiness to change behaviour	Control	Intervention	P
<b>Readiness to change eating habits</b>			
Not ready to change (1-3) / Unsure (4-5)	3 (17.7)	2 (9.1)	0.64 <sup>1</sup>
Ready to change (6-8)/Trying to change (9-10)/Already made changes (11)	14 (82.4)	20 (90.9)	
<b>Readiness to change drinking habits</b>			
Not ready to change (1-3) / Unsure (4-5)	4 (23.5)	5 (22.7)	0.95
Ready to change (6-8)/Trying to change (9-10) /Already made changes (11)	13 (76.5)	17 (77.3)	
Total	17	22	

<sup>1</sup>Fisher’s exact Test

#### Mean Changes in outcomes from baseline to follow up, by control and intervention groups

Looking at the crude mean differences from baseline to follow up in the two groups there are no differences in the anthropometric measurements, sugary and non-sugary drinks, total snacking occasions and snack B occasions and portions (Table 20). There was a significant reduction in mean unhealthy snacking occasions in the intervention group but after adjusting for gender the effect was attenuated. Similarly, although not statistically significant (p=0.07) there was a greater reduction in unhealthy snack portions in the intervention group, however this was not maintained in the adjusted model (Table 21).

**Table 20** Mean differences in anthropometric and diet measures, by control and intervention from baseline to follow-up (n=39)

	Crude model			
	Control Mean (SD)	Intervention Mean (SD)	Mean difference (CI)	P
BMI z score	-0.06 (0.2)	-0.05 (0.3)	0.01 (-0.2,0.2)	0.9
WC z score	-0.04 (0.3)	-0.08 (0.4)	-0.04 (-0.3,0.2)	0.8
Mean daily sugary drinks (ml)*	-67 (228)	-121 (292)	-54 (-237,129)	0.6
Mean non sugary drinks (ml)*	-160 (240)	-81 (233)	79 (-84,242)	0.3
Total mean snacking occasions*	0.2 (0.7)	-0.3 (0.9)	-0.4 (-1,0.1)	0.1
Mean snack A occasions*	0.2 (0.5)	-0.2 (0.6)	-0.4 (-0.8,0.04)	0.03
Mean snack A portions*	0.1 (1.1)	-0.5 (1)	-0.7 (-1.3,0.04)	0.07
Mean snack B occasions*	0.05 (0.5)	-0.06 (0.4)	-0.1 (-0.4,0.2)	0.5
Mean snack B portions*	0.1 (1.3)	-0.2 (1.1)	-0.3 (-1.1,0.5)	0.5
Total (n)	17	22		

\*Due to missing data, all dietary outcomes are based on 35 participants

**Table 21** Beta coefficients of mean differences in anthropometric and diet measures per group, from baseline to follow-up (n=39)

	Crude Model				Adjusted Model**			
	B	95% CI		P	B	95% CI		P
		Lower	Upper			Lower	Upper	
BMI z score	0.01	-0.2	0.2	0.9	0.06	-0.15	0.27	0.56
WC z score*	-0.04	-0.3	0.2	0.8	0.08	-0.19	0.34	0.56
Mean daily sugary drinks (ml)*	-54	-237	129	0.6	-45	-259	170	0.68
Mean non sugary drinks (ml)*	79	-84	242	0.3	5	-179	-188	0.96
Total mean snacking occasions*	-0.4	-1	0.1	0.1	-0.37	-1	0.27	0.25
Mean snack A occasions*	-0.4	-0.8	-0.04	0.03	-0.26	-0.68	0.16	0.22
Mean snack A portions*	-0.7	-1.3	0.04	0.07	-0.55	-1.36	0.26	0.18
Mean snack B occasions*	-0.1	-0.4	0.2	0.5	-0.10	-0.48	0.28	0.59
Mean snack B portions*	-0.3	-1.1	0.5	0.5	-0.07	-1	0.89	0.90

\*Due to missing data, WC z scores are based on 37 participants and all dietary outcomes are based on 35 participants

\*\*Model adjusted for gender

### Summary of results at follow up

In summary, after adjusting for gender, there were no differences in anthropometric and dietary outcomes between the intervention and control groups from baseline to 6 months.

### 3.2.3 Clustering – Intra cluster correlation

In order to calculate a sample size for a larger scale trial, the intra cluster correlation (ICC) for each outcome needed to be assessed to determine the clustering effect of the study design. The ICC was calculated for the anthropometric and sugary drinks outcomes and included only participants with complete data at baseline and follow up. Additionally, the effect size of the intervention on primary and secondary outcomes was estimated. Table 22 shows the ICC values for the young people's anthropometric and dietary outcomes as they are the outcomes likely to inform future sample size calculations.

**Table 22** Intra-cluster correlation of young people’s anthropometric and dietary outcomes

Outcome	ICC
BMI z scores	0.0
WC z scores	0.0
Sugary Drinks	0.0

Due to the fact that mean differences of anthropometric measurements at baseline and follow up were almost zero, the sample size calculations were based on the mean difference of sugary drinks consumption. If clustering was not taken into account, using a power of 80% with the significance level set at 0.05, a sample of 3034 participants would be required (1517 participants per group) , using a standard deviation of 531ml and a mean difference of 54ml. Since the ICC values are zero, if clustering is taken into account the sample size calculation will remain the same.

## Chapter 4 Process Evaluation

### 4.1 Introduction

An essential component of an exploratory trial is the process evaluation, to assess how the intervention was delivered and its acceptability to key stakeholders. As there is no standardised protocol for process evaluation of exploratory RCTs, a number of frameworks have been utilised, including one proposed by Linnan and Steckler (2002). Therefore, the evaluation will take into account:

- Recruitment and participation.
- Intervention completeness.
- Fidelity / quality of the intervention.
- Satisfaction.
- Contextual aspects.

Process evaluation data were collected using a variety of methods throughout the implementation and evaluation phase of the trial:

#### Capturing reasons for non-participation

Eligible patients who declined to take part were asked for their reasons for non-participation, either at the point of telephone contact or through a postal questionnaire.

#### Fidelity testing of the intervention

A sample of digitally recorded intervention sessions were assessed for consistency to the MI approach. A validated coding system was used and recordings were evaluated by an external assessor.

#### Questionnaires with intervention participants

Participants in the intervention group were asked to complete a self-administered questionnaire post-intervention, either at the point of contact or through a postal questionnaire. Questions included the degree to which the participant felt they could speak openly to practitioners, felt comfortable in a dental surgery and felt the sessions were useful to them.

#### Interviews with a purposive sample of participants in control and intervention groups

A sample of participants in the control and intervention groups were invited to a one-to-one interview immediately after the follow-up appointment, which was digitally recorded and transcribed. Interviewers followed a thematic guide addressing questions such as 'how did

you feel about the consent and the information given to you about the study?’ and ‘What did you think of the 24 hour recall?’.

#### Interviews with dental team members at each study site

All study sites were invited to take part in the process evaluation, with the principal dentist and one DCP or receptionist invited to one-to-one interviews which were digitally recorded and transcribed. Interviewers followed a thematic guide addressing questions such as ‘how did you recruit young people to the study? What worked well and what didn’t?’ and ‘What did you think about the organisation of the study?’.

#### Interviews with the research team

Members of the research team having direct contact with participants attended a one-to-one interview which was digitally recorded and transcribed. The interviewer followed a thematic guide which included questions such as ‘What did you think about the communication methods used with dental teams?’, ‘what did you think of the content of the MI training?’ and ‘what were your perceptions about measuring young people in dental surgeries?’.

## 4.2 Recruitment and participation

### 4.2.1 Participation rate

Dental practices were each asked to recruit a minimum of 25 patients fitting the eligibility criteria based on the screening questionnaire. The research team were given a list of eligible patients and contacted them by phone to invite patients and their parents to a consent and measurement appointment. This appointment determined whether participants were eligible to take part based on their BMI z-score (classified as overweight or obese for age and sex). Participation rates are shown in Table 23.

**Table 23** Participation numbers for the SWITCH trial

	Control	Intervention	Total
<b>Completed screening questionnaire</b>	143	121	264
<b>Declined to participate</b>	29	33	62
<b>Could not be contacted</b>	29	24	53
<b>Consented to participate</b>	85	64	149
<b>Not eligible based on BMI</b>	68	42	110
<b>Eligible based on BMI</b>	17	22	39

One fifth of eligible patients could not be contacted using the details they provided. If the research team were unable to get hold of the eligible patient by phone, a letter was posted to invite the patient to contact the research team. The contact details of eligible patients who could not be contacted were checked with the dental team, and alternative contact details were provided if available.

Of the 149 patients measured, almost three quarters were not eligible based on not meeting the criteria for BMI (being overweight or obese). This high proportion of non-overweight patients may be due to overweight or obese young people not attending the dentist as often as healthy weight children, overweight or obese patients being reluctant to take part, or a reluctance of dental teams to approach overweight patients due to the sensitive nature of the study topic.

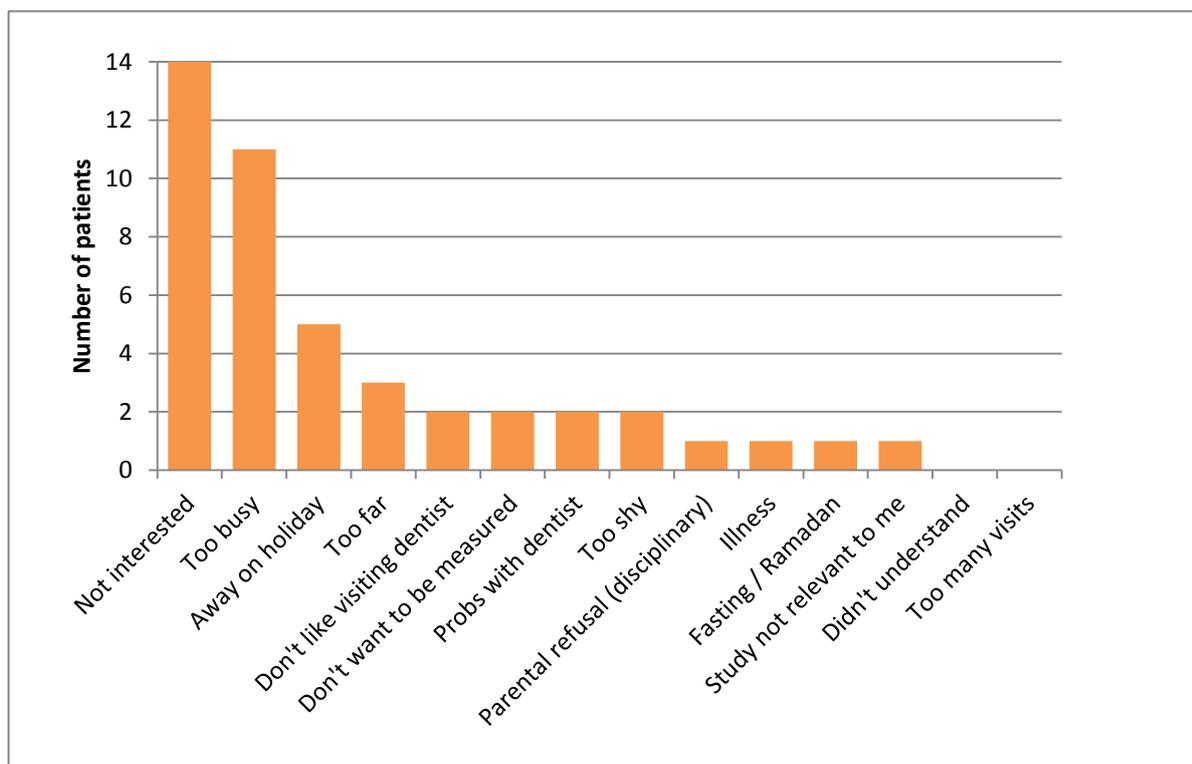
### Capturing reasons for non-participation

Approximately one quarter of eligible patients were not recruited on to the trial because they declined to take part when invited to a measurement session.

Eligible dental patients who declined to participate at the recruitment phase (post-screening) were asked their reason for declining to take part (although they were informed that they were under no obligation to provide a reason for non-participation). In the first instance, patients were asked at the point of declining. If this was not asked, patients were sent a short questionnaire.

Of the 62 eligible patients who declined, 45 gave a reason for non-participation. 42 of these gave their reason at the point of declining, whilst 3 replied to the questionnaire. Figure 5 displays the reasons for non-participation.

**Figure 5** Reasons for non-participation by eligible patients



### 4.3 Intervention completeness

Of the 22 participants in the intervention group, 18 underwent the intervention and 4 withdrew before the intervention could start.

Of the 18 participants that took part in the intervention, two participants attended only one session, so the intervention was considered incomplete. For those completing the intervention (n=16) an average of 3 sessions were delivered. The average duration of sessions was 19 minutes.

On this basis, the intervention was delivered as planned for the large majority of participants. It may be useful to determine reasons for withdrawal or non-completion of the intervention.

### 4.4 Fidelity / quality of the intervention

#### 4.4.1 MITI results

Table 24 presents the details of sessions that were selected for coding. Nine sessions were coded in total, with each practitioner having at least one of each intervention session coded. The sample was weighted by sex to account for a higher number of females undergoing the intervention, with each practitioner having two female (n=6) and one male participant (n=3) selected for coding.

**Table 24** Details of sessions selected for coding

Practitioner	Session 1	Session 2	Session 3
1	F <sup>a</sup>	F	M <sup>b</sup>
2	F	M	F
3	M	F	F

<sup>a</sup>Female <sup>b</sup>Male

Table 25 presents the means of coded sessions displayed with the corresponding proficiency and competency thresholds.

#### Global scores

Global scores capture the assessor's overall impression of how well the practitioner meets the description of categories on a scale of 0 to 5. A 'total spirit' score is calculated based on an average of the three scores for evocation, collaboration and autonomy/support. Practitioners scored a mean of 2.9 on a scale of 0 to 5. The scores suggest that practitioners:

- Occasionally responded to client change talk, but may have missed opportunities to investigate client motivation for change.
- Incorporated the client's goals, ideas and values, but did not structure interaction to solicit collaboration.

- May have sacrificed some opportunities for mutual problem solving in favour of supplying knowledge or expertise.
- Were neutral regarding client's autonomy and choice; neither actively instilling it nor denying it .
- Directed conversation toward changing the target behaviour with the balance of time spent discussing possible change .
- Made efforts to explore the client's perspective. Offered some accurate reflections, whilst other reflections may have misinterpreted or missed the client's point.

### Behaviour counts

Behaviour counts make up the remainder of the MITI testing, where the discourse is coded into categories to provide feedback on specific MI practitioner behaviours. The scores suggest:

Practitioners were competent in providing complex reflections (reflections that add substantial meaning or emphasis to what the client has said).

Almost half of all questions practitioners asked were open and invited the client's perspective.

Practitioners provided 0.6 reflections per question asked (at proficiency, practitioners provide one reflection per question).

MI-adherent behaviours (asking permission before giving advice, emphasizing a client's autonomy and supporting the client with compassion) were used by practitioners 83% of the time.

### Differences by sex and session number

The rating differed slightly for male versus female clients. Practitioners were more collaborative and empathetic when talking to the female participants, but used more direction with male participants. Total spirit scores were higher overall for female than for male clients.

Practitioners used more complex reflections but less open questions with females. The proportion of MI-adherent dialogue was 45% higher when practitioners spoke to female participants compared to male participants (93% and 64% respectively).

There was no overall pattern to scores across the three sessions, although empathy was particularly low in session 1 (2.3), evocation was low in session 2 (2.3) and the R:Q was low in session 3 (0.4).

### Limitations of the MITI

The MITI is not a perfect measure of fidelity; it is not an exhaustive coding system, with some MI behaviours not coded and accounted for (Moyers et al., 2010). The intervention delivered was a brief intervention with sessions designed to last around 15 minutes, to fit in with the appointment slots allocated to routine dental appointments. The average duration was 19.21 minutes (8.29 - 28.29) and fidelity was assessed using 10 minute segments of

session recordings. The MITI is typically used to assess 20-minute segments; hence the recordings used here may not have captured the full spirit of the practitioner's session. The clinician proficiency and competency thresholds are based on expert opinion and lack validity data to support them (Moyers et al., 2010).

Furthermore, the MITI has been tested for reliability and validity in adult populations but not in children or young people (Moyers et al., 2005). Counselling sessions with children can be quite different to those with adults (Resnicow et al., 2006); hence it may not be appropriate to apply the same thresholds of proficiency and competency. It has been suggested that MI with children may require practitioners to ask more questions than usual to elicit responses, which may go some way to explain the low R:Q in this intervention (Resnicow et al., 2006).

Table 25 Fidelity testing scores for the MI intervention using the MITI

	All sessions	Female	Male	S <sup>f</sup> 1	S 2	S 3	P <sup>g</sup> 1	P 2	P 3	proficiency	competency
<b>Number of sessions coded</b>	9	6	3	3	3	3	3	3	3		
<b>Global ratings</b>											
<b>Evocation</b>	3	3.0	3.0	3.3	2.3	3.3	3.3	2.7	3.0		
<b>Collaboration</b>	3.2	3.3	3.0	3.3	3.0	3.3	3.7	2.7	3.3		
<b>Autonomy support</b>	3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
<b>Direction</b>	4.9	4.8	5.0	5.0	5.0	4.7	5.0	5.0	4.7		
<b>Empathy</b>	2.7	2.8	2.3	2.3	3.0	2.7	3.0	2.3	2.7		
<b>Summary scores</b>											
<b>Total Spirit<sup>a</sup></b>	2.9	3.1	2.6	2.9	2.7	3.2	3.3	2.8	2.8	3.5	4
<b>% Complex reflections<sup>b</sup></b>	52	54	47	50	56	50	68	42	46	40	50
<b>% Open questions<sup>c</sup></b>	44	40	52	44	41	48	46	43	44	50	70
<b>Reflection to question ratio [R:Q]<sup>d</sup></b>	0.6	0.7	0.6	0.7	0.8	0.4	0.6	0.6	0.7	1	2
<b>% MI adherent<sup>e</sup></b>	83	93	64	79	87	84	81	85	85	90	100

<sup>a</sup>Total Spirit = (Evocation + Collaboration + Autonomy Support) / 3

<sup>b</sup>% complex reflections = (number of complex reflections / total reflections) x 100

<sup>c</sup>% open questions = (number of open questions / total number of questions) x 100

<sup>d</sup>Reflection to question ratio (R:Q) = (total reflections/ total questions) x 100

<sup>e</sup>%MI adherent = MI adherent / (MI adherent + MI non adherent)

<sup>f</sup>Session

<sup>g</sup>Practitioner

## 4.5.1 Questionnaires with intervention participants

### Satisfaction and contextual aspects

All intervention participants were asked to complete a post-intervention questionnaire, either following the last session at the practice, or through the post if the final session was missed. Out of 18 young people who completed the intervention, 9 completed a questionnaire, a response rate of 50%.

### Satisfaction with intervention

Most respondents felt that the sessions were the right length and that there was the right number of sessions. On average, participants strongly agreed that they felt the SWITCH practitioner listened to them and that the sessions were useful to them, and somewhat agreed that they felt they could talk openly with the SWITCH practitioner and felt comfortable that the sessions took place in a dental surgery. All participants felt that they would recommend SWITCH to a friend.

### Likes and dislikes

The questionnaire collected qualitative feedback on what participants liked about the sessions. All participants responded to this question, with the most common answers being that they liked the advice and information (particularly visual aids of the number of sugars in drinks), the feeling of being open and understood, and that the sessions helped them to change gradually without feeling pushed.

*"I like that sessions had lots of information and that they never pushed me to make any changes"*

*"The fact that the SWITCH member understood me and the way I felt with myself"*

*"I liked that they helped me to tell me how many sugars they were in fizzy drinks"*

The questionnaire also collected feedback on things the participant would change. Two participants suggested changes. One felt that they would like more visual aids and the other would prefer a group-based intervention.

## 4.5.2 Interviews with participants in control and intervention groups

20% of participants (n=8) were selected at random to be invited to a one-to-one interview with a member of the research team following the final measurement session. Six participants agreed to be interviewed, and were each allocated to a researcher who had no prior face-to-face contact with the participant. A thematic guide was used and the interviews were recorded, transcribed and the data assigned to headings.

Participants were recruited in a variety of ways

Most young people were introduced to the study through parents who had visited the dentist, whilst a small number were recruited directly from the receptionist or dentist, either during a routine check-up or through a leaflet. Dental nurses did not appear to play a big role in recruitment from the perception of young people. Participants felt that the researchers could benefit from recruiting young people from schools.

Young people were interested learning about healthy eating habits

The primary driver for taking part in the study was to learn more about healthy eating and drinking habits and improve their knowledge on the effects of fizzy drinks. Some were interested in learning more about how lose weight. Some were already thinking about changing their habits or felt they needed to change their habits. Young people felt the study would be interesting. The voucher incentives were not mentioned as a reason for taking part.

Young people expected that they would be given information about healthy habits and weight management, and some expected that the sessions would help them to lose weight. Some young people were under the impression that the sessions were going to be group-based, and might have preferred that set-up.

The measurement process was acceptable to young people

The measurement process was viewed on the whole as a positive experience. Despite some initial anxiety or a general uneasiness / self-consciousness with being measured, young people felt fairly comfortable with the anthropometric measures being taken in a dental care setting. However, many felt that the room was too small or cluttered with dental equipment. One young person was not comfortable that a parent was present in the room at the same time.

*'Thought it was kind of weird, being measured in a dental practice, it's not that weird anymore.'*

Young people felt that although the recalls were a little long and difficult, they were a very useful process in improving their self-awareness of their own eating and drinking habits. The process could be improved by having a paper worksheet to complete in advance.

Study information was not well used by participants

Despite young people not recalling a participant information sheet and feeling that they didn't have much written information about the study, they felt that they had all the information needed and were comfortable asking questions. Those that did recall the participant information sheet felt it was mostly clear and easy to understand.

*'It gave a good overview of what was going to happen.'*

Participants felt the study had a positive impact on their knowledge or behaviours

The feedback from young people on their experience of SWITCH was overwhelmingly positive. They felt they had improved their knowledge of food and drinks, had a greater awareness of their own dietary patterns and had changed their views on food and drinks as a result of their involvement. Many felt that the programme led to clear changes in their eating and drinking habits, and some also felt that their confidence and self-esteem improved. However, no young people mentioned that they felt their appearance or weight had changed as a result of the study.

*'The sessions made me feel better about myself.'*

*'I've cut down completely on fizzy drinks, I'm very proud of myself.'*

Young people make use of a variety of communication methods

Young people felt that phone calls were an appropriate method of communicating with them, but that face-to-face contact is their preference. Email and Twitter are other appropriate methods. It may be useful to continue to follow-up young people for the purposes of the study through regular appointments at the dentist.

Young people were receptive to the MI intervention

Young people in the intervention group were positive about the SWITCH programme and felt that the MI practitioners were easy to talk to, spoke to them in an adult way and were supportive. Participants felt comfortable in talking openly and honestly about their eating and drinking habits.

Participants felt comfortable in attending the programmes at their dental practice, as this was a familiar setting and their parents were happy for them to travel there alone.

The use of resources such as picture cards were very effective in getting the message across, but the intervention could benefit from increased use of activities or interactive resources. Others felt that they would have preferred a group-based programme.

Involvement in research was viewed as positive and helpful for others

Young people enjoyed being involved in a research study mainly because they felt they were helping others and benefitting society, but also for their own self-improvement and a sense of belonging/involvement.

*'It was nice to help people, it goes to a good cause.'*

### 4.5.3 Interviews with dental team members

Principal dentists and one other member of the dental team were invited to take part in the process evaluation for all ten study practices. One-to-one interviews were conducted by the research team, and the researcher with the least interaction with each practice was selected to conduct the each set of interviews. A thematic guide was used by interviewers and sessions were digitally recorded. In total, nine of ten practices agreed to be interviewed, with 6 dental care professionals (DCPs) or receptions interviewed, and 9 principal dentists. Recordings were transcribed into summaries and key points were collated and grouped under headings.

Views on taking part in a research study

#### *The engagement process was effective in recruiting dental practices*

The promotional event at UCL was the most effective method of getting dentists interested in the study. Face-to-face meetings were key to engaging with dentists, as the principal was able to get a clear picture of the study, ask questions and build relationship with the research team. The enthusiasm of the research team was also encouraging, and having the principal investigator make a personal visit had an impact on some dentists, as they felt the meeting carried more weight. Working around the schedule of the practices was successful in winning over some dentists, who were positive about the research team's flexibility in booking the meeting and training.

#### *Practices were motivated to take part by a number of factors*

A straightforward study design with minimum pressure on the practice was a facilitating factor. Some principal dentists felt that the payment was an influential factor. Many had bad experiences in the past with payments from research studies or from the PCT, so there was an element of mistrust around the payment aspect, and it was important for practices to be reassured that payments would be straightforward. Other principal dentists were not as interested in payments, but felt that the benefit to patients, staff or the practice was the main reason for being involved. Some had a personal interest in research, prevention or diet, and felt strongly about the need to conduct more research in this field and in a primary care/'real life' setting. Having additional surgery space seemed an important factor in practice's agreement to take part in the study.

*"Pay them a little bit of money, say you are not going to do very much, then they [dentists] will offer you the help"*

*"Firstly, evidence-based research...I think it's the way the world is going. It was nice to be part of that and see how it actually works in the real world".*

Dental teams were very positive about their experience of taking part in a research study. It was felt that there are a number of benefits to taking part:

- Improved patients' perceptions of the practice as a 'caring' practice, increased attendance for check-ups, and was seen as an 'additional service' offered by the practice.

- Staff gained an insight into their patient's dietary habits.
- Staff enjoyed engaging more with teens and patients in general.
- Helped to build team working skills.
- Improved staff knowledge of drinks and their effect on oral health.
- CPD for staff receiving training in research methods.

*"It was a very good advert for us."*

#### *There were challenges to conducting the study in the dental practice*

Some staff members (both dentists and DCPs) felt they would have been more successful if they were less busy with other work, as day-to-day work took priority. Some practices would have liked greater involvement in study, perhaps through nurses undertake the measurement sessions with patients, or delivering the intervention (although DCPs/reception staff were not confident that they could do this accurately/reliably).

*"It might have been nice to have us do the intervention so that the patients could have benefitted more. It was hard for [the dentist], he didn't want to tell them to stop drinking soft drinks because it would have interfered with the study, so that was hard."*

A number of control practices felt that their involvement in the study restricted their routine advice-giving to patients, as they felt they couldn't say too much as it might interfere with the study.

*"so it was almost trying to in one way recruit, in another hold back in terms of some of the advice I could give the patient, because ordinarily you'd say 'this, please don't do this, please don't do this' whereas on this occasion it was 'carry on' which made it a bit more difficult"*

#### *Dental teams felt the training session was useful*

Dental teams were satisfied with the training session and felt it was clear and concise, and helped to clearly define the roles of the dental team and research team. Of particular use was the hand-out, which was used by many as a prompt sheet when interacting with potential participants about the study.

*"Every phone call I made I had this piece of paper in front of me... it was written what you can say, what you can't say... so that was really helpful"*

Although most interviewees felt that the right staff members attended the training, a number of those interviewed had not attended the training, despite having a large involvement in the study. Those that didn't attend felt a little disconnected /removed from the study and unclear about the aims and methods.

*"I wasn't too clear of what was going on"*

*"If I had been at the first meeting it would have been a bit clearer. I had to get up to speed as I went along, because I wasn't sure what was going on but I soon picked it up."*

Some dentists felt that the training could have been improved by:

- A more senior member of the team delivering it.
- Re-fresher training part-way through the study.
- A shorter time period between the initial meeting and the training, as some opportunities to recruit patients opportunistically were lost and staff momentum was a little reduced by this time.
- A feedback form after the training.

#### Roles within the dental team

##### *Study responsibilities within the team differed by practice*

In many practices, DCPs or reception staff played a key role in recruiting and administering the study. Most of the administrative functions were delegated to the DCP or reception staff, and they were often seen as the 'lead' member of staff for the study. Most DCPs and reception staff had a more active role in recruitment, including making phone calls to patients, engaging young people in reception, motivating other staff, checking eligibility and coordinating recruitment.

In all practices, however, both DCPs/reception staff and dentists felt that the principal dentist had overall responsibility for the study. The dentists were the initial contact point for the research team and arranged the initial meetings and training event. In many cases, the dentist was actively involved in recruitment through helping the reception staff to select appropriate patients based on their personal knowledge of the patient, explaining the study to patients whilst in clinic and checking eligibility based on medical history.

Many of the dentists also felt that they had a big role in engaging and motivating their staff, and some delegated recruitment targets to staff. Despite this, many dentists were unsure about how they performed in recruitment and appeared disconnected from the recruitment and booking process. Many dentists felt that, although they had overall responsibility for the study, they did not have much involvement in the day-to-day running of it.

*"Not too sure how it went, I'm completely clueless as to how we got on and the numbers we gave you."*

In some practices, DCPs and reception staff felt that some patients would be more likely to take part if the dentist spoke to them about the study directly, as it carried more influence. On the other hand, some dentists felt that the DCPs / reception staff were more 'in touch' with patients, therefore recruitment was more appropriate through DCPs/reception staff.

The involvement of the whole dental team in the study was varied; in some cases, DCPs/reception staff and dentists agreed that overall, a team approach was used, with no single person solely responsible for recruiting. In other cases, interviewees stated that, outside of the allocated DCP/reception staff and principal dentist, the rest of the team was not involved in the study in any way. In a small number of cases, the DCP or reception staff felt they did not have much support from the rest of the team.

*"It was mine to do, and none of the others helped"*

## The recruitment process

### *Practices differed in their recruitment strategies and used multiple methods*

Mixed recruitment methods were used by most practices, with no single method favoured or considered most effective. There was an element of trial and error, and some dentists described recruitment as a 'learning curve'. Practices were flexible in their recruitment approach, changing their method of recruitment if it was not working well. Some practices favoured approaching the parents initially, with others approaching the young person directly. Active methods e.g. phone calls and face-to-face recruitment, were seen as more effective than passive recruitment e.g. posters, leaflets and letters.

*"It didn't help just by having leaflets or delivered, people didn't get interested just by looking at them, because we didn't get any children this way"*

A common factor in those practices with high recruitment figures was a targeted and personal approach. Some examples include:

- Calling those who were due for a check-up.
- Combining the measurement session with a check-up appointment.
- Targeting those with a high number of fillings.
- Targeting those that appeared overweight.
- Targeting those whom the practice knew to be regular attenders.
- Extending the duration of young patients' appointments, so the dentist could allocate time to explain the study.
- Engaging parents through local schools (although the practice stated that this was not effective in recruiting patients).

### *A number of factors facilitated recruitment*

Factors that facilitated the recruitment of young people were the incentive of a voucher, combining the recruitment with a check-up and explaining the benefits of being involved for improving their oral health.

*"I said that it is going to be very helpful, I mean, I said this is very good for children to know what to eat and what to drink, you know, to avoid decay, and I think that was the main issue [that worked]... and the voucher"*

*"We bribed them as well!"*

Factors that aided the dental teams' ability to recruit include having a computerised patient database, aiming for a target number of participants and a good relationship with the research team e.g. providing advice on how to improve recruitment, adapting the target numbers based on feedback from the practice, providing feedback on how other practices are doing and showing appreciation for their efforts in recruiting. Some dentists also felt that a 'nudge' from the research team was helpful in motivating them to recruit.

*"I liked that [liaising with research team] because we were working as a team. It wasn't just you guys and us, it made you more involved. Wanted you to get more children, as many as we could."*

*“I may have only given you 3 names, but it was so much appreciated, it was nice to be appreciated.”*

### *There were a number of barriers to recruitment*

Factors that affected recruitment included:

- Language barriers.
- Lack of interest in topic from patients.
- Out-of-date patient contact details.
- Some dentists reported that obese children were less keen to take part, and that a clustering of health behaviours (poor attendance and poor diet) resulted in a lower number of eligible participants being screened.
- Local issues such as a generally low attendance rate within the area.
- The prospect of a number of appointments.
- A small practice size (there are fewer patients to recruit).

*“The patients that need it most may not be the ones that would turn up.”*

*“The people were most suited to your diet criteria were least suited to your attendance criteria”*

### **Suggested improvements to the recruitment process were:**

- Greater promotion / incentives through more advertising, posting letters or information sheets before young people attend routine check-ups and giving a bigger incentive / covering travel costs.
- Dealing with staffing issues e.g. designating full-time dental team members to lead the recruitment (as opposed to part-time), the research team to have a list of names of all those in the practice involved in recruitment and collaborating with all directly.
- Greater involvement from research team e.g. having a researcher attend the practice for a day and approach patients opportunistically, and conducting measurements on the same day as the screening questionnaire, to reduce the total number of attendances required.
- Dealing with timing issues through having a greater time frame for recruitment, a shorter time frame between recruitment and measurements to minimise drop-outs, extending patient appointments to allow dentists time to discuss the study, and by taking into account school holidays and Ramadan when planning the recruitment schedule.
- Adapting the study design e.g. Contacting patients who hadn't attended for several years, as they may be more likely to be overweight, aiming the study at a younger age group and taking into account local characteristics when setting recruitment targets.

### *Screening questionnaire*

The screening questionnaire was considered fairly simple for young people to complete, although some young people were confused by the drinks section or could not distinguish between different types of fizzy drink i.e. diet and non-diet. Some young people ticked 'no'

when asked if they were interested in taking part – the team would then have to explain that if this box was ticked, they would not be able to take part, and many changed their answer after this. There was a general feeling amongst dentists that young people were not answering dietary questions honestly.

## Communication

### *The dental team felt supported by the research team*

All study practices felt supported by the research team and felt that the dental team were part of the research team, and vice versa. DCPs/reception staff and dentists were positive about the methods used to communicate, and advocated a mixed method approach. Most practices had a single point of contact for the research team to liaise with. Dental teams felt that the research team had a flexible and relaxed approach. However, a number of dentists felt that the team could have benefitted from a researcher visit to update everyone on progress, and more reassurance that the dental team were on the right track.

*“We sat together [with a member of the research team] and discussed how to get the children”*

*“It was like having another member of staff come in, it was nice, and it was a nice, relaxed atmosphere, we weren’t on edge with someone coming into the practice, we were more than happy for her to come in”*

*“You lot have done such a good job you haven’t pushed us in that way, you have let us go at our own pace”*

### *Informal methods of with-in team communication were used*

Within study practices, dental teams took an informal approach to communicating with each other about the study, usually through day-to-day work-based conversations. None of the dental teams mentioned that they used formal communication methods such as meetings or emails. Larger teams required some coordination of schedules in order to ensure all staff were aware of the research team’s visits, and it was more difficult to communicate if staff were part-time.

Some DCPs and receptionists acknowledged that there were a small number of occasions where there was a communication breakdown on their part, leading to clinic rooms not being available for the research team, or the practice closing early.

## Allocation of space

### *The study did not interfere with the practice’s time or space*

Room availability was not an issue for most practices, as they all had a free clinic or alternative space that were not being used, or they allocated a particular day for the room to be free for study appointments. As a result, there was little interference with the practice schedule. It was felt that the payments received adequately covered the investment in time and space made by the practice.

*“Sessions didn’t impact on our practice, as we are fortunate to have space here and there”*

*All practices felt the study was well organised.*

*“This was by far the best the most well organised study, it’s the first time the professor approached everybody first and got opinions on how it would work, then they we had individual training sessions and took a lot of responsibility away from the practice and having a dedicated researcher or contact, these 3 things have not been present in other studies.”*

Setting and age group

*The topic of the study was appropriate for a dental care setting but there are challenges in working with young people*

Most DCPs / receptionists and dentists felt that the study was appropriate in a primary dental care setting because it was a diet-related study, and dental health is an indicator of people’s diets. The parents of young people know of the links between sugary drinks and oral health, and wanted their children to have less sugary drinks. Prevention is becoming more of a priority in primary dental care, so this study fits in well with that philosophy. It was also felt that the dental practice was more appropriate than other settings because is local to participants so is more accessible, and in general, children visit the dentist more regularly than any other primary care setting. However, there are some barriers to carrying out research in a primary dental care setting, including time (interference with practice activities), space and money.

*“Time and money is always a problem”*

*“I will do anything to help as long as it’s not going to impinge on my core activities”*

Dental staff are well aware of the problems in working with teenagers e.g. missed appointments, although concede there is not much that can be done to improve attendance. Some commented that they felt there were too many appointments for young people. In some cases, parents were interested, but the child was not, and vice versa. Young people may not be responsive to dietary advice as they had already formed their views and it would be difficult to change their habits.

#### **4.5.4 Interviews with the research team**

4 members of the research team had a one-to-one interview. Interviews were digitally recorded and summaries of the main discussion points were produced. Below is a report of the themes emerging from the interviews.

## Engagement

### *A process of engagement with dental teams was essential in recruitment and building good relationships*

There was a high level of agreement that a comprehensive process of engagement with dental teams was essential to the success of the study. The developmental phase (focus groups and questionnaires), and promotion (UCL evening event and visiting local networks) was useful in initiating interest. All researchers agreed that the individual face-to-face meetings with principal dentists interested in taking part were the most effective form of engagement. Interviewees felt it was particularly useful for dentists who had uncertainty about the topic of the research, the level of involvement required or the degree of funding given to participating practices. It was seen as an opportunity to answer dentists' questions, build rapport and become a 'familiar face'. Researchers felt that principal dentists responded best to more senior members of the research team conducting face-to-face visits, whilst it was still considered important for team members doing the field work to meet dentists face-to-face too.

*"A lot of people said in our evaluation that that was the main thing that kind of got them interested in the study, so seeing us and us kind of being enthusiastic about the study and talking to them, engaging with them, was an important factor in them taking part."*

*"The face-to-face meetings was the best approach, it was a good chance to ask questions and meet the research team... I think it's worth the time."*

*"Also I think meeting with members of the team who would go in to their practice was equally as important... they have a term of reference... because we were the main people calling them, they knew who they were talking to."*

### *Research training for the dental team was effective but did not always include the right staff members*

Interviewees felt the training sessions were well attended and dental teams were engaged. The resources provided helped deliver the message and were well used by dental team members in the recruitment phase. Factors that supported the delivery were:

- Providing training at a convenient time for the dental team (lunch times worked particularly well).
- Providing refreshments.
- Providing CPD.
- Keeping the training short and simple.
- Providing a step-by-step pathway for recruitment.

*"We were quite flexible to go either before or after office hours... I think the lunchtime arrangement worked very well..."*

However, interviewees agreed that many of the team members that most needed the training (those carrying out the recruitment, principal dentists) were sometimes absent. In practices where this happened, dental teams often struggled with recruitment because they felt they were not clear on what was required of them.

*“Some said ‘Oh it was difficult recruiting because we didn’t have the training’, so I think next time, we need to make, you know, very sure that whoever has an active part needs to attend.”*

## Communication

### *Good communication with dental practices was essential but a challenge*

All interviewees felt that making initial contact with principal dentists was very difficult and the challenges in communication persisted through the duration of the study. It was acknowledged that it took time to establish the best method of communication with each practice.

Communication with practices was particularly difficult when the lead contact worked on a part-time basis or when there was a change in staff. In larger practices, some staff had a poor awareness of the study and researchers expressed frustration at having to explain things to different staff members on each visit or phone call. It was felt that in practices where communication was poor, this was reflected in their recruitment levels.

*“The main barrier initially was getting through the dentists... from the receptionist actually through to the dentist.”*

In most practices, good communication allowed successful scheduling of measurement and intervention appointments. However, in some cases a breakdown in communications led to appointments having to be cancelled or last minute changes in room allocations.

Methods that worked well included:

- Engagement of the whole dental team.
- Using a variety of communication methods.
- Having one key staff member to liaise with.
- Making regular phone calls to check how recruitment was going.
- Integration into the practice’s booking system.

*“It seemed to work best when our appointments were integrated into their appointment system.”*

### *Communication with young people was a challenge*

It was felt that making initial contact with potential participants following their recruitment at the dental practice was difficult for the research team, with many not answering the phone or providing incorrect numbers. Some could not remember the study or changed

their minds; in some cases there was a large time-lag between initial screening and a follow-up phone call from the research team. A lack of fluency in English was also cited as barrier in the recruitment phase.

Problems with communication persisted throughout the study. One researcher felt that the telephone-based dietary recalls were not appropriate because it was difficult to get hold of young people on the phone. In addition, young people's attendance rates were very low and systems in place to try and improve attendance (text messaging, phone calls) were not effective.

*"Getting them [young people] to turn up was the biggest challenge."*

*"It was difficult recruiting them [young people] in general, keeping them on board, making appointments with them and making sure they kept their appointments."*

Dental teams' responsibilities

*Dental teams were supportive but not always aware of their responsibilities within the study*

The research team felt largely supported by the dental teams for the recruitment and booking of appointments, and thought the teams did a good job in explaining the study to potential participants.

*"The teams were with us and, you know, doing all they could to get the people we needed."*

*"I was always told I was part of the team... they were helpful and welcoming."*

However, interviewees referred to a sense that principal dentists weren't providing the space they had agreed to as part of the payment arrangements, and that most staff had a poor awareness that there was a study agreement in place. There were several references to the space provided for measurements and sessions not being appropriate and breaches of privacy.

*"Some of the staff might not have even known that the principal dentist was being paid for that, and so they thought it was just kind of a favour we were asking of them."*

*"I don't think we impinged on the practice time at all, because we were using space that was free anyway..."*

It was also felt that the dental team members responsible for recruitment sometimes had not correctly informed potential participants about the details of the study and its voluntary basis.

### *There are a number of facilitators and barriers to conducting research in a dental practice*

The research team agreed that the recruitment and booking processes worked best when there was good communication between teams and within teams, where there was an additional surgery rarely in use, where bookings for measurement sessions and appointments were integrated into the practice's systems and where there was a flexible approach.

*"We had to kind of be very flexible... so we went out of hours or tried to get hold of them in a way that was convenient to them"*

A number of barriers were also identified. Practices were busy and the study wasn't a priority.

*"Obviously they're very busy, it was something they had to do extra on top of all their other tasks."*

Clinical spaces were sometimes awkward when setting up measurement equipment, whereas staff areas were not very private. However, young people did not appear to mind having measurements taken in either setting.

*"We had to make do with the layout of the individual surgeries... it was challenging at times."*

*"I remember doing one MI in the kitchen, and you know, staff walking in, so it wasn't really ideal."*

### *Maintaining an agreeable relationship with the dental team was paramount to the research team*

Interviewees had the impression that dental teams needed to be managed carefully. There was a perception that researchers should not apply too much pressure on teams to recruit, or to be too demanding in the use of space, so as not to damage the relationship. This reluctance to put demands on the practice extended to the training and recruitment protocol provided, as the research team felt this should be as straightforward and unchallenging as possible.

*"Because you're in their space, and you want to keep the dentist and the dental nurses quite happy, you couldn't really say 'do not come in'."*

*"It didn't feel ever appropriate to bring up that we were paying for the room...."*

*"We were calling up to see how things were going, without adding any pressure, just to make sure they were confident and things were going smoothly."*

*“Working with practices that weren’t so easy to get along with helped build skills in terms of the fine line between... telling them what I want from them but also keeping them on-side and keeping them happy so they continued along with the study.”*

Adequacy of MI training

*Some aspects of the training were more useful than others*

Those attending the two day MI training course felt that, although it was a good grounding in the theory of MI, it didn’t effectively meet their needs as practitioners.

*“Would have been good to have more opportunities to do role play and actual practical experience.”*

The distance tuition, particularly through role play and direct feedback on sessions, was the most useful, as it helped build practitioners’ confidence. However, it was felt the trainer lacked experience in MI with adolescents. The support provided by external collaborators from King’s College London was useful in understanding the challenges of working with young people, as they had experience of working with this age group.

Researchers felt they had developed a number of skills that can be applied to other aspects of their work, including listening and reflecting. Most MI practitioners reported a lack of confidence in delivering MI and suggested they didn’t feel fully prepared after the training. Confidence increased after delivering a number of sessions, and taking notes and listening back over digitally recorded sessions helped practitioners feel prepared for future sessions.

*“The first few sessions were quite difficult, but after that, my confidence picked up.”*

*“The skills that I learnt from there I can use in every day practice, just in terms of listening to people, not telling people what to do, but asking more questions.”*

*“I think it’s taught me a lot. In terms of listening, in terms of reflecting, and also respecting somebody else’s view.”*

*“The instances where it didn’t go well were because I felt that I wasn’t prepared, that I didn’t have enough experience, to deal with what came up. In hindsight I think ‘I should have said that’ or ‘I should have picked up on that’.”*

There was a general feeling that more training would be beneficial. It was also felt that this training would be difficult to roll out to dental practitioners.

MI as a behaviour change technique

*MI was seen as being an effective method of behaviour change for some, but not all, young people*

MI practitioners agreed that they felt the sessions had a positive impact on young people and helped many achieve positive changes. They reported that young people enjoyed the one-to-one contact with practitioners and an opportunity to talk through their issues. Most young people were motivated, self-aware and receptive to the technique, and were comfortable and open talking about their weight to an adult.

*“They [young people] enjoyed the opportunity to talk and it gave them an opportunity to explore the issues.”*

*“They were motivated... and the way the MI went, because you’re not forcing them to do anything and you’re just saying to the ‘what do you think about this?’ and ‘what changes would you like to make?’, I think, you know, they were very receptive to that.”*

*“They liked that someone was spending one-on-one time with them, talking about things they were interested in talking about, them, and not telling them what to do, letting them speak.”*

However, it was felt that there were some challenges unique to the age group that reduced the effectiveness of the intervention. It was felt that a more directive approach than is typically expected from MI was required for the age group, and that practitioners needed to ask more questions. There was a strong feeling that the older adolescents were more receptive to MI as they were more capable of understanding the concept and had better developed conversational skills, and that MI was not appropriate for younger adolescents. Similarly, one practitioner felt that MI was more effective in females as there was a perception they had higher levels of comprehension and more developed conversational skills than males. The fact that all MI practitioners were female may have had an impact.

*“If you have an 11 year old who has just finished primary school and has just gone into secondary school and are just finding their feet, and then here we are saying ‘what do you think about this’. I don’t think they have the confidence.”*

*“I felt they went smoother with females, I don’t know whether that’s comprehension levels or just they found it easier to talk to another female, or whether they were just chattier.”*

*“The ones that were younger I felt didn’t talk as much.”*

Practitioners felt the resources developed, in particular the visual aids, were a useful discussion tool and were effective in motivating change.

Practitioners were mixed in their opinions of the number and duration of sessions, with one suggesting fewer but longer sessions and another suggesting shorter sessions.

## Insights

*The study has provided a number of insights into research in this area.*

The research team reported that working with dental teams was, on the whole, a positive experience. They were engaged and willing to build partnerships and it was felt that there is potential to work with dental teams on future research studies. Interviewees felt that this positive experience was largely due to the comprehensive engagement process. However there are a number of issues that need to be resolved, including improving the communication methods and ensuring the relevant dental team members attend training. There may also be a need for refresher training, particularly for new staff.

*“We gained a lot of insight ...and also the relationships we’ve created with the dentists now, we’re starting definitely from a higher point than we did before, when we first started.”*

Working with young people was also considered a positive experience by the research team. A good retention rate was demonstrative of good communication methods. However, greater consideration needs to be given to how the age of participants influences data collection and the design of the intervention.

*“It was nice talking to them, especially if they made changes, it was quite rewarding.”*

*“Our retention rate was quite good and I think it shows we tried everything we could to have different types of communication, different ways they could communicate with us, worked around their schedules.”*

MI has potential as a behaviour change technique in adolescents, although may be more appropriate for sub-categories of this age group. The intervention has enabled the research team to produce a number of useful MI resources that could be used in the future. There was a feeling that it would be difficult to get MI delivered successfully by dental teams (mainly due to the training demands), and there was a suggestion that MI could be delivered in schools through a peer-support system.

Recruitment needs to be more carefully considered. The eligibility criteria should be wide enough to ensure a sufficient sample size is achieved and consideration should be given to local factors that may have affected recruitment.

*“If we’re trying to prevent obesity, it should include normal weight, overweight and obese.”*

*“English language was a bit of a problem ...and the demographics of the area was not great so that created problems in terms of getting people on board and getting them to come back.”*

## Chapter 5 Discussion, Conclusions & Recommendations

### 5.1 Introduction

Obesity is a significant public health problem and there is an urgent need for effective preventive interventions. A significant body of scientific evidence has highlighted the role of sugars consumption, particularly in soft drinks in the development of overweight and obesity. However, very few intervention studies assessing the impact of reducing sugary drinks consumption on anthropometric outcomes have been conducted. Primary dental care provides a suitable setting to target preventive interventions at young people but there is a paucity of research with dental teams.

In this final discussion chapter the aims and objectives of this study will be presented together with an overview of the key findings from this research. A summary of the strengths and weaknesses, details of the dissemination and study conclusions will then be outlined. Finally, recommendations on future research will be presented.

### 5.2 Project aims and objectives

The overall aim of the study was to assess the feasibility and acceptability of an obesity preventive intervention, using motivational interviewing among overweight 11-16 year olds attending primary dental care services in North Central London PCTs. Based upon the MRC framework on developing and evaluating complex interventions a mixed methods approach was used across two stages of the study. An initial development stage and then an exploratory randomised controlled trial was conducted.

The specific objectives of the study were as follows:

- To assess dental teams' experience, motivation and training needs in providing preventive care for both oral and general health improvement
- To assess the acceptability to young people and their parents of the proposed intervention
- To develop a motivational interviewing intervention and training programme specifically designed for dental practices working with young people to prevent obesity
- To conduct an exploratory randomised controlled trial of the obesity intervention
- To make recommendations on conducting a definitive randomised controlled trial of the obesity intervention

### 5.3 Summary of key findings

#### *Development stage*

Due to the dearth of research in this field, it was essential to undertake some detailed and comprehensive developmental work prior to conducting the exploratory trial. The questionnaire survey of dentists, the focus groups with dental teams, and the focus groups with young people and their parents all provided very helpful information essential in the

subsequent development of the intervention and conduct of the trial. In addition very useful insights were also gained through informal meetings with a wide and diverse selection of local dental professionals, dental commissioners and representatives from the R&D office.

#### *Dental teams' experience, motivation and attitudes towards prevention*

Despite an enormous amount of effort, in the initial questionnaire survey with dentists we achieved a rather disappointing 55% (n=164) response rate. However some encouraging and useful information was collected from the survey. Overall the results indicated a generally positive view and relatively high levels of engagement in prevention amongst the dentists responding to the survey. The sample reported a high level of involvement with various clinical preventive measures such as fissure sealants and fluoride varnishes, and in giving oral hygiene and diet advice. The vast majority agreed or strongly agreed that dentists had a role to play in smoking cessation (81%), diet advice (93%) and alcohol support (66%). Dentists who were younger and female were significantly more likely to engage in certain preventive activities and hold more positive attitudes. The majority of the sample reported that lack of time (84%), inadequate remuneration (86%) and lack of patient compliance (77%) were important barriers to providing more prevention. In terms of training needs, the vast majority identified that they would find training in a range of preventive topics useful. In particular training covering knowledge on key concepts of prevention, evidence based recommendations and effective communication skills were highlighted as useful.

The focus groups with selected dental teams also uncovered some valuable insights. Overall prevention was considered to be fundamentally important, and indeed an ethical and professional obligation. The different roles and responsibilities of dentists and dental care professionals in prevention was highlighted. A key factor determining individual roles in the practice was the level of experience of the individual team member. Despite the recognition of the importance of prevention, a number of barriers were identified as being a major obstacle to delivering prevention in NHS general dental services. These barriers were classified into 3 main categories: organisational factors (lack of adequate remuneration, NHS bureaucracy, sense of isolation from NHS); patient factors (lack of motivation, poor compliance) and professional factors (poor motivation, lack of training and limited supporting resources).

#### *Views of young people and their parents of proposed obesity prevention intervention*

In the focus groups with young people and their parents, mixed opinions were expressed about the idea of a dentist giving advice on weight control. This was seen as a very sensitive topic. However the idea of dentists discussing healthy food/drinks was considered far more acceptable as this was seen to be directly related to oral health, and therefore more acceptable. Practical dietary support was seen as most helpful and various useful suggestions were made on how advice should be delivered to maximise the interest and motivation of the young people targeted.

#### *Development of MI intervention*

A considerable amount of time and effort was dedicated to developing the MI intervention. A comprehensive review of the background scientific literature, together with some informal guidance from a leading academic (SR) provided some very helpful information in

the design and planning of the intervention. Data from the focus groups also helped in this process.

The intervention was designed to be delivered by the trained staff as a MI brief intervention in the dental practice setting, with appointments lasting between 15-20 minutes with 3 or 4 sessions per participant. The staff delivering the intervention attended an initial 2 day specially developed MI training course delivered by a very experienced MI trainer (JA). In addition, on-going coaching was provided by the trainer to further develop the appropriate MI skills, competencies and confidence of the staff delivering the intervention. A detailed intervention protocol was developed to ensure consistency of approach. This followed a MI pathway which involved: 1) establishing rapport, 2) setting the agenda, 3) exchanging information, 4) assessing importance & confidence/developing discrepancy, 5) planning for change (setting goals), 6) summary & closing statements. Supporting nutritional resources were also produced for the MI consultations to ensure a practical and applied focus.

### *Exploratory RCT*

#### *Engagement, recruitment and randomisation of dental practices*

Considerable effort was dedicated to engaging with dental practices across the three PCTs to encourage their participation in the trial phase of the study. A set of selection criteria was used to identify suitable practices from those indicating interest in participating. Twenty two dental practices met the selection criteria, of which 10 practices were then selected and randomised to the intervention and control groups. The staff in these selected practices were then trained to follow the research protocol, specifically in relation to participant recruitment and consent.

#### *Recruitment and retention of study sample*

The study protocol proved very effective in successfully recruiting young people into the trial with 149 dental patients aged 11-16 years agreeing to take part. However only 39 participants were deemed eligible following their anthropometric measurements as the majority were not overweight or obese, and therefore ineligible for the trial. Twenty two participants were recruited in the intervention practices and 17 in the controls. The mean age of the sample was 13.6 (SD 1.15) years. At baseline few differences were found between participants in the intervention and control groups. At the 6 months follow up xx% (n=31) were retained in the study.

#### *Delivery and conduct of the exploratory RCT*

Overall the trial ran very smoothly in line with the study protocol. The majority of the dental practices successfully engaged with the study with only 1 practice being unable to recruit any subjects.

#### *Outcomes of the exploratory RCT*

As an exploratory trial this study was not powered to detect significant changes in the outcomes. However at the 6 months follow up, participants in the intervention group reduced their BMI z scores (0.05) (primary outcome), mean daily consumption of sugary drinks (121ml) and frequency of daily consumption of unhealthy snacks (by a fifth of an

occasion) but the mean difference between intervention and control groups was not significant.

#### *Process evaluation*

The comprehensive and detailed process evaluation provided some very interesting and important insights from the different perspectives of the study participants, dental teams and researchers into the acceptability and fidelity of the intervention and study methodology.

#### *Intervention compliance and fidelity*

The MI intervention was delivered very much as planned with the majority of participants allocated to the intervention attending the set sessions. For those completing the intervention (n=16), they attended on average 3 separate MI sessions which lasted approximately 20 minutes. The fidelity of the MI intervention was independently assessed using a standard (Motivational Interviewing Treatment Integrity - MITI) approach. This provides a detailed and comprehensive assessment of the delivery and content of the MI sessions. Overall the intervention was deemed to be delivered in a satisfactory and appropriate fashion with very useful and detailed feedback provided by the external assessor. The approach appeared to be particularly appropriate with female participants.

#### *Acceptability of intervention – key players*

Feedback from study participants, dental teams and researchers involved in delivering the intervention and its evaluation was gathered through a combination of methods including brief questionnaires and individual semi structured interviews.

#### *Participants*

Overall the young people involved in the intervention were very positive about the nature and content of the MI sessions. It appeared to provide them with a useful opportunity to reflect on their dietary practices. Talking to an adult on a one to one basis about themselves was appreciated and valued. The conduct of the study in terms of recruitment and measurement were also deemed to be acceptable and appropriate by the participants.

#### *Dental teams*

The interviews with the principal dentists and other members of the dental teams from 9 of the 10 practices involved in the study provided some really useful and informative information on the acceptability and challenges of conducting research in general dental practices.

Overall the dental professionals expressed a very positive view of being involved in the study. They found the initial engagement with the UCL team as being very helpful and informative. Holding the evening meeting at UCL was seen as being very useful in encouraging their participation and interest in the research. The training sessions delivered at the practices were praised as being both informative and helpful. In the interviews the different roles and responsibilities adopted by the dental teams in each practice was explored and it was very evident different approaches were used depending upon the characteristics and experience of the teams. The main challenge identified was combining this activity with their existing very busy schedules in running their practices. A range of

benefits were identified including team building, developing a preventive focus in the practice, interest in research, CPD credits for the training and the financial support offered. Overall the dental professionals were very complementary of the support, communication and professionalism offered by the UCL research team. They particularly appreciated the flexible, friendly and accommodating approach of the UCL team.

#### *Research team*

The 4 researchers involved in conducting the study and delivering the MI sessions were interviewed individually to assess their views and experiences of being involved.

All acknowledged that investing time and effort in the initial engagement stages of the study were of fundamental importance in the overall success of the research. Holding the CPD evening event and personally visiting each practice was considered as essential in recruiting the dental practices into the study. The research training sessions provided to the dental teams was also considered as an essential element in successfully setting up the study. However it was noted that not all the 'right' staff attended these training sessions and further support and training was often needed. A major and frustrating challenge was establishing effective communication with each of the dental practices. Perseverance, use of a flexible approach, always maintaining a professional and friendly style of communication and using different means of communicating with the staff were all considered as essential. Various barriers were overcome in managing to successfully conduct the research including the importance of clarifying and reinforcing the roles of different members of the dental team in the study.

In terms of the MI intervention some useful comments were made. The initial 2 day training programme although useful in terms of background theory did not provide sufficient time to practice and develop practical skills and confidence. However the subsequent 'coaching' sessions were found to be really very helpful and constructive. The MI sessions and overall technique were viewed positively but the approach was considered more appropriate and useful for older adolescents, with the younger participants it did not work as well.

#### *Comparison with other studies*

There have been a number of RCT's which have attempted to reduce the consumption of SSB's in adolescence. Ebbeling et al (2006), delivered non-calorific drinks to intervention groups homes decreasing the consumption of SSB's compared to the control group by 82%. This was similar to a study by Albala et al (2008), in which SSB's were displaced by milk beverages which were delivered to the homes of those randomized to intervention.

Sichieri et al (2009) and James et al (2004) both used education based interventions set in schools. James et al. delivered the educational package to 7-11 year olds in UK schools, with consumption decreasing in intervention but increasing in control. Sichieri et al.'s classroom intervention consisted of messages to increase water consumption, which resulted in a statistically significant reduction in in daily SSB consumption in intervention participants.

All four studies showed a reduction in SSB consumption amongst intervention group participants, however none of the studies showed a statistically significant reduction in BMI.

None of the RCTs used to reduce SSB consumption in this age group, utilised Motivational Interviewing as a behaviour change intervention or Primary Dental Care as a setting, and therefore this study aims to bridge the gap in the literature.

### *Strengths and weaknesses of the study*

It is important to reflect on the strengths and weaknesses of the study now that it is completed. As highlighted previously, very limited research has been conducted in primary dental care settings, particularly in relation to researching public health topics such as obesity prevention. This study was therefore very innovative in nature and faced considerable challenges. However, overall the study can be considered as a major success in that the study team successfully completed all elements of the research as planned and have gained very valuable insights to inform future work in this topic. Particular strengths of the study include:

### *Research methodology*

Based upon the MRC framework, the study design comprised 2 elements, an initial developmental stage, followed by the exploratory trial. The development stage provided very useful information to assist in the planning and development of the intervention. The exploratory trial ran very smoothly as planned. A detailed study protocol and training of the researchers ensured a robust and rigorous approach was adopted in all stages of the trial. The comprehensive process evaluation provided very helpful insights into all aspects of the study and intervention. The methodological approach adopted therefore enabled the study aim and objectives to be met.

### *Engagement with general dental practitioners and their teams*

A major strength of this study has been the successful engagement achieved with general dental practitioners and their teams from across north central London. The study team have established excellent links with dental teams who are now keen and interested in research. A particular strength was the excellent working relationships achieved with the practices involved in the trial stage of the study. Of the 10 practices recruited, 8 maintained very active involvement throughout the study. The research training programme for the dental teams was found to be useful and effective in supporting their involvement in the study.

### *Patient and Public Involvement*

The link with the Islington secondary school provided some very useful information in the early stages of the study. In particular the consultation sessions with the students assisted the team in developing and tailoring the measurement tools and elements of the intervention resources for use with adolescents. Without this support, the language and terminology used in the study materials may have not been so clear to the participants and this could have affected the response and retention rates.

### *Development of MI intervention*

Although MI has been previously used in many other areas, the technique has not been extensively tested in oral health care settings. Considerable time, energy and effort was therefore directed at developing and testing the MI materials and techniques. The intervention developed therefore had a strong theoretical basis and the researchers involved in delivering the intervention were intensively trained and coached by MI experts.

### *Recruitment of participants*

Research with adolescents faces a major challenge of how to effectively recruit and engage young people. This study was very successful in recruiting 149 adolescents which exceeded the original recruitment target. The recruitment strategy therefore succeeded in engaging with young people attending dental practices.

### *Collaboration*

A final strength of the study was the effective collaborative approach that was established. A diverse and complementary team of researchers and practitioners worked effectively as a team to achieve the desired research outcomes. Researchers from dental public health, public health nutrition, psychology and statistics used their respective skills and expertise in a complementary and supportive fashion. Leading experts in MI also provided very valuable support and input, and local authority public health practitioners ensured that the study linked with the local agendas across the 3 PCTs.

### *Weaknesses*

Inevitably this study had some weaknesses that need to be acknowledged. In the initial questionnaire survey with dentists, a response rate of 55% was achieved. This was disappointing as considerable effort was directed at increasing the response rate to at least 60%. The questionnaire findings have to be viewed with a degree of caution and cannot be considered representative of general dental practitioners in the areas studied. It was also very difficult to recruit the desired number and diversity of young people and their parents for the focus groups in the developmental stage of the study. In future it would be useful if a more developed PPI forum was established to enable dental patients to be more actively engaged in research. The final weakness was the very low numbers of young people who were deemed eligible for participation in the trial. Of the 149 participants recruited, only 39 were found to be eligible based upon their anthropometric assessments. Far fewer young people who were overweight or obese attended dentists than was originally predicted.

### *Conclusions*

This exploratory study has demonstrated the feasibility and acceptability of conducting an obesity prevention intervention within a general dental practice setting. The results have demonstrated that dental professionals are interested in prevention; the dental practice is a suitable setting for implementing MI interventions; and the MI support had a small positive, but non-significant effect on key outcomes. A major challenge however was the difficulty in recruiting overweight and obese young people attending dentists.

### *Recommendations for future research*

Based upon the findings of this study, the following recommendations are made for future research:

#### 1. Creation of GDS research network in north central London

The results of this study have demonstrated an interest and willingness of general dental practitioners to be involved in research activities. In collaboration with CEL a network of research active dental practices should be created to facilitate further research activity. Primary dental care settings provide an ideal setting for clinical and public health research studies. Future studies need to ensure that appropriate reimbursement of clinical staff time

and use of NHS premises is available. Further training in research methods should be offered to dental staff to develop their expertise and skills.

## 2. Development of dietary intervention

The MI intervention developed and piloted in this study showed real promise. However it needs to be recognised that the intervention required extensive training, ongoing support and was delivered by highly skilled researchers. Such arrangements are not possible in NHS dental practices. A modified and simplified dietary intervention therefore needs to be developed which could be delivered by NHS dental staff. The intervention should be informed by behavioural theory and should aim to reduce sugars consumption to promote both oral and general health.

## 3. Conduct of future RCT

A large scale randomised controlled trial should be conducted to evaluate the effectiveness and cost effectiveness of the newly developed dietary intervention. The study would need to be a multicentre trial and should link into plans to develop a greater preventive emphasis in general dental practice.

## **5.8 Dissemination of findings**

The study team are committed to disseminating the findings of this research to all relevant groups and organizations. To date three scientific papers have been drafted: a protocol paper which has now been accepted for publication in *Contemporary Clinical Trials* (Appendix 45); a qualitative paper presenting the data from the focus groups with dental teams (a revised version currently under consideration for publication in *Social Science and Dentistry*); and a quantitative paper summarising the questionnaire data gathered from dentists (soon to resubmitted to an appropriate journal). Currently 2 other papers reporting on the outcomes of the trial and process evaluation are being drafted. Members of the team also presented 2 posters at international scientific meetings (Appendices 46 and 47) and are preparing a third poster for a forthcoming meeting in November 2013.

Summaries of the study results were sent out to all dental practices involved in the trial plus a range of other interested professionals (Appendix 48). A lay summary was also sent out to all the young people and their parents involved in the trial (Appendix 49). A summary scientific report was also submitted to NIHR (Appendix 50). Finally, an evening scientific meeting was held in March 2013 at the British Dental Association to share the study results with interested general dental practitioners. Despite the very poor weather conditions 48 dental professionals attended the event and gave very positive feedback on the evening. Indeed 17 dentists expressed interest in being involved in future research studies.

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### Steering group members

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Helen Crawley, First Steps Nutrition  
Louise Gregory, University College London  
Anna Kolliakou, King's College London  
David McCarthy, London Metropolitan University  
Mandy Murdoch, NHS North Central London / London Borough of Islington  
Marie Murphy, University College London  
Tim Newton, King's College London  
Antiopi Ntouva, University College London  
Hynek Pikhart, University College London  
Jessie Porter, University College London  
Manos Stamatakis, University College London  
George Tsakos, University College London  
Richard Watt, University College London  
Huda Yusuf, University College London

### Experts

Jeff Allison, Jeff Allison Training Ltd.  
Nina Gobat, Cardiff University  
Professor Steve Rollnick, Cardiff University

### Local organisations helping to promote the study

Lynis Lewis and her Team (Central and North West London NHS Foundation Trust)  
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## Appendices

1. Trial protocol version 6
2. Gantt chart
3. Ethics approval confirmation
4. R and D approval
5. Survey of dentists questionnaire
6. Letter to dentists for survey participation
7. Information sheet for survey participation
8. Letter to dentists for FG participation
9. Information sheet for FG participation
10. Consent form FG Dentists
11. Topic Guide FG Dentist
12. Info sheet FG Parent
13. Info sheet FG Young Person
14. Consent form FG Parent
15. Consent form FG Young Person
16. Topic Guide FG Parent
17. Topic Guide FG Young Person
18. Randomisation of dental practices for SWITCH sample
19. Young person screening questionnaire
20. Young person participant information sheet
21. Parental participant information sheet
22. Consent form for parents
23. Consent form for young people
24. Protocol for anthropometric measurements
25. Dietary assessment protocol
26. Young person's baseline questionnaire
27. Young person's follow-up questionnaire (intervention)
28. Young person's follow-up questionnaire (control)
29. Parental questionnaire
30. Dietary data coding protocol
31. Dietary data coding sheet
32. SWITCH MI guidance
33. MI prompt sheet session 1
34. MI prompt sheet session 2
35. MI prompt sheet session 3-4
36. Agenda setting sheet
37. Decisional balance worksheet
38. Scale rulers
39. Sugary drinks visual aid
40. Effects of soft drinks
41. Dietary and physical activity guidelines
42. Drinks directory
43. Healthy eating leaflet
44. Protocol for post MI follow-up

45. Protocol Paper
46. Poster 1
47. Poster 2
48. Professional summary report
49. Lay summary report
50. Final NIHR RfPB report

## List of figures

1. Flow diagram of recruitment and baseline measurement of participants
2. MI brief intervention tools and techniques.
3. Examples of prompt questions
4. Consort flow diagram for the main phase of the exploratory trial
5. Reasons for non-participation by eligible patients

## List of tables

1. Characteristics of the study sample who completed the Prevention Questionnaire in the three PCTs
2. Current preventive activities among respondents
3. Proportion of dentists undertaking preventive activities, by age groups and gender (n=164)
4. Associations between barriers to the provision of prevention, with age groups and gender (n=164)
5. Demography of parents for the whole sample, at baseline (n=39)
6. Outcome measures across the whole sample, at baseline (n=39)
7. Physical activity and sedentary behaviour across the whole sample, at baseline (n=39)

8. Readiness to change eating and drinking habits across the whole sample, at baseline (n=39)
9. Parental socio demographic characteristics, by control and intervention groups, at baseline (n=39)
10. Young people's demography, by control and intervention groups, at baseline (n=39)
11. Physical activity and sedentary behaviour, by control and intervention groups, at baseline (n=39)
12. Readiness to change eating and drinking habits, control and intervention, at baseline (n=39)
13. Outcome measures (unadjusted), by control and intervention, at baseline
14. Outcome measures across the whole sample, at follow up (n=39)
15. Physical activity and sedentary behaviour across the whole sample, at follow up (n=39)
16. Readiness to change eating and drinking habits across the whole sample, at follow up (n=39)
17. Outcome measures (unadjusted), control and intervention, at follow up (n=39)
18. Physical activity and sedentary behaviour (unadjusted), control and intervention groups, at follow up (n=39)
19. Readiness to change eating and drinking habits (unadjusted), control and intervention (n=39), at follow up
20. Mean differences in anthropometric and diet measures, by control and intervention from baseline to follow-up (n=39)
21. Beta coefficients of mean differences in anthropometric and diet measures per group, from baseline to follow-up (n=39)
22. Intra-cluster correlation of young people's anthropometric and dietary outcomes
23. Participation numbers for the SWITCH trial
24. Details of sessions selected for coding
25. Fidelity testing scores for the MI intervention using the MITI

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## **Preventing obesity in young people attending primary dental care settings: an exploratory randomised controlled trial**

### **Project summary**

#### *Background*

Obesity is a significant public health problem in the UK. Amongst young people obesity rates have risen dramatically in recent years. The health, social and economic consequences of this epidemic are significant. Overweight and obesity is caused by a complex interplay of metabolic, behavioural, social and environmental factors but ultimately results when a sustained energy imbalance occurs. Recent NICE guidance has highlighted the need for effective preventive interventions. Epidemiological and intervention studies have highlighted the important role that sugars consumption, particularly from soft drinks has on the development of obesity. A high proportion of young people attend dentists routinely. This provides a unique opportunity to develop and test an obesity prevention intervention.

#### *Aims and objectives*

**Aim:** To develop and test the feasibility of an obesity prevention intervention targeting 11-16 year olds attending general dental services in Islington; Camden; and Haringey PCTs.

#### *Specific objectives:*

1. To assess dental teams' experience, motivation and training needs in providing preventive care for both oral and general health improvement
2. To assess the acceptability to young people and their parents of the proposed intervention
3. To develop a motivational interviewing intervention and training programme specifically designed for dental practices working with young people to prevent obesity
4. To conduct an exploratory randomised controlled trial of the obesity intervention
5. To make recommendations on conducting a definitive randomised controlled trial of the obesity intervention

#### *Plan of investigation*

Based upon the MRC framework for developing and evaluating complex interventions this study will use qualitative and quantitative methods in the following stages:

1. undertake qualitative focus groups with dental teams in Islington PCT to understand their attitudes and beliefs towards preventive activities
2. undertake a quantitative survey of dentists across 3 London PCTs to assess their experience, motivation and training needs in prevention
3. conduct qualitative focus groups with young people and, separately their parents to determine the acceptability and salience of the proposed obesity intervention
4. develop a motivational interviewing intervention and training programme specifically designed for dental practices working with young people to prevent excess weight gain

5. conduct an exploratory trial to assess the feasibility and acceptability of the intervention and trial methods for a later definitive RCT

### *Potential Impact*

Treatment options for childhood obesity are limited and frequently fail to achieve long term success. Effective and innovative preventive interventions are therefore urgently required. This study will provide detailed information on the feasibility, acceptability and practicality of implementing a theoretically innovative obesity intervention. Contractual and commissioning arrangements now enable dentists to become more actively engaged in health promotion activity. This study will explore the potential role dental practices may play in preventing a significant public health problem. The findings from this study will then be used to apply for funding for a definitive RCT. This study will therefore have potentially significant policy and practice implications.

## **Project outline**

### **Background**

Childhood obesity is a significant public health problem (1, 2). In the UK obesity in children increased from 9.9% in 1995 to 13.7% in 2003 (9). It is estimated that by 2010 19% of boys and 24% of girls aged under 10 will be obese (10). Obesity has a significant impact on both physical and psychosocial health of children and is an independent risk factor for adult obesity (1,11). As the recent NICE review has highlighted treatment options are limited and frequently fail to achieve long term success (3). Effective preventive strategies which focus on, at risk children, in particular, are urgently required. In essence excessive weight gain develops when there is a sustained imbalance between the amount of energy consumed and the amount used up in everyday life (12).

A recent revised Cochrane review has highlighted the paucity of good quality interventions to make any generalisable conclusions on the prevention of childhood obesity (4). 22 studies were reviewed, most of which were school based and focused on multiple interventions. No studies reviewed were conducted in primary care. The review reported that in most cases the interventions did not significantly reduce overweight or obesity. The review concluded that there was a need for more well designed studies to examine the effectiveness of a range of interventions.

A promising area of research is the role played by sugars in weight gain. Data from the US and UK has shown that over the past 20 years, concomitant with the increase in rates of obesity, consumption of sugars, particularly from soft drinks has also increased rapidly (13,14). In the UK 16% of total energy in children aged 4-18 years comes from free sugars (15), well in excess of the recommended level of 10% of energy (1,16). Over 50% of free sugars come from soft drinks and confectionery. More than 70% of adolescents consume soft drinks on a regular basis (15). Two systematic reviews have examined the evidence of the role of soft drinks on weight gain (17,18). 30 good quality studies were reviewed. Both reviews concluded that soft drink consumption

was associated with increased energy intake, weight gain and obesity. Two of the intervention studies reviewed targeted young people. A UK RCT with 7-11 year olds found that a school based educational intervention aimed at reducing carbonated drinks consumption produced a reduction in the drinks consumed and a significant reduction in the number of children who were overweight or obese (19). Very recently a US RCT with 13-18 year olds showed a significant impact on reducing consumption of sugary drinks and levels of overweight and obesity (20). A potential mechanism linking sugary drinks consumption to excessive weight gain is their high glycemic index. Rapid consumption of food/drinks with a high glycemic index alters hormonal and metabolic functions and promotes excessive food intake (21).

The recently published NICE guidance (3) and Department of Health obesity plan (22) have highlighted the important role that primary health care professionals can play in the prevention of obesity in children. One potential but under utilized primary care setting for obesity prevention is the dental practice. Dentists more than any other health professional routinely treat young people. Over 70% of children visit their dentist each year (23). Sugar consumption is also a key factor causing dental caries (1, 24), a common childhood disease. National policy and new contractual arrangements are now encouraging dentists to become more actively engaged in prevention (6-8). Reviews of the oral health literature have highlighted the lack of well designed studies aiming to reduce sugars consumption to prevent dental caries (25-27). More high quality research is needed on interventions to reduce sugary drinks consumption to promote weight management and oral health. Dental practices provide an ideal setting for this and the link between soft drinks and dental health maybe a less stigmatising motivator to make changes.

It is imperative that any intervention is developed from a sound theoretical basis. Motivational interviewing (MI) is a well known, scientifically tested method of counselling clients. It is defined as a 'directive, client-centred counselling style for eliciting behaviour change by helping clients to explore and resolve ambivalence.' (28) The approach has been used by a variety of health professionals working with a diverse range of clients including adolescents (29,30). A recent systematic review of MI interventions reviewed 72 RCTs and showed that the technique had a significant effect on a range of outcomes including BMI (31). MI has been successfully used in interventions to promote diet change in adolescents (32) and prevent caries in young children (33).

The applicants bring together expertise in oral health service research, nutrition, health psychology and public health. Further details of the team are outlined in section 16.

### **Aims and specific objectives**

#### *Aim:*

To develop and test the feasibility of an obesity prevention intervention targeting 11-16 year olds attending primary dental care services in Islington; Camden; and Haringey PCTs.

*Specific objectives:*

1. To assess dental teams' experience, motivation and training needs in providing preventive care for both oral and general health improvement
2. To assess the acceptability to young people and their parents of an obesity prevention intervention designed for primary dental practices
3. To develop a motivational interviewing intervention and training programme specifically designed for dental practices working with young people to prevent obesity
4. To conduct an exploratory randomised controlled trial of the obesity preventive intervention targeting 11-16 years olds attending primary dental care services
5. To make recommendations on conducting a definitive randomised controlled trial of the obesity intervention.

## **Research plan**

*Study location*

The study will take place across Islington, Camden and Haringey PCTs, three inner city areas with complex health needs. Levels of obesity amongst young people in these areas is higher than national figures with 22% of 10 year olds being obese (34). Previous research conducted across this area by the UCL team showed that dentists were changing the nature of their clinical practice and were interested in prevention (35).

*Study population*

11-16 year olds who are overweight or obese and attend dentists across Islington; Camden; and Haringey PCTs. This age group have been selected for the following reasons:

1. This is an important transition stage in the lifecourse when young people are developing a greater degree of autonomy and control over their behaviours
2. Motivational interviewing interventions have previously been tested on this age group in relation to dietary interventions (32)
3. Consumption of soft drinks is high in this age group (15).

*Study design*

Prior to conducting a definitive trial to evaluate the effectiveness of a complex intervention, it is essential that appropriate preliminary research is undertaken. The widely used MRC Framework for Evaluating Complex Interventions provides a useful guide to these preliminary stages (5). Both quantitative and qualitative methods will be used in this study. Detailed methods for each objective of the study are now described.

**Objective 1: To assess dental teams' experience, motivation and training needs in prevention**

In this important, but under researched area of investigation it is essential that relevant background data is collected to inform the development of the intervention and its subsequent pilot testing. It is critically important that any intervention package developed addresses the needs and concerns of the

dentists and their teams who are going to be delivering the intervention. The first phase of this study will therefore compose of two parts;

- a) a set of focus groups with dental teams in Islington PCT, and
- b) a survey of all dentists working in Islington, Camden and Haringey PCTs.

a) Focus groups

A purposeful sampling method will be used to identify 4 dental practices in Islington PCT. To encourage open discussion separate focus groups will be undertaken with dentists and dental teams.. A topic guide will be developed to explore the following issues in each group:

- broad views and perspectives on prevention within general dental practice settings
- explore perceived priorities for prevention (oral and general health)
- discuss perceived barriers limiting involvement and engagement in preventive activities
- broad discussion on how best to move preventive agenda forwards

The focus groups will be recorded, transcribed and entered onto an electronic data management program. A thematic approach will be used to analyse the qualitative data (36). This will involve data organisation through coding, category development and then testing (37). The focus groups will help inform the design of the questionnaire and intervention.

b) Questionnaire survey

A short interview-administered questionnaire will be designed and pilot tested prior to administration. The questionnaire will collect the following information:

- Current preventive activities provided
- Roles of dental team in prevention
- Perceived importance of prevention for both oral and general health
- Perceived barriers limiting preventive activity and recommendations on how to tackle these
- Identify training needs and resource requirements
- Willingness to participate in the exploratory trial

All 350 general dental practitioners on the Performer Lists of the three PCTs will be sent an initial letter explaining the study and the intention to undertake interview-administered questionnaires. Dentists will then be contacted to arrange a suitable time for a face-to-face questionnaire interview. If a suitable time cannot be agreed, the dentist will be offered a telephone interview as an alternative. Appropriate incentives will be used to encourage a good response rate. Previous research by the study team in this area has yielded good response rates from dentists (35). The questionnaire data will be analysed to assess the nature and extent of preventive activity undertaken, dentists' interest in providing obesity advice, barriers that limit their involvement in prevention, and their training and support needs. Information from the questionnaires will also provide an indication of potential dental practices willing to participate in the subsequent phases of the study and give an indication of the numbers of young people attending each practice.

Objective 2. To assess the acceptability to young people and their parents of proposed intervention

The MRC framework stresses the need for qualitative research in the early stages of developing an intervention (5). Qualitative methods are useful in testing the underlying assumptions, and the salience and acceptability of the intervention, as well as exploring suggestions on the best ways of delivering the intervention to the proposed target group. Four focus groups, each with 6-8 participants will be conducted, two with young people aged 12-14 years and two with their parents. Participants will be recruited from patients attending 2 dental practices in the Islington, Camden, and Haringey areas. A purposive sampling method will be used to recruit a diverse group of young people from different social and ethnic backgrounds, males/females and those with a range of body sizes (normal and overweight). A topic guide will be developed to explore the following issues with each group:

- significance of obesity amongst young people locally
- causes of obesity amongst young people including the role of soft drinks consumption
- acceptability of dental practices as a setting to implement an obesity intervention
- suggestions on best ways of helping young people to change their behaviours (dietary & physical activity).

The interviews will be recorded, transcribed and entered onto an electronic data management program. A thematic approach will be used to analyse the qualitative data (36). This will involve data organisation through coding, category development and then testing (37). Analysis will focus in particular on exploring participants views of the acceptability and desirability of the intervention, and perceptions of the relevance of the intervention to young people. **The young people and their parents involved in these focus groups will not take part in the main trial in this study.**

Objective 3: To develop MI intervention and training programme  
Intervention development

The development of the intervention will be informed by the findings of the previous 2 stages of the study and will follow NICE guidance on the prevention of childhood obesity (3). In addition, the theoretical basis of the behavioural intervention will be motivational interviewing (MI) (28), a technique that has been successfully used to promote diet change amongst young people (32). The members of the team with extensive experience in developing MI (AK), and nutrition and physical activity (HC) interventions will provide expert input into the development of this intervention. In addition, Professor Stephen Rollnick, a leading expert in MI will provide further guidance and support. In brief the proposed intervention will comprise of the following features:

Aim - the primary focus will be to encourage overweight and obese young people to reduce their consumption of sugary soft drinks and switch to healthier alternatives such as water. However the dietary support will be consistent with general healthy eating advice (see NICE guide page 14) and recommendations on increasing physical activity and reducing sedentary behaviours (see NICE guide page 47) (6). A key motivator for reducing soft

drinks will be the link made to dental health, a less stigmatising issue than obesity.

Target group - advice and support will be offered to young people aged 11-16 years who attend general dental practices in Islington, Camden and Haringey and who are overweight or obese (BMI above 85<sup>th</sup> centile ) and consume soft drinks on a regular basis

Assessment procedures - using sensitivity and appropriate communication skills with the young person and their family, information will be collected on nature and impact of the condition, their readiness and motivation to change, and current diet and physical activity levels

Behavioural support - in line with MI techniques, once rapport has been established tailored support will include assessing readiness to change, weighing up personal costs and benefits of change, goal setting, praising goals reached, boosting self confidence and self monitoring

Delivery and duration - based upon findings from the systematic review of MI support (31), the intervention will be delivered as a brief intervention in four 15 minute appointments over a 1 month period

Resources and materials - a collection of resources will be developed to support the intervention including motivational materials, diet and physical self assessment tools, personal reflection diaries, practical information on local support services and skills training materials.

Monitoring and review - it is essential that on-going feedback and encouragement are provided to maintain motivation.

#### Training programme

Initially, the MI intervention was going to be delivered by dentists and their teams. However it was felt that for the purposes of this efficacy trial and to ensure intervention fidelity it would be more appropriate to rigorously train a smaller number of individuals for this stage of the research. Therefore it was decided that three members of the research team (HY, MM and JP) will be trained to deliver the MI intervention within dental practices. To ensure appropriate skills and techniques are used, a standardised training programme will be delivered by Jeff Allison who has extensive experience in delivering MI training in primary health care. . The MI training will focus on:

- Team working and communication skills
- MI principles and practice – motivating individuals, negotiation, goal setting, self monitoring, coping strategies

Additional training will also cover the core nutritional content of the intervention and will include:

- Nutrition – healthy eating, sugars and health, healthy drink/snack choices
- Physical activity for young people – recommended levels, practical measures to follow
- Referral to local nutrition and physical activity programmes

The dental teams involved in the intervention phase will also need some initial training and support. Members of the research team will provide training to dental staff on the following topics:

- Conduct and principles of research
- Procedures to follow in recruiting participants

- Procedures to follow for gaining consent

#### Delivery and evaluation of training

Based upon previous published MI training programmes with dentists (37), a four session programme will be developed. A detailed evaluation of the training programme will be undertaken using pre and post assessments of knowledge gains, attitude change and skills acquired.

#### Objective 4: To conduct an exploratory RCT

An exploratory trial provides vital information on the feasibility and practicality of key components of the trial design including sample recruitment and retention, measurement of outcomes and delivery of intervention (5). It also provides evidence of intervention effects for the purposes of calculating the power of the main larger trial. In addition, this phase provides an opportunity of determining the most suitable nature of the comparative (control) arm of a definitive trial.

#### Pilot design

The exploratory trial will be undertaken in 10 dental practices (5 intervention and 5 controls) across the PCTs. Dental teams in the intervention practices will be offered training in recruiting participants and gaining consent and will be provided with appropriate supporting resources. The intervention will be delivered by the research team over a 1 month period and will consist of four 15 minute appointments. Baseline and post intervention (6 months later) outcome measures will be collected from the young people participating in the trial. A comprehensive process evaluation will be undertaken to assess the acceptability of the trial to participants.

#### Recruitment of dental practices

Dentists who indicated their willingness to participate in the trial in the first phase of the study will be randomly allocated to either the intervention or control group. (The dental practice will be the unit of randomisation, not the individual dentist). Members of the study team have established links with local dentists and feedback from the Local Dental Committee has indicated a general interest in health promotion research. Incentives to encourage participation will include payment at the Guild rate for attending training sessions and provision of health promotion materials for all practices at the end of the study. PCRN agreed costings will also be provided to cover room usage within dental practices and any other associated costs.

#### Sample size

As this is an exploratory trial it is not necessary to undertake an exact power calculation. However based on previous similar pilot obesity interventions with young people it is estimated that 140 subjects will be needed in this pilot study (20,38). Based upon the assumption that the average dental practice list consists of 2,500 patients, it is estimated that each practice will have approximately 300 patients aged 11-16 years on their list. Assuming 20% of this age group are overweight and 40% of those approached agree to

participate, the involvement of 10 dental practices will be sufficient to meet the target sample size.

#### Sample recruitment

Young people and their parents will be identified and approached when they attend for dental care and letters will also be sent out to those not due for a dental appointment inviting them to participate in the study. Standard consent forms and information sheets will be used. Once parental consent has been given all those young people interested in the study will have their height, weight and waist circumference measured in the standard fashion.

#### Inclusion criteria

aged 11-16 years

classified as overweight or obese (BMI at or above 85th centile)

full parental consent given

young person interested in intervention

consumes at least the equivalent of 1 soft drink per day

#### Exclusion criteria

classified as normal weight (BMI below the 85<sup>th</sup> centile)

has serious medical condition or eating disorder

on special diet

unable to communicate effectively in English

Young people who have consented and fit the inclusion criteria and who attend the test practices will provide baseline demographic and dietary information and will then be offered the intervention. Those who did not fit the inclusion criteria and the eligible young people attending the control practices will be given a standard information leaflet about healthy eating. Any young people who are identified as being clinically obese will be referred to their GP or follow procedures outlined in the local obesity care pathway at the 6 month follow-up appointment.

#### Outcome measures

Main outcome measures are anthropometric measures of height, weight and waist circumference. Height (without shoes) will be measured to the nearest 0.1cm using the portable Leister height measures. Weight (in light clothing) will be measured to the nearest 0.1kg on portable electronic scales (Seca 770). Waist circumference will be measured at 2cm above the naval.

Secondary outcomes: mean daily consumption of sugary soft drinks assessed through 4 day triple pass dietary recalls (19).

#### Process evaluation

A comprehensive process evaluation will be undertaken to assess the feasibility, acceptability and practicality of the trial methods. Young people and their parents will be asked to complete a brief questionnaire exploring their views and experiences of the intervention. Young people in the control group will also be sent a questionnaire to assess their views. In addition, 4 focus groups will be conducted in each of the intervention dental practices. All members of the dental teams will be invited to participate in the focus groups. Issues to be explore will include:

Involvement during the intervention – team roles, time etc  
Value of resources and training provided  
Problems encountered and suggested solutions

Finally, young people and their parents who initially verbally expressed interest to take part in the study but subsequently changed their minds (before written consent was obtained) will be contacted by letter to determine why they decided to not participate further in the study. If the individual does not wish to give any reason, this decision will be fully respected.

#### Data analysis

The effect of the intervention will be assessed through comparison of the baseline and post intervention anthropometric outcomes for the intervention and control groups. This data will then enable a power calculation to be undertaken for the definitive trial. The process evaluation questionnaire data will be descriptively analysed to assess the key elements of the participants feedback on the intervention. The qualitative data from the focus groups will be analysed in a similar manner to that described in objective 2.

#### Objective 5: To make recommendations on definitive RCT

Based upon the findings from the quantitative survey, focus groups and exploratory RCT, recommendations on the design and conduct of a definitive RCT will be made. A trial protocol will be finalised and funding sought for a full RCT.

#### *Details of public involvement*

It is essential that the development of any new intervention is informed by the public. This is even more important when the intervention focuses upon changing behaviours, is innovative in nature and deals with a potentially sensitive and difficult topic such as overweight and obesity amongst young people.

Public involvement in this proposed study will consist of two main elements:

#### Parent representation on project steering group

Two parents of young people attending dental services across both PCTs will be invited to join the project steering group. The parents will be recruited through the young people's research forum and the parents' focus groups (Objective 2). The parents will be involved in all aspects of planning and conducting the study. Any travel and childcare costs will be covered and, in addition each parent will be offered £50 for attending meetings.

#### Young peoples research forum

To enable the research team to fully consult and collaborate with young people, the target group of the proposed intervention, a research forum will be established in a secondary school in Islington or Camden. Both PCTs have excellent links with local secondary schools and UCL is actively supporting collaborative ventures with local schools. A group of 12 young people aged

13-14 years (Year 9) will be invited to form the group. In close liaison with the Social and Personal Education co-ordinator in the selected school, the group will meet 3 times a year and provide a platform for discussion on all aspects of this study. The young people will be encouraged to express their opinions on all aspects of the study including the methods used to collect data and the nature and design of the intervention. In addition, the forum will provide the young people with an insight into the conduct of research. A £200 token will be offered to the school as an incentive to participate

### **Project management**

Overall project management and planning will be provided by the principal investigator (Richard Watt) who has extensive experience of supervising research projects. He will ensure that deadlines are met and that the project follows the agreed plan. The Gantt chart outlines the key phases of the project. Richard Watt will be responsible for following this plan and delivering the agreed outputs. A project steering group will meet three times a year to oversee all aspects of the project. This group will be chaired by the lead applicant and comprise of all the other co-applicants and two parent representatives. The steering group will review progress, advice on each phase of the study and assist with any problems that may arise. At each steering group meeting a progress report will be submitted for discussion. Richard Watt will meet the researcher appointed to the project on a fortnightly basis to discuss and review progress with the project. Richard Watt will also be responsible for financial management and will be supported in this task by Sarah Price.

### **Dissemination plans**

The results of this project will stimulate a considerable amount of interest in a wide variety of professional and voluntary groups due to the widely recognised public health significance of childhood obesity. The research team comprises of individuals from a variety of academic and service backgrounds including dental public health, health psychology, public health, nutrition and social epidemiology. Efforts will therefore be made to disseminate the study findings through conference papers/posters to these professional groups across academia and the NHS. For example, Richard Watt is the previous president of BASCD, the national dental public health group and is responsible for organising national conferences for NHS public health dentists. These conferences would provide an ideal forum for dissemination of the study findings.

The researchers are very experienced in writing up papers for publication in high quality journals. It is envisaged that this study would generate some important papers for publication. The results of the study would also be used to apply for future funding for a definitive RCT. Such a trial would generate international interest because of the global challenge of obesity prevention.

A final very important part of the dissemination plan would be to provide detailed feedback to the NHS dentists and young people and their parents who were involved in the study and the wider local community across Islington; Camden; and Haringey. Richard Watt, Huda Yusuf and Sarah Price

through their public health roles have established links with the local dentists and community groups. Feedback to the Local Dental Committee and local education authorities would also be very important.

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## National Research Ethics Service

North West London REC 1

REC Office  
Maternity, Level 7  
Northwick Park Hospital  
Watford Road  
Harrow  
HA1 3UJ

Tel: 020 8869 5446  
Fax: 020 8869 5222

23 February 2011

Professor Richard G. Watt  
Professor and Honorary Consultant in Dental Public Health  
Epidemiology and Public Health  
1-19 Torrington Place  
London WC1E 6BT

Dear Professor Watt

**Study title:** Preventing obesity in young people attending primary dental care settings: an exploratory randomised controlled trial.  
**REC reference:** 10/H0722/2

This study was given a favourable ethical opinion by the Committee on 03 February 2010.

It is a condition of approval by the Research Ethics Committee that the Chief Investigator should submit a progress report for the study 12 months after the date on which the favourable opinion was given, and then annually thereafter. To date, the Committee has not yet received the annual progress report for the study, which was due on 02 February 2011. It would be appreciated if you could complete and submit the report by no later than 02 March 2011.

Guidance on progress reports and a copy of the standard NRES progress report form is available from the National Research Ethics Service website.

The NRES website also provides guidance on declaring the end of the study.

Failure to submit progress reports may lead to the REC reviewing its opinion on the study.

**10/H0722/2:**

**Please quote this number on all correspondence**

Yours sincerely

**Ms Louise Braley**  
**Committee Co-ordinator**

E-mail: [louise.braley@nhs.net](mailto:louise.braley@nhs.net)

Copy to: Ms Lynis Lewis



## North Central London Research Consortium

### North Central London Research Consortium

3rd Floor, Bedford House  
125-133 Camden High Street  
London NW1 7JR

Telephone: 020 3317 3759

Facsimile: 020 7685 5788

7<sup>th</sup> July 2011

Professor Richard Watt  
Professor & Honorary Consultant in Dental Public Health  
Department of Epidemiology and Public Health  
University College London  
1-19 Torrington Place  
London.  
WC1E 6BT

Dear Professor Watt,

**Title:** Preventing Obesity in young people attending primary dental care settings: an exploratory randomised controlled trail.  
**REC Ref:** 10/H0722/2  
**R&D Ref:** CSP 37690  
**Host Trust:** Haringey Teaching PCT

I am pleased to confirm that the above study has now received R&D approval, and you may now start your research in **Haringey Teaching Primary Care Trust**. May I take this opportunity to remind you that during the course of your research you will be expected to ensure the following:

- **Patient contact:** only trained or supervised researchers who hold the appropriate Trust/NHS contract (honorary or full) with each Trust are allowed contact with that Trust's patients. If any researcher on the study does not hold a contract please contact the R&D office as soon as possible.
- **Informed consent:** original signed consent forms must be kept on file. A copy of the consent form must also be placed in the patient's notes. Research projects are subject to random audit by a member of the R&D office who will ask to see all original signed consent forms.
- **Data protection:** measures must be taken to ensure that patient data is kept confidential in accordance with the Data Protection Act 1998.
- **Health & safety:** all local health & safety regulations where the research is being conducted must be adhered to.
- **Adverse events:** adverse events or suspected misconduct should be reported to the R&D office and the Ethics Committee.
- **Project update:** you will be sent a project update form at regular intervals. Please complete the form and return it to the R&D office.
- **Publications:** it is essential that you inform the R&D office about any publications which result from your research.
- **Ethics:** R&D approval is based on the conditions set out in the favourable opinion letter from the Ethics Committee. If during the lifetime of your research project, you wish to make a revision or

amendment to your original submission, please contact both the Ethics Committee and R&D Office as soon as possible.

Please ensure that all members of the research team are aware of their responsibilities as researchers. For more details on these responsibilities, please check the R&D handbook or NoCLoR website:  
<http://www.noclor.nhs.uk>

We would like to wish you every success with your project

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Angela Williams', with a long horizontal flourish extending to the right.

**Angela Williams**  
**R&D Manager**



## North Central London Research Consortium

North Central London Research Consortium  
3rd Floor, West Wing  
Camden PCT, St Pancras Hospital  
4 St Pancras Way, London, NW1 0PE  
Telephone: 020 7530 5375  
Facsimile: 020 7530 3235  
[www.camdenproviderservices.nhs.uk](http://www.camdenproviderservices.nhs.uk)

12<sup>th</sup> August 2010

Professor Richard Watt  
Professor & Honorary Consultant in Dental Public Health  
Department of Epidemiology and Public Health  
University College London  
1-19 Torrington Place  
London,  
WC1E 6BT

Dear Professor Watt,

**Title:** Preventing Obesity in young people attending primary dental care settings: an exploratory randomised controlled trail.

**REC Ref:** 10/H0722/2

**R&D Ref:** CSP 37690

I am pleased to confirm that the above study has now received R&D approval, and you may now start your research in **Islington Primary Care Trust**. May I take this opportunity to remind you that during the course of your research you will be expected to ensure the following:

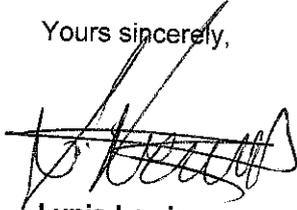
- **Patient contact:** only trained or supervised researchers who hold the appropriate Trust/NHS contract (honorary or full) with each Trust are allowed contact with that Trust's patients. If any researcher on the study does not hold a contract please contact the R&D office as soon as possible.
- **Informed consent:** original signed consent forms must be kept on file. A copy of the consent form must also be placed in the patient's notes. Research projects are subject to random audit by a member of the R&D office who will ask to see all original signed consent forms.
- **Data protection:** measures must be taken to ensure that patient data is kept confidential in accordance with the Data Protection Act 1998.
- **Health & safety:** all local health & safety regulations where the research is being conducted must be adhered to.
- **Adverse events:** adverse events or suspected misconduct should be reported to the R&D office and the Ethics Committee.
- **Project update:** you will be sent a project update form at regular intervals. Please complete the form and return it to the R&D office.
- **Publications:** it is essential that you inform the R&D office about any publications which result from your research.
- **Ethics:** R&D approval is based on the conditions set out in the favourable opinion letter from the Ethics Committee. If during the lifetime of your research project, you wish to make a revision or

amendment to your original submission, please contact both the Ethics Committee and R&D Office as soon as possible.

Please ensure that all members of the research team are aware of their responsibilities as researchers. For more details on these responsibilities, please check the R&D handbook or NoCLoR website:  
<http://www.noclor.nhs.uk>

We would like to wish you every success with your project

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Lynis Lewis', written over a horizontal line.

**Lynis Lewis**  
**Assistant Director, Research and Development**



## North Central London Research Consortium

North Central London Research Consortium

3rd Floor, West Wing  
Camden PCT, St Pancras Hospital  
4 St Pancras Way, London, NW1 0PE

Telephone: 020 7530 5375

Facsimile: 020 7530 3235

[www.camdenproviderservices.nhs.uk](http://www.camdenproviderservices.nhs.uk)

21 September 2010-09-21

Professor Richard Watt  
Professor & Honorary Consultant in Dental Public Health  
Epidemiology & Public Health  
University College London  
1-19 Torrington Place  
London  
WC1E 6BT

Dear Professor Watt,

**Title: Preventing obesity in young people attending primary dental care settings: an exploratory randomised controlled trial.**

**REC Ref:** 10/H0722/2

**R&D Reference Number:** CSP37690

I am pleased to confirm that the above study has now received R&D approval, and you may now start your research in **Camden Primary Care Trust**. May I take this opportunity to remind you that during the course of your research you will be expected to ensure the following:

- **Patient contact:** only trained or supervised researchers who hold the appropriate Trust/NHS contract (honorary or full) with each Trust are allowed contact with that Trust's patients. If any researcher on the study does not hold a contract please contact the R&D office as soon as possible.
- **Informed consent:** original signed consent forms must be kept on file. A copy of the consent form must also be placed in the patient's notes. Research projects are subject to random audit by a member of the R&D office who will ask to see all original signed consent forms.
- **Data protection:** measures must be taken to ensure that patient data is kept confidential in accordance with the Data Protection Act 1998.
- **Health & safety:** all local health & safety regulations where the research is being conducted must be adhered to.
- **Adverse events:** adverse events or suspected misconduct should be reported to the R&D office and the Ethics Committee.
- **Project update:** you will be sent a project update form at regular intervals. Please complete the form and return it to the R&D office.
- **Publications:** it is essential that you inform the R&D office about any publications which result from your research.
- **Ethics:** R&D approval is based on the conditions set out in the favourable opinion letter from the Ethics Committee. If during the lifetime of your research project, you wish to make a revision or amendment to your original submission, please contact both the Ethics Committee and R&D Office as soon as possible.

Please ensure that all members of the research team are aware of their responsibilities as researchers. For more details on these responsibilities, please check the R&D handbook or NoCLoR website:  
<http://www.noclor.nhs.uk>

We would like to wish you every success with your project

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Angela Williams', followed by a horizontal line.

Angela Williams  
Research & Development Manager

## Prevention in General Dental Practice



Thank you for agreeing to take part in our research. The questionnaire will take around 15 minutes to complete.

Your response is important and we would be grateful if you could answer all the questions as honestly and openly as possible. All data is confidential and your name or practice will not be identified in any subsequent report. Your details will not be passed on to any third parties

Once finished, please place the completed questionnaire in the freepost envelope provided and return it to us.

Office use only

Respondent code		Date received	
Practice code		Date of data entry	
PCT code		Method (P or E)	

# About you and your practice

1	<b>What is your gender?</b> <i>Please tick</i>	Male <input type="checkbox"/>	Female <input type="checkbox"/>
---	--	-------------------------------	---------------------------------

2	<b>Which of these age groups do you fall into?</b> <i>Please tick</i>	Under 30 <input type="checkbox"/>	
		30 to 39 <input type="checkbox"/>	
		40 to 49 <input type="checkbox"/>	
		50 to 59 <input type="checkbox"/>	
		60 + <input type="checkbox"/>	

3	<b>Which of these categories best describes your employment status?</b> <i>Please tick one box</i>	Practice owner / Principal <input type="checkbox"/>	
		Associate dentist <input type="checkbox"/>	
		Vocational trainee <input type="checkbox"/>	
		Other ( <i>please write in the box below</i> ) <input type="checkbox"/>	

4	<b>In what year did you first qualify as a dentist?</b> <i>Enter year</i>	
---	---	--

5	<b>What is the name of the dental school you qualified from?</b> <i>Please write in box</i>	
---	---	--

6	<b>Which of these additional qualifications do you hold?</b> <i>Please tick all that apply</i>	M/FDS RCS <input type="checkbox"/>	
		MSc <input type="checkbox"/>	
		PhD <input type="checkbox"/>	
		MJDF <input type="checkbox"/>	
		MClinDent <input type="checkbox"/>	
		None <input type="checkbox"/>	
		Other ( <i>please write in box below</i> ) <input type="checkbox"/>	

7	<b>Do you have any specialist interest?</b> <i>Please tick</i>	Yes <input type="checkbox"/>	
		No <input type="checkbox"/>	

8	<b>What is your specialist interest?</b> <i>Write in box</i>	
---	--	--

9	<b>Are you on any specialist list?</b> <i>Please tick</i>	Yes <input type="checkbox"/>	
		No <input type="checkbox"/>	

10	<b>Which of these PCTs do you work in?</b> <i>Please tick all that apply</i>	Camden <input type="checkbox"/>	
		Islington <input type="checkbox"/>	
		Haringey <input type="checkbox"/>	
		Other ( <i>please write in the box below</i> ) <input type="checkbox"/>	



17		How often do you provide the following interventions for either adults or children? Please tick relevant boxes				
		Always	Frequently	Sometimes	Rarely	Never
a	Fissure sealants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	Topical fluoride	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	Oral hygiene instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	Diet advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e	Tobacco advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f	Alcohol intake advice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g Other (Please give more detail and complete same information in space below)						
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18		How often do you make patient referrals to the following services? Please tick relevant boxes				
		Always	Frequently	Sometimes	Rarely	Never
a	Stop Smoking services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b	Dietitian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c	Alcohol treatment services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d	GP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e Other (Please give more detail and complete same information in space below)						
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19	<b>Do you or any members of your team give oral health advice outside of your practice?</b> <i>For example, schools, nurseries, children's centres etc.</i>	Yes <input type="checkbox"/>	<i>If yes, go to qn. 20</i>
		No <input type="checkbox"/>	<i>If no or don't know, go to qn. 22</i>
		Don't know <input type="checkbox"/>	

20	<b>Which settings do you give oral health advice to?</b> <i>Please tick all that apply</i>	Schools <input type="checkbox"/>
		Nurseries <input type="checkbox"/>
		Children's centres <input type="checkbox"/>
		Nursing / care homes <input type="checkbox"/>
		Others (please write below) <input type="checkbox"/>

21		Please give us some details of how often you deliver group advice, typical turnout at sessions etc.

22 **Have you heard of the document ‘Delivering Better Oral Health: An Evidence-based Toolkit for Prevention’? Please tick**

Yes  No  (If no, go to question 26)

23 **Have you read the document? Please tick**

Yes  No  (If no, go to question 26) Some

24 **Have you adopted the recommendations in your dental practice? Please tick**

Yes  No  Some

25 **Please rate how useful you find each section of the toolkit Please tick relevant boxes**

	Very useful	Useful	Neither	Not useful	Not useful at all
a Chap 2. Principles of toothbrushing for oral health	<input type="checkbox"/>				
b Chap 3. Increasing fluoride availability	<input type="checkbox"/>				
c Chap 4. Healthy eating advice	<input type="checkbox"/>				
d Chap 5. Identifying sugar-free medicines	<input type="checkbox"/>				
e Chap 6. Improving periodontal health	<input type="checkbox"/>				
f Chap 7. Stop smoking guidance	<input type="checkbox"/>				
g Chap 8. Alcohol misuse support	<input type="checkbox"/>				
h Chap 9. Prevention of erosion	<input type="checkbox"/>				

## Attitudes and beliefs about prevention

26 **Please indicate your level of agreement with each of the following statements Please tick relevant boxes**

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
<b>“Dental teams have a role to play in...”</b>					
a Advice on smoking prevention and cessation	<input type="checkbox"/>				
b Advice on alcohol consumption	<input type="checkbox"/>				
c Dietary advice	<input type="checkbox"/>				

27 **To what extent you agree or disagree with the following statements? Please tick relevant boxes**

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
<b>“In the future, the General Dental Service should have a role to play in...”</b>					
a Dental surveys	<input type="checkbox"/>				
b Smoking cessation	<input type="checkbox"/>				
c Alcohol advice	<input type="checkbox"/>				
d Dietary advice	<input type="checkbox"/>				

Please rate the following statements on a scale of one to seven *Please circle relevant numbers*

		Very important					Very unimportant	
30	<b>“For me, providing my patients with prevention is...”</b>	1	2	3	4	5	6	7

31 Please rate the following statements on a scale of one to seven <i>Please circle relevant numbers</i>		Strongly agree					Strongly disagree	
a	<b>“I aim to provide prevention to all my patients”</b>	1	2	3	4	5	6	7
b	<b>“Most of my dental colleagues provide prevention for all of their patients”</b>	1	2	3	4	5	6	7
c	<b>“My patients think, as a dentist, I should use every opportunity to provide them with prevention”</b>	1	2	3	4	5	6	7
d	<b>“I feel confident about practicing prevention if I wanted to”</b>	1	2	3	4	5	6	7

		Very easy					Very difficult	
32	<b>“For me to provide my patients with prevention is...”</b>	1	2	3	4	5	6	7

## Barriers to implementing prevention

33 On a scale of one to seven, to what extent do you agree that the following issues are barriers to effective prevention in your practice? <i>Please circle relevant numbers</i>		Strongly agree					Strongly disagree	
a	Lack of time	1	2	3	4	5	6	7
b	The current remuneration system (or banding system)	1	2	3	4	5	6	7
c	Lack of motivation on my part	1	2	3	4	5	6	7
d	Lack of knowledge on my part	1	2	3	4	5	6	7
e	Lack of training in preventive dentistry	1	2	3	4	5	6	7
f	Poor compliance of prevention by patients	1	2	3	4	5	6	7
g	It is likely to alienate patients	1	2	3	4	5	6	7
h	Lack of confidence on my part	1	2	3	4	5	6	7
i	Lack of belief that prevention works	1	2	3	4	5	6	7
j	Other <i>(please specify in space below and rate to what extent you consider it a barrier)</i>	1	2	3	4	5	6	7

# Knowledge, skills and training needs

34 How would you rate your current knowledge of the evidence base for the following oral health promotion topics? <i>Please tick relevant boxes</i>		Excellent	Good	Average	Fair	Poor
a	Tobacco cessation	<input type="checkbox"/>				
b	Healthy eating	<input type="checkbox"/>				
c	Fissure sealants	<input type="checkbox"/>				
d	Fluoride varnish	<input type="checkbox"/>				
e	Oral hygiene	<input type="checkbox"/>				
f	Alcohol intake	<input type="checkbox"/>				

Please state whether you think the following statements are true or false <i>Please tick</i>	
35	For a 5 year old, the concentration of tooth paste should be 1,000 ppm True <input type="checkbox"/> False <input type="checkbox"/> Don't know <input type="checkbox"/>
36	Sugar consumption should be limited to four times per day True <input type="checkbox"/> False <input type="checkbox"/> Don't know <input type="checkbox"/>
37	Formal training is not necessary to deliver effective tobacco cessation in a dental practice True <input type="checkbox"/> False <input type="checkbox"/> Don't know <input type="checkbox"/>
38	It is recommended that a child's first visit to the dentist be around 3 years old True <input type="checkbox"/> False <input type="checkbox"/> Don't know <input type="checkbox"/>
39	Fluoride varnish should be applied twice a year for all children over the age of 3 True <input type="checkbox"/> False <input type="checkbox"/> Don't know <input type="checkbox"/>

40	<b>Which of the following are your key sources of health promotion knowledge? <i>Please tick all that apply</i></b>	Dental journals <input type="checkbox"/>
		CPD events <input type="checkbox"/>
		Textbooks <input type="checkbox"/>
		CD Rom <input type="checkbox"/>
		Distance learning <input type="checkbox"/>
		Other (please specify below) <input type="checkbox"/>

41	<b>If you would like training on prevention, in which of these formats would you like to receive it? <i>Please tick all that apply</i></b>	CPD events <input type="checkbox"/>
		Textbooks <input type="checkbox"/>
		CD Rom <input type="checkbox"/>
		Distance learning <input type="checkbox"/>
		None <input type="checkbox"/>
		Other (please specify below) <input type="checkbox"/>

42 How useful would you consider the following training topics? Please tick the relevant boxes					
	Very useful	Useful	Neither	Not useful	Not at all useful
a Knowledge on key concepts of prevention	<input type="checkbox"/>				
b Knowledge on evidence-based prevention and recommendations	<input type="checkbox"/>				
c Oral hygiene advice	<input type="checkbox"/>				
d Dietary advice	<input type="checkbox"/>				
e Smoking cessation	<input type="checkbox"/>				
f Alcohol advice	<input type="checkbox"/>				
g Effective communication skills for prevention	<input type="checkbox"/>				
h Current concepts and skills in behaviour change	<input type="checkbox"/>				
i Use of fissure sealants	<input type="checkbox"/>				
j Use of topical fluorides	<input type="checkbox"/>				
k Developing health promotion roles for dental team members	<input type="checkbox"/>				

## Premises, environment and resources

43 Does your practice have a dedicated space for dental prevention? Please tick your answer

Yes

No

Don't know

44 If you have any additional comments that you wish to make regarding prevention in general practice and the future developments in training and practice that you would like to see, you can use this space to do so.

45 Finally, would you and your dental team be interested in taking part in the next stage of this study? Please tick your answer

Yes

No

Maybe / not sure

That is the end of the questionnaire. You can now place it in the enclosed envelope and return it to us.

**Thank you very much for taking the time to complete it, your contribution is appreciated.**

If you have any questions, you can contact us using the details on the information sheet.

Date

**Re: Invitation to participate in a local research study**

I am writing to you to invite you to participate in an exciting research project.

The purpose of this project is to develop a preventive intervention aimed at reducing sugars consumption among young people in primary dental care. Before we can do this, we are asking you and your colleagues across Camden, Islington and Haringey to complete a short questionnaire to help us explore your experience of delivering prevention in dental practice. We understand that there may be challenges in this area of clinical practice, and we hope that you would share your views with us. This will only take around 15 minutes of your time.

This project is funded by the National Institute of Health Research (NIHR), which funds research in the NHS and has full ethical approval from the local Research Ethics Committee. We have enclosed an information sheet, the questionnaire, as well as a self-addressed, freepost envelope in order to minimise any disruption to your busy clinical schedule.

All information gathered from the questionnaire will be anonymised, with no individuals' names or dental practices being identified in any reports. A final report on the project will be submitted to NIHR.

**As a token of our appreciation for your time to complete and return the questionnaire, we will enter your name into a prize draw for dinner for two at The Ivy, a top restaurant in central London.**

Your participation in this project is highly valued and we thank you for your contribution. We would be grateful for a reply by Monday 26<sup>th</sup> September 2011.

If you have any further questions, please do not hesitate to contact me on 0207 679 1996.

We look forward to receiving your questionnaire.

Yours sincerely,



Professor Richard G. Watt BDS PhD MSc FFPH  
Professor & Honorary Consultant in Dental Public Health



**PARTICIPANT INFORMATION SHEET:**

**QUESTIONNAIRE SURVEY WITH DENTISTS**

**Confidential**

***Invitation to participate***

You are being invited to take part in a research project. Before you decide to take part, it is important that you understand why this research is being carried out and what is involved. Please take time to read through the following information carefully and discuss it with others if you wish. If there is anything that is not clear or requires further information, please contact us.

***Project title***

Preventing obesity in young people attending primary dental care settings: an exploratory randomised controlled trial

***What is the research about?***

The Government's recently published White Paper "Healthy lives, healthy people: our strategy for public health in England", outlines a shift in emphasis in the NHS from treatment to prevention. This general change in NHS policy very much fits in with the Steele Review of dental services which also highlighted the importance of developing prevention in general dental services.

This project aims to develop and test a preventive programme in selected general dental practices across north London. Before we can do this, we need to understand better the views and experiences of dentists about prevention. We are therefore planning to conduct a survey in order to explore their experience of delivering prevention in dental practice, the barriers limiting this area of practice and their recommendations on ways of expanding preventive services.

***Why have I been asked to take part?***

We are asking dentists from Camden, Islington and Haringey PCTs to take part in this survey.

***Do I have to take part?***

It is up to you to decide whether or not to take part. If you do decide to take part you should read the rest of this information sheet and then complete and return the questionnaire. If you decide to take part you are still free to withdraw at any time and without giving a reason.

***What will happen to me if I take part?***

If you agree to take part, you should return the completed questionnaire to us.

***What do I have to do?***

You would have to complete the questionnaire and return it to us. A freepost return envelope is provided. The questionnaire will explore dentists' views and attitudes on preventive activities in their surgeries as well as any potential training needs.

***What are the possible disadvantages of taking part?***

A disadvantage of being part of this project is the time involved in completing the questionnaire. However, it should only take around 15 minutes to complete.

***What are the benefits of taking part?***

The information gathered from these questionnaires will help us develop and evaluate a preventive intervention. Should our study demonstrate beneficial effects of the intervention, preventive recommendations will then be developed and disseminated to other dentists across England. At the end of the project a summary report will be sent to all participants outlining the key findings of the study.

A freepost return envelope is provided. Entry into a prize draw of dinner for two at The Ivy will also be offered to study participants as a token of thanks for their time.

***Will my taking part in this project be kept confidential?***

All the information you give us will be held in the strictest confidence and will only be available to those directly involved in the research. We will not put your name on any of the reports of the project.

***What will happen to the results of the research project?***

The results of this project will provide valuable information on ways in which dentists and their staff perceive health promotion and implement it in every day practice. You will not be identified in any way in any publications or reports printed or published as part of this research. A final report will be sent to the local ethics committee, Primary Care Trusts and funding body. A summary of the results will also be sent to all dental professionals involved in the study.

***Who is organising and funding the research?***

This research is being conducted by the Department of Epidemiology and Public Health at University College London. The funding for the research has been provided by the National Institute for Health Research (NIHR).

***Who has reviewed this project?***

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This research was reviewed by the **Camden and Islington Community Health Service Research Ethics Committee**. It has also been reviewed by independent external experts appointed by the National Institute of Health Research.

***Further information***

Should you require further information regarding this research, please contact: Professor Richard Watt, Department of Epidemiology and Public Health, UCL, 1-19 Torrington Place, London WC1E 6BT. Telephone: 020 7679 1699 or 020 7679 1703.

Thank you for taking time to read this summary.

You do not have to take part in this project if you do not want to.

Date: 04/07/2011

Version: 02

## Appendix 8

Dental Practice Name  
Address  
Post code  
Date

Dear Mr .....,

### **Re: Invitation to participate in group discussion**

I am writing to you to invite you to participate in a group discussion that aims to explore dentists and their team members' views and attitudes towards prevention in general dental practice.

We plan to hold two focus groups with dentists and another two separate focus groups with dental care professionals (DCPs) working in the Islington area.

These group discussions are part of a wider research project funded by the National Institute of Health Research (NIHR) which has full ethical approval from the local Ethics and Research and Development committees.

We will organise the focus groups at a time and venue that is most suitable for you to minimise any disruption to your busy clinical schedule. The session will take approximately an hour but we will reimburse you a full sessional fee calculated at the Dental Guild Rate (£265) for your participation. We will also reimburse any DCPs involved in the group discussions at £100 each.

All the comments and information gathered in the group discussions will be anonymised, with no individuals' names or dental practices being identified in any subsequent reports. A final report on the overall project will be submitted to NIHR and to NHS Islington who are also supporting this work.

In a few days' time we will telephone you to provide any additional information you might require and to hopefully arrange a suitable date and venue for the group discussion.

Yours sincerely,

Professor Richard G. Watt BDS PhD MSc FFPH  
Professor & Honorary Consultant in Dental Public Health

### **PARTICIPANT INFORMATION SHEET:**

#### **GROUP DISCUSSIONS WITH DENTISTS AND THEIR TEAMS**

##### **Confidential**

##### ***Invitation to participate***

You are being invited to take part in a research project. Before you decide to take part, it is important that you understand why this research is being carried out and what is involved. Please take time to read through the following information carefully and discuss it with others if you wish. If there is anything that is not clear or requires further information, please ask.

##### ***Project title***

Preventing obesity in young people attending primary dental care settings: an exploratory randomised control trial

##### ***What is the research about?***

The Government's recently published White Paper "Healthy lives, healthy people: our strategy of public health in England", outlines a shift in emphasis in the NHS from treatment to prevention. This general change in NHS policy very much fits in with the Steele Review of dental services which also highlighted the importance of developing prevention in general dental services.

The overall aim of this project is to develop and test a preventive programme in selected general dental practices across north London. Before we can develop and implement a preventive programme we need to understand better the views and experiences of dentists about prevention. We are therefore planning to conduct initial group discussions with dentists and their team members to explore their attitudes and experiences with regards prevention.

##### ***Why have I been asked to take part?***

We are asking dentists and their teams from selected surgeries in Islington PCT to take part in this component of the study.

##### ***Do I have to take part?***

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

##### ***What will happen to me if I take part?***

If you agree to take part, you will be asked to join in a group discussion that will last no longer than 60 minutes. There will be separate focus groups for dentists and separate ones for other dental care professionals, each comprising of between 6-10 participants.

##### ***What do I have to do?***

The group discussions will take place in a convenient local venue. The discussions will explore dental teams' views and attitudes towards preventive activities in their surgeries.

##### ***What are the possible disadvantages of taking part?***

A disadvantage of being part of this project is the time and hassle involved in being involved in the group discussions. We will make every effort to arrange the discussions at a convenient time to minimise any disruptions to your busy routines.

***What are the benefits of taking part?***

Travel expenses will be paid for any individual involved in the group discussions. At the end of the project everyone who has been involved will be sent a summary of the project results.

***Will my taking part in this project be kept confidential?***

All the information you give us will be held in the strictest confidence and will only be available to those involved in the research. We will not put your name on any of the reports of the project.

***What will happen to the results of the research project?***

The results of this project will provide valuable information on ways in which dentists and their staff perceive health promotion and implement it in every day practice. You will not be identified in any way in any publications or reports printed or published as part of this research. A final report will be given to the local ethics committee, Primary Care Trusts and funding body. A summary of the results will also be sent to all dental care professionals involved in the study.

***Who is organising and funding the research?***

This research is being conducted by the Department of Epidemiology and Public Health at University College London. The funding for the research has been provided by the National Institute for Health Research (NIHR).

***Who has reviewed this project?***

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This research was reviewed by the **Camden and Islington Community Health Service Research Ethics Committee**. It has also been reviewed by independent external experts appointed by the National Institute of Health Research.

***Further information***

Should you require further information regarding this research, please contact: Professor Richard Watt, Department of Epidemiology and Public Health, UCL, 1-19 Torrington Place, London WC1E 6BT. Telephone: 020 7679 1699 or 020 7679 1703.

Thank you for taking time to read this summary. You will be given a copy of this form and a copy of the consent form should you agree to participate.

You do not have to take part in this project if you do not want to. If you decide to take part you may withdraw at any time without having to give a reason.

Date: 11<sup>th</sup> April 2011

Version: 01



## DENTISTS AND DENTAL CARE PROFESSIONALS' CONSENT FORM: FOCUS GROUP: ATTITUDES TOWARDS PREVENTION

### Study title

Preventing obesity in young people attending primary dental care settings: an exploratory randomised controlled trial.

### Investigator

Prof Richard Watt; Department of Epidemiology & Public Health, University College London

**Please tick box**

1. I confirm that I have read and understand the information sheet dated 11/04/2011 (version 1) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
  
2. I understand that my participation is voluntary and that I am free to leave the group at any time without giving a reason
  
3. I understand that none of my experiences or thoughts will be shared by anyone outside of the research team, unless all identifiable information is removed first.
  
4. I agree to be tape-recorded during this focus group discussion
  
5. I agree to take part in the above study

\_\_\_\_\_  
Name of health professional

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name of researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

## **Topic Guide for Focus Groups with Dental Teams**

### *(1) Introductions*

- Personal introductions
- Briefly recap on study details and purpose of group discussion (refer to information sheet)
- Recap on confidentiality and study reporting details
- Ensure all signed consent form

### *(2) General opening discussion (warming up exercise)*

- Discuss with participants their respective roles and responsibilities in dental practice
- Discuss participant's views on nature of patient's clinical needs using this dental practice

### *(3) Opening discussion on participants' general views on prevention in general dental practice*

- Discuss overall importance of prevention within a general dental practice setting
- What opportunities exist for prevention in their routine daily work?
- Who is responsible within the dental team for prevention? – explore roles and responsibilities of team members
- Do they link with other health professionals and public health teams in terms of prevention?

### *(4) Barriers to providing prevention in dental practices*

- Explore participants' general views on the barriers and obstacles limiting prevention
- What are the main obstacles they face?

### *(5) Ways of developing preventive role within dental practices*

- What can be done to further develop preventive activities?
- Explore views on the value of providing:
  - tailored preventive resources for teams and patients;
  - training programmes for dental teams;
  - improved links with other professionals in primary care, public health etc
  - other support

### *(6) Other issues*

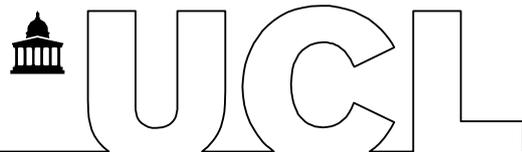
- Check if any other important and relevant issues have been missed out

### *(7) Closing Up*

- Thanks to all participants
- Recap on confidentiality
- Explain details of claiming Guild Rate fee etc



North Central London

**PARTICIPANT INFORMATION SHEET:****GROUP DISCUSSIONS WITH PARENTS/GUARDIANS****Confidential*****Invitation to participate***

You are being invited to take part in a research project. Before you decide to take part, it is important that you understand why this research is being carried out and what is involved. Please take time to read through the following information carefully and discuss it with others if you wish. If there is anything that is not clear or requires further information, please ask.

***Project title***

Preventing obesity in young people attending primary dental care settings: an exploratory focus group with parents

***What is the research about?***

Obesity in young people is a major problem in the UK. Being overweight or obese is harmful to young people's health and is linked to serious diseases in later adult life. More research is needed to understand how best young people can be helped to avoid becoming overweight. One of the causes of obesity is when young people eat and drink too many sugary items such as fizzy drinks. Despite the best efforts of parents/guardians it is often very difficult to get young people to eat the recommended foods and drinks. Dentists and their staff see many young people on a regular basis and could help with advising young people on their eating habits.

Before any support can be offered by dentists and their staff it is important to find out from the parents/guardians of young people what help they need. Talking to the parents/guardians of young people about this issue will provide valuable information in designing support. The aim of this study is to hold group discussions with parents/guardians and young people to assess their views of a new approach in advising young people about their eating habits. The information gathered in these discussions will be used in a later stage of the project to design the best way of advising young people to reduce their intake of fizzy drinks.

***Why have I been asked to take part?***

We are asking parents/guardians of young people attending the dental surgeries involved in this study to take part.

***Do I have to take part?***

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a

decision not to take part, will not affect in any way the care and treatment you or your child receives from your dentist.

***What will happen to me if I take part?***

If you agree to take part, you will be asked to join in a group discussion that will last no longer than 60 minutes. There will be between 6 and 10 other parents/guardians in each group. We also will hold separate group discussions with young people to hear their views.

***What do I have to do?***

The group discussions will take place in a convenient local venue. The discussions will explore parents/guardians views of the causes of overweight amongst young people and discuss the ways in which dentists and their staff could help young people to reduce their fizzy drinks consumption.

***What are the possible disadvantages of taking part?***

A disadvantage of being part of this project is the time and hassle involved in being involved in the group discussions. We will make every effort to arrange the discussions at a convenient time to minimise any disruptions to your busy routines.

***What are the benefits of taking part?***

Travel expenses will be paid for any individual involved in the group discussions. At the end of the project everyone who has been involved will be sent a summary of the project results and a leaflet on nutrition for young people.

***Will my taking part in this project be kept confidential?***

All the information you give us will be held in the strictest confidence and will only be available to those involved in the research. We will not put your name on any of the reports of the project.

***What will happen to the results of the research project?***

The results of this project will provide valuable information on ways in which dentists and their staff can advise young people on reducing their consumption of sugary fizzy drinks. You will not be identified in any way in any publications or reports printed or published as part of this research. A final report will be given to the local ethics committee, Primary Care Trusts and other agencies involved with the health and well being of young people. A summary of the results will also be sent to all parents/guardians and young people involved in the study.

***Who is organising and funding the research?***

This research is being conducted by the Department of Epidemiology and Public Health at University College London. The funding for the research has been provided by a Government agency called the National Institute of Health Research (NIHR).

***Who has reviewed this project?***

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This research was reviewed by the **Camden and Islington Community Health Service Research Ethics Committee**. It has also been reviewed by independent external experts appointed by the National Institute of Health Research.

***Further information***

Should you require further information regarding this research, please contact: Professor Richard Watt, Department of Epidemiology and Public Health, UCL, 1-19 Torrington Place, London WC1E 6BT. Telephone: 020 7679 1699 or 020 7679 1703.

Thank you for taking time to read this summary. You will be given a copy of this form and a copy of the consent form should you agree to participate.

You do not have to take part in this project if you do not want to. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether to take part or not will not affect you or your child's dental care and treatment.

Date: 9<sup>th</sup> March 2010

Version: 02



North Central London

**PARTICIPANT INFORMATION SHEET:****GROUP DISCUSSIONS WITH YOUNG PEOPLE****Confidential*****Invitation to participate***

You are being invited to take part in a research project. Before you decide to take part, it is important that you understand why this research is being carried out and what is involved. Please take time to read through the following information carefully and discuss it with others if you wish. If there is anything that is not clear or requires further information, please ask.

***Project title***

Preventing obesity in young people attending primary dental care settings: an exploratory focus group with parents

***What is the research about?***

Obesity in young people is a major problem in the UK. Being overweight is harmful to young people's health and is linked to serious diseases in later adult life. More research is needed to understand how best young people can be helped to avoid becoming overweight. One of the causes of obesity is when young people eat and drink too many sugary items such as fizzy drinks. Cutting down on the amount of sugary foods and drinks is not easy. Dentists and their staff see many young people on a regular basis and could help with advising young people on their eating habits.

Before any support can be offered by dentists and their staff it is important to find out from young people what help they need. Talking to young people about this issue will provide valuable information in designing support. The aim of this study is to hold group discussions with young people to assess their views of a new approach in advising them on their eating habits. The information gathered in these discussions will be used in a later stage of the project to design the best way of advising young people to reduce their intake of fizzy drinks.

***Why have I been asked to take part?***

We are asking young people attending the dental surgeries involved in this study to take part.

***Do I have to take part?***

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect in any way the care and treatment you receive from your dentist.

***What will happen to me if I take part?***

If you agree to take part, you will be asked to participate in a group discussion that will last no longer than 60 minutes. There will be between 6 and 10 other young people in each group. We also will hold separate group discussions with parents/guardians of young people to hear their views.

***What do I have to do?***

The group discussions will take place in a convenient local venue. The discussions explore young people's views of the causes of overweight and explore the ways in which dentists and their staff could help young people to reduce their fizzy drinks consumption.

***What are the possible disadvantages of taking part?***

A disadvantage of being part of this project is the time and hassle involved in being involved in the group discussions. We will make every effort to arrange the discussions at a convenient time to minimise any disruptions to your busy routines.

***What are the benefits of taking part?***

At the end of the project everyone who has been involved will be sent a summary of the project results and a leaflet on nutrition for young people.

***Will my taking part in this project be kept confidential?***

All the information you give us will be held in the strictest confidence and will only be available to those involved in the research. No information disclosed during the discussions will be given to your parents/guardians or teachers. We will not put your name on any of the reports of the project.

***What will happen to the results of the research project?***

The results of this project will provide valuable information on ways in which dentists and their staff can advise young people on reducing their consumption of sugary fizzy drinks. You will not be identified in any way in any publications or reports printed or published as part of this research. A final report will be given to the local ethics committee, Primary Care Trusts and other agencies involved with the health of young people.

***Who is organising and funding the research?***

This research is being conducted by the Department of Epidemiology and Public Health at University College London. The funding for the research has been provided by a Government agency called the National Institute of Health Research (NIHR).

***Who has reviewed this project?***

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This research was reviewed by the **Camden and Islington Community Health Service Research Ethics Committee**. It has also been reviewed by independent external experts appointed by the National Institute of Health Research.

***Further information***

Should you require further information regarding this research, please contact: Professor Richard Watt, Department of Epidemiology and Public Health, UCL, 1-19 Torrington Place, London WC1E 6BT. Telephone: 020 7679 1699 or 020 7679 1703.

UCL Department of Epidemiology and Public Health  
University College London 1-19 Torrington Place London WC1E 6BT  
Tel: +44 (0)20 7679 1699 Fax: +44 (0)20 7813 0280  
[r.watt@ucl.ac.uk](mailto:r.watt@ucl.ac.uk), [www.ucl.ac.uk/dph](http://www.ucl.ac.uk/dph)

Thank you for taking time to read this summary. You will be given a copy of this form and a copy of the consent form should you agree to participate.

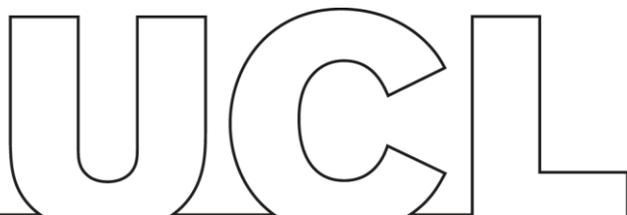
You do not have to take part in this project if you do not want to. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether to take part or not will not affect your dental care and treatment.

Date: 9<sup>th</sup> March 2010

Version: 02



North Central London



## CONSENT FORM: FOCUS GROUP PARENT/GUARDIAN

### Study title

Preventing obesity in young people attending primary dental care settings: an exploratory focus group with parents/guardians

### Investigator

Prof Richard Watt; Department of Epidemiology & Public Health, University College London

**Please tick box**

1. I confirm that I have read and understand the information sheet dated 09/03/2010 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason.
3. I agree to take part in the above study.

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

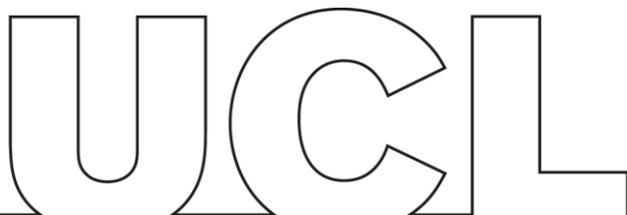
\_\_\_\_\_  
Name of researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature



North Central London



## CONSENT FORM: FOCUS GROUP YOUNG PEOPLE

### Study title

Preventing obesity in young people attending primary dental care settings: an exploratory focus group with young people

### Investigator

Prof Richard Watt; Department of Epidemiology & Public Health, University College London

**Please tick box**

1. I confirm that I have read and understand the information sheet dated 09/03/2010 (version 2) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason.
3. I agree to take part in the above study.

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name of researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

## **Topic Guides for Focus Groups with Young People and Parents**

### **Assessing acceptability to young people and their parents of the proposed intervention**

#### Topics:

- significance of obesity amongst young people locally
- causes of obesity amongst young people including the role of soft drinks consumption
- acceptability of dental practices as a setting to implement an obesity intervention
- suggestions on best ways of helping young people to change their behaviours (dietary & physical activity)
- Effective motivators and incentives for young people

#### **PARENT FOCUS GROUPS**

##### *(1) Introductions*

- Personal introductions
- Ice-breaker
- Briefly recap on study details and purpose of group discussion (refer to information sheet)
- Recap on confidentiality and study reporting details
- Ensure all signed consent form

##### *(2) General opening discussion (warming up exercise)*

- Discuss participant's views on the significance of obesity among young people locally – is it an issue in their neighbourhood, their school etc.?

##### *(3) Causes of obesity amongst young people*

- Explore views on what contributes to children/teenagers becoming obese
  - Foods and drinks (prompt for the role of soft drinks if needed)
  - Activity
  - Other causes

- What can other teenagers do to maintain/reach a healthy weight?
- What are the barriers and obstacles for teenagers maintaining a healthy weight?

*(4) Acceptability of dental practices as a setting for obesity intervention*

- Who can / should support teenagers to achieve a healthier weight?
- What is the role of health professionals in supporting teens?
- Do their children visit their dentist regularly? How do their children feel about going to the dentist?
- Do their children receive advice about their eating habits from the dentist?
- Can they see the link between oral health and weight?
- Do they see it as an appropriate environment for a weight management intervention for teenagers?
- Would their children follow advice about diet etc. from dentists or dental nurses at home? Would parents encourage them to follow this advice?
- What are the barriers/challenges to using a dental setting for an adolescent weight management intervention?
- Practicalities – how long should sessions be? Etc.

*(5) suggestions on best ways of helping young people to change their dietary & physical activity behaviours?*

- What would help get the message across?
- What would encourage them to pay attention / follow advice at home?
- What could be done to make it interesting?
- What incentives could be used to motivate teenagers to stick to their goals?

*(6) Other issues*

- Check if any other important and relevant issues have been missed out

*(7) Closing Up*

- Thanks to all participants
- Recap on confidentiality
- Explain details of incentive for taking part

## **Topic Guides for Focus Groups with Young People**

### **Assessing acceptability to young people and their parents of the proposed intervention**

Topics:

- significance of obesity amongst young people locally
- causes of obesity amongst young people including the role of soft drinks consumption
- acceptability of dental practices as a setting to implement an obesity intervention
- suggestions on best ways of helping young people to change their behaviours (dietary & physical activity)
- Effective motivators and incentives for young people

#### **YOUNG PEOPLE FOCUS GROUPS**

*(1) Introductions*

- Personal introductions
- Ice-breaker
- Briefly recap on study details and purpose of group discussion (refer to information sheet)
- Recap on confidentiality and study reporting details
- Ensure all signed consent form (parents?)
- Ground rules about speaking etc.

*(2) General opening discussion (warming up exercise)*

- Appropriate warm-up for adolescents – hobbies, interests, food/exercise related?
- Discuss participant's views on the significance of obesity among young people locally – is it an issue in their neighbourhood, their school etc.?

*(3) Causes of obesity amongst young people*

- Explore views on what contributes to others becoming obese

- Foods and drinks (prompt for the role of soft drinks if needed)
- Activity
- Other causes
- What can teenagers do to maintain/reach a healthy weight?
- What are the barriers and obstacles for teenagers maintaining a healthy weight?  
Why do some people find it hard?

*(4) Acceptability of dental practices as a setting for obesity intervention*

- Who can / should support teenagers to achieve a healthier weight?
- What is the role of health professionals in supporting teens? Which health professionals can support this?
- Who visits their dentist regularly? How do they feel about going to the dentist?
- What type of advice do they receive from their dentist about their eating habits?
- Can they see the link between oral health and weight?
- Would they follow advice about diet etc. from dentists or dental nurses at home?
- What are the barriers to using a dental setting for a weight management intervention?
- Practicalities – how long should sessions be? Etc.

*(5) suggestions on best ways of helping young people to change their dietary & physical activity behaviours?*

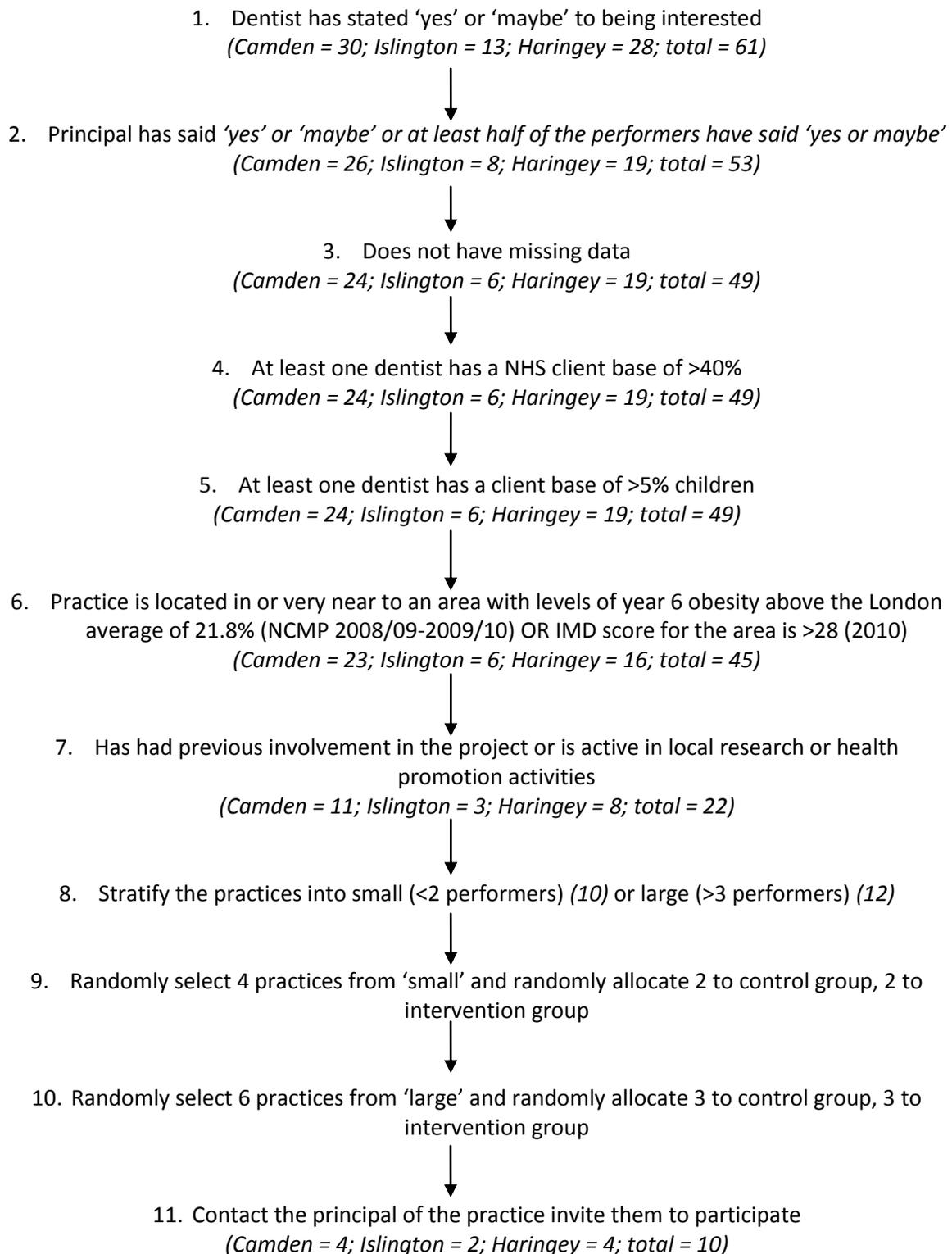
- What would help get the message across?
- What would encourage teenagers to pay attention / follow advice at home?
- What could be done to make it interesting?
- Would they prefer 'talking' or an 'activity' such as a written activity? (views on paperwork/form-filling in general)
- What incentives could be used to motivate teenagers to stick to their goals?
- How can we continue to encourage young people after the face-to-face contact has stopped, for example, text messages or websites?

*(6) Other issues*

- Check if any other important and relevant issues have been missed out

*(7) Closing Up*

- Thanks to all participants
- Recap on confidentiality
- Explain details of incentive for taking part

**Randomisation of GDPs into intervention and control groups**



## SWITCH SCREENING QUESTIONNAIRE

1. What is your date of birth? \_\_\_\_\_

2. Are you....?

Male       Female

3. How often do you drink the following drinks? (*please tick*)

	Less than once a day	Once a day	2 – 3 times a day	4 - 5 times a day	More than this
<b>1. Regular fizzy drinks</b> <i>e.g. Mountain Dew, Vimto or similar</i>	<input type="checkbox"/>				
<b>2. Diet or low calorie fizzy drinks</b> <i>e.g. Pepsi Max, Coke Zero or similar</i>	<input type="checkbox"/>				
<b>3. Sports drinks &amp; energy drinks</b> <i>e.g. Lucozade, Monster, Red Bull or similar</i>	<input type="checkbox"/>				
<b>4. Squash or flavoured water</b>	<input type="checkbox"/>				
<b>5. Fruit Juice drinks</b> <i>e.g. Rubicon, KA, Fruit Shoot or similar</i>	<input type="checkbox"/>				
<b>6. Other</b> (please write below): _____	<input type="checkbox"/>				

4. Are you on any special diet for medical reasons? E.g. gluten-free, dairy or lactose free

Yes    If yes, please give more detail \_\_\_\_\_

No

5. Would you be interested in taking part in a programme that may help to improve your eating habits?

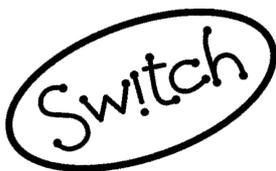
Yes       No

6. Do you have any medical conditions (such as diabetes, digestive disorders, medically diagnosed food allergies, eating disorders etc.)?

Yes    If yes, please give more detail \_\_\_\_\_

No

<b>Young person's name</b>	
<b>Parent's name</b>	
<b>Address</b>	
<b>Telephone / mobile number</b>	
<b>Email address</b>	



**INFORMATION SHEET:**  
**EVALUATION OF DIETARY ADVICE**

**Confidential**

***Invitation to participate***

You are being invited to take part in a research project. Before you decide to take part, it is important that you understand why this research is being carried out and what is involved. Please take time to read through the following information carefully and discuss it with others if you wish. If there is anything that is not clear or requires further information, please ask.

***Project title***

Preventing obesity in young people attending primary dental care settings: a randomised controlled trial.

***What is the research about?***

Obesity in young people is a major problem in the UK. Being overweight is harmful to young people's health and is linked to serious diseases in later adult life. More research is needed to understand how best young people can be helped to avoid becoming overweight. One of the causes of obesity is when young people eat and drink too many sugary items such as fizzy drinks. Cutting down on the amount of sugary foods and drinks is not easy. Dentists and their staff see many young people on a regular basis and their practices could be used to provide advice to young people on their eating habits. Research is needed to assess the impact of dietary advice in dental practices.

The aim of this study is to develop and test the effect of providing dietary advice to young people attending dental practices across Islington, Camden and Haringey

***Why have I been asked to take part?***

We are asking young people attending the dental surgeries involved in this study to take part.

***Do I have to take part?***

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect in any way the care and treatment you receive from your dentist.

***What will happen to me if I take part?***

Sometimes because we do not know which way of helping people is best, we need to make comparisons. Young people attending dentists in the study areas will be put into

groups and then compared. The groups are selected by a computer which has no information about the individual ie by chance. Individuals in each group will have different support given to them. One group will receive the standard preventive advice from their dentist. The second group will receive a package of newly developed nutritional advice delivered by a trained researcher. Every young person agreeing to become involved in the project has an equal chance of being in the group given the extra support by the research team.

The researchers at the dental surgeries where the dietary advice and support will be delivered will provide this to the young people over four appointments in a one-month period. The researchers providing the advice will be specially trained for this purpose.

All young people in the project will have their heights, weights and waist circumference measured and will be asked to provide 4 dietary records. This information will be collected at the start of the study and then 6 months later.

***What do I have to do?***

Young people who become involved in this project do not have to make any special visits to their doctor or the hospital. All the information collected in this project will be during visits to the dentists or during specially arranged home visits.

***What are the possible disadvantages of taking part?***

A disadvantage of being part of this project is the time and hassle involved in being involved. We will make every effort to arrange appointments at a convenient time to minimise any disruptions to your busy routines.

***What are the benefits of taking part?***

Young people receiving the package of newly developed nutritional advice will be given to up to date dietary information. The young people attending the other dental surgeries will still receive the usual preventive advice from their dentists.

All young people will be offered a £10 gift token at the 6 month follow up appointment as a gesture of thanks for their participation. At the end of the project all the young people and their parents/guardians will be sent a summary of the study findings and a leaflet on nutrition.

***Will my taking part in this project be kept confidential?***

All the information you give us will be held in the strictest confidence and will only be available to those involved in the research.

***What will happen to the results of the research project?***

The results of this project will provide valuable information on ways in advice can be given to young people on reducing their consumption of sugary fizzy drinks in dental surgeries. You will not be identified in any way in any publications or reports printed or published as part of this research. A final report will be given to the local ethics

committee, Primary Care Trusts and other agencies involved with the health of young people.

***Who is organising and funding the research?***

This research is being conducted by the Department of Epidemiology and Public Health at University College London. The funding for the research has been provided by a Government agency called the National Institute of Health Research (NIHR).

***Who has reviewed this project?***

All proposals for research using human subjects are reviewed by an ethics committee before they can proceed. This research was reviewed by the **Camden and Islington Community Health Service Research Ethics Committee**. It has also been reviewed by independent external experts appointed by the National Institute of Health Research.

***Further information***

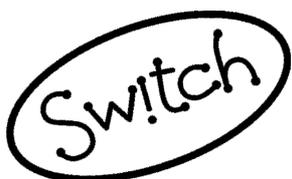
Should you require further information regarding this research, please contact: Professor Richard Watt, Department of Epidemiology and Public Health, UCL, 1-19 Torrington Place, London WC1E 6BT. Telephone: 020 7679 1699 or 020 7679 1703.

Thank you for taking time to read this summary. You will be given a copy of this form and a copy of the consent form should you agree to participate.

You do not have to take part in this project if you do not want to. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether to take part or not will not affect your dental care and treatment.

Date: 19<sup>th</sup> December 2011

Version: 03



**PARENTAL INFORMATION SHEET:**  
**EVALUATION OF DIETARY ADVICE**

**Confidential**

***Invitation to participate***

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Preventing obesity in young people attending primary dental care settings: a randomised controlled trial.

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Obesity in young people is a major problem in the UK. Being overweight is harmful to young people's health and is linked to serious diseases in later adult life. More research is needed to understand how best young people can be helped to avoid becoming overweight. One of the causes of obesity is when young people eat and drink too many sugary items such as fizzy drinks. Despite the best efforts of parents/guardians it is often very difficult to get young people to eat the recommended foods and drinks. Dentists and their staff see many young people on a regular basis and their practices could be used to provide advice to young people on their eating habits. Research is needed to assess the impact of dietary advice in dental practices.

The aim of this study is to develop and test the effect of providing dietary advice to young people attending dental practices across Islington, Camden and Haringey.

***Why have I been asked to take part?***

We are asking parents/guardians of young people attending the dental surgeries involved in this study to take part.

***Do I have to take part?***

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect in any way the care and treatment you or your child receives from your dentist.

***What will happen to me if I take part?***

Sometimes because we do not know which way of helping people is best, we need to make comparisons. Young people attending dentists in the study areas will be put into

groups and then compared. The groups are selected by a computer which has no information about the individual ie by chance. Individuals in each group will have different support given to them. One group will receive the standard preventive advice from their dentist. The second group will receive a package of newly developed nutritional advice delivered by a trained researcher . Every young person agreeing to become involved in the project has an equal chance of being in the group given the extra support by the research team.

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Young people who become involved in this project do not have to make any special visits to their doctor or the hospital. All the information collected in this project will be during visits to the dentists or during specially arranged home visits.

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***Will my taking part in this project be kept confidential?***

All the information you give us will be held in the strictest confidence and will only be available to those involved in the research.

***What will happen to the results of the research project?***

The results of this project will provide valuable information on ways in which advice can be given to young people on reducing their consumption of sugary fizzy drinks in dental surgeries. You or your child will not be identified in any way in any publications or reports printed or published as part of this research. A final report will

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***Who is organising and funding the research?***

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***Further information***

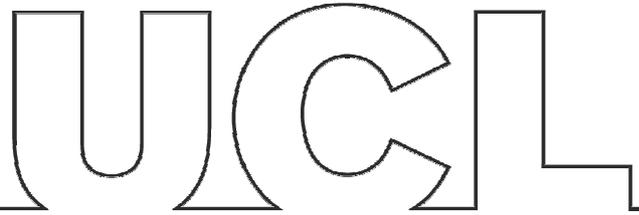
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Thank you for taking time to read this summary. You will be given a copy of this form and a copy of the consent form should you agree to participate.

You do not have to take part in this project if you do not want to. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether to take part or not will not affect you or your child's dental care and treatment.

Date: 19<sup>th</sup> December 2011

Version: 03



North Central London

## PARENTAL CONSENT FORM: TRIAL

### Study title

Preventing obesity in young people attending primary dental care settings: a randomised controlled trial

### Investigator

Prof Richard Watt; Department of Epidemiology & Public Health, University College London

Please tick box

1. I confirm that I have read and understand the information sheet dated 19/12/2011 (Version 3) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I realize that my child's participation in this study will involve him/her having their weight, height and waist circumference measured.
3. I understand that my child's participation is voluntary and that he/she is free to withdraw at any time, without giving a reason.
4. I confirm that my child is aged between 12-14 years, is not on a special diet due to medical problems and is not suffering from a serious medical problem or eating disorder.
5. I agree for my child to take part in the above study.

\_\_\_\_\_  
Name of young person

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name of parent/guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

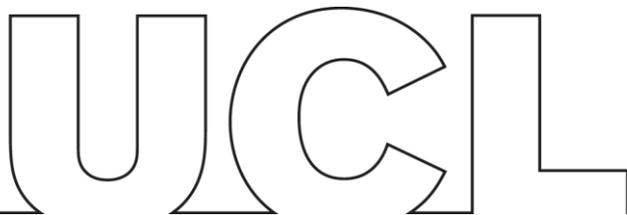
\_\_\_\_\_  
Name of researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature



North Central London



## CONSENT FORM: TRIAL YOUNG PEOPLE

### Study title

Preventing obesity in young people attending primary dental care settings: a randomised controlled trial

### Investigator

Prof Richard Watt; Department of Epidemiology & Public Health, University College London

**Please tick box**

1. I confirm that I have read and understand the information sheet dated 19/12/2011 (Version 3) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I realize that my participation in this study will involve me having my weight,height and waist circumference measured.
3. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason.
4. I confirm that I am aged between 11-16 years,; not on a special diet due to medical problems and not suffering from a serious medical problem or eating disorder
5. I agree to take part in the above study.

\_\_\_\_\_  
Name of participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name of researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

# Measurement Protocols

Weight measurements (adjusted from Seca manual and LIDNS protocol)

## A. THE EQUIPMENT

The scales used for this study are [Seca 899](#).

The reading is only in metric units, but if the participant would like to know their weight in stones a conversion chart will also be available.

The scales have an inbuilt memory which stores the weight for 10 minutes. If during this time you weigh another object that differs in weight by less than 500 grams (about 1lb), the stored weight will be displayed and not the weight that is being measured. This means that if you weigh someone else during this time, you could be given the wrong reading for the second person.

So if you get an identical reading for a second person, make sure that the memory has been cleared. Clear the memory from the last reading by weighing an object that is more than 500 grams lighter (ie a pile of books, your briefcase or even the stadiometer). You will then get the correct weight when you weigh the second respondent.

You will only need to clear the memory in this way if:

- a) You have to have a second or subsequent attempt at measuring the same person
- b) Two respondents appear to be of a very similar weight
- c) Your reading for a respondent is identical to the reading for another respondent whom you have just weighed.

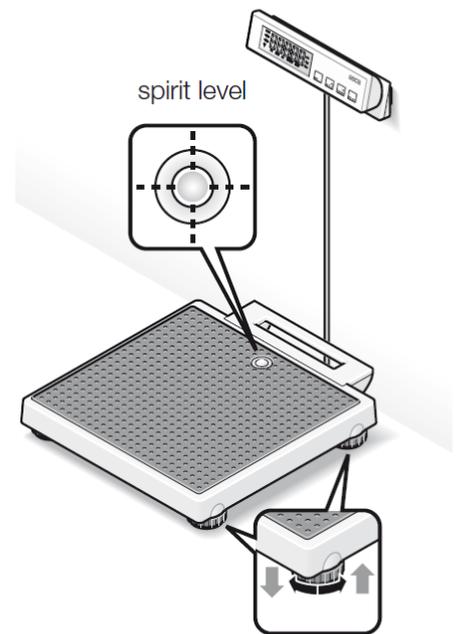
## B. THE PROTOCOL

### Setting up and aligning the scale

The screwed feet can be used to level off any slight unevenness in the floor.

- Place the scale on a level surface.
- Align the scale by screwing the foot screws. The air bubble in the spirit level must be right in the centre of the circle.
- Ensure that only the feet of the scale are in contact with the floor. The scale may not be in contact at any other point.

**Important: The alignment of the base of the scale must be checked and corrected if necessary every time the location of the scale is changed.**



The scales should also be calibrated regularly with a known weight

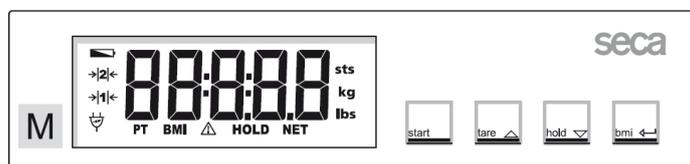
### Operating the scale

1. Press the Start key with no load on the scale.

**SECA, 88.888** and **0.0** appear consecutively in the display.

The scale is then automatically set to zero and ready to use.

If this is not displayed check the batteries.



-  Switch scale on and off
-  set display to zero, activate/deactivate tare function in function menu → increase value
-  activate/deactivate hold function in function menu → decrease value
-  Activating the BMI function, Confirmation

2. Ask the respondent to remove shoes, heavy outer garments such as jackets and cardigans, heavy jewellery, loose change and keys. Ideally the respondent should have also emptied their bladder before the measurement takes place
3. Ask the respondent to stand with their feet together in the centre and their heels against the back edge of the scales. Arms should be hanging loosely at their side head facing forward. Ensure that they keep looking ahead - it may be tempting for the respondent to look down at their weight reading. Ask them not to do this and assure them that you will tell them their weight afterwards if they want to know. The posture of the respondent is important. If they stand to one side, look down, or do not otherwise have their weight evenly spread, it can affect the reading. If the respondent moves excessively while the scales are stabilising you may get a false reading. If you think this is the case reweigh, but first ensure that you have erased the memory.
4. Read the weighing result off the digital display. – If a load greater than 200 kg is placed on the scale, **STOP** appears in the display.
5. The scales have been calibrated in kilograms and 100 gram units (0.1 kg). Record the reading on the data recording sheet.
6. To switch off the scale, press the Start key again.
7. Take two consecutive measurements
8. To account for clothing 1kg will be deducted from the participants during the winter months and 0.5kg during the summer months (June-August?)
9. Take two measurements and record the mean

### **WARNING**

The maximum weight registering accurately on the scales is 200kg (SECA 899). If you think the respondent exceeds this limit code them as “Weight not attempted”. Do not attempt to weigh them.

### **Additional Points**

If you are using scales that have the read out on a handset, it is possible that skirts, coats and legs can obstruct the beam between the receiver and the transmitter and prevent a reading. Try to ensure that the respondent and their clothing are positioned so as to avoid this.

## Weighing Children

In most cases it will be possible to measure children's weight following the protocol set out for adults. However, if accurate readings are to be obtained, it is very important that respondents stand still. Ask the child to stand perfectly still - "Be a statue."

## Height Measurements (adjusted from LIDNS and Scottish Heath Survey protocols)

### THE EQUIPMENT

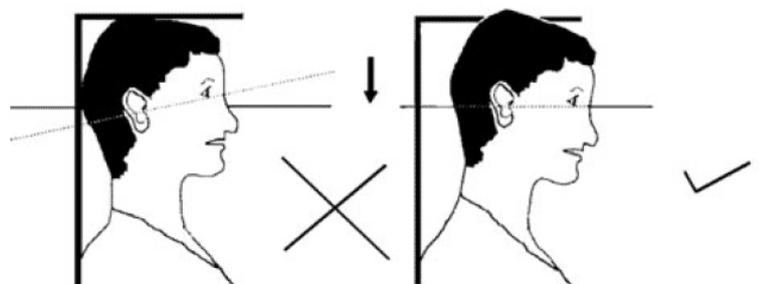
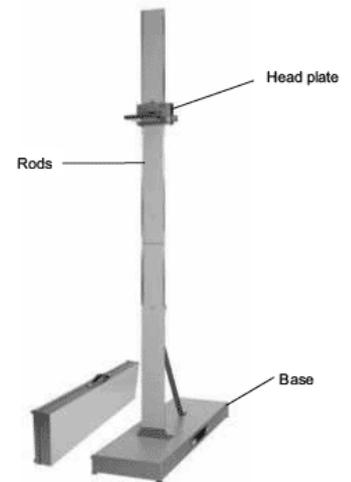
A portable stadiometer will be used. It is a collapsible device with a sliding head plate, a base plate and three connecting rods marked with a measuring scale.

Frankfort plane card

### THE PROTOCOL – RESPONDENTS AGED 2-15

Children's bodies are much more elastic than those of adults. Unlike adults they will need help in order to stretch to their fullest height. This is done by stretching them. This is essential in order to get an accurate measurement. It causes no pain and simply helps support the child while they stretch to their tallest height.

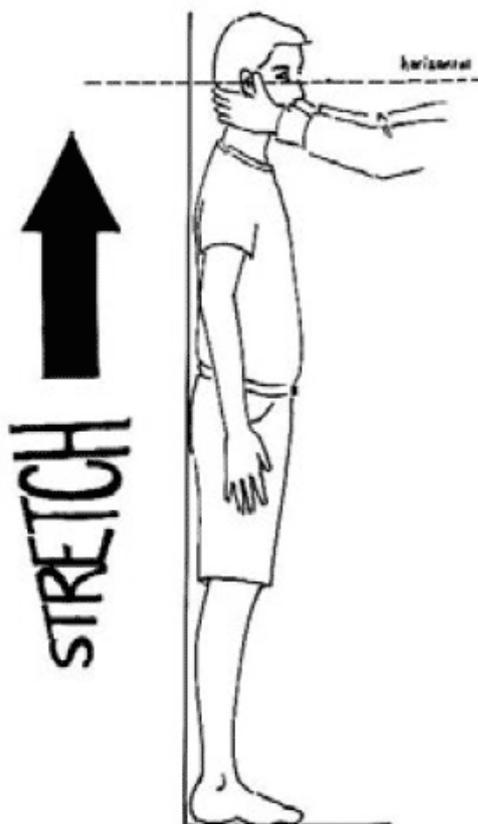
1. In addition to removing their shoes, children should remove their socks as well. This is not because the socks affect the measurement. It is so that you can make sure that children don't lift their heels off of the base plate. (See point 3 below).
2. Assemble the stadiometer and raise the head plate to allow sufficient room for the child to stand underneath it.
3. The child should stand with their feet flat on the centre of the base plate, feet together and heels against the rod. The child's back should be as straight as possible, preferably against the rod, and their arms hanging loosely by their sides. They should be facing forwards.
4. Place the measuring arm just above the child's head.



5. Move the child's head so that the Frankfort Plane is in a horizontal position (**Figure 1**). This position is as important when measuring children as it is when measuring adults if the measurements are to be accurate. To make sure that the Frankfort Plane is horizontal, you can use the Frankfort Plane Card to line up the bottom of the eye socket with the flap of skin on the ear. The Frankfort Plane is horizontal when the card is parallel to the stadiometer arm.

6. Cup the child's head in your hands, placing the heels of your palms either side of the chin. Your fingers should come to rest just under the ears (**Figure 2**).

**Figure 2: The child stretch**



7. Firmly but gently, apply upward pressure lifting the child's head upwards towards the stadiometer headplate and thus stretching the child to their maximum height. Avoid jerky movements, perform the procedure smoothly and take care not to tilt the head at an angle: you must keep it in the Frankfort plane. Explain what you are doing and tell the child that you want them to stand up straight and tall but not to move their head or stand on their tip-toes.

8. Lower the headplate down gently onto the child's head. Make sure that the plate touches the skull and that it is not pressing down too hard.

9. Still holding the child's head, relieve traction and allow the child to stand relaxed. If the measurement has been done properly the child should be able to

step off the stadiometer without ducking their head. Make sure that the child does not knock the head plate as they step off.

10. Read the height value in metric units to the nearest millimetre

11. Take two measurements and record the mean

12. Push the head plate high enough to avoid any participant hitting their head against it when getting ready to be measured.

## E. ADDITIONAL POINTS - ALL RESPONDENTS

1. If the respondent cannot stand upright with their back against the stadiometer and have their heels against the rod (e.g. those with protruding bottoms) then give priority to standing upright.
2. If the respondent has a hairstyle which stands well above the top of their head, (or is wearing a turban), bring the headplate down until it touches the hair/turban. With some hairstyles you can compress the hair to touch the head. If you cannot lower the headplate to touch the head, and think that this will lead to an unreliable measure, record this. If it is a hairstyle that can be altered, e.g. a bun, if possible ask the respondent to change/undo it.
3. If the respondent is tall, it can be difficult to line up the Frankfort Plane in the way described. When you think that the plane is horizontal, take one step back to check from a short distance that this is the case.

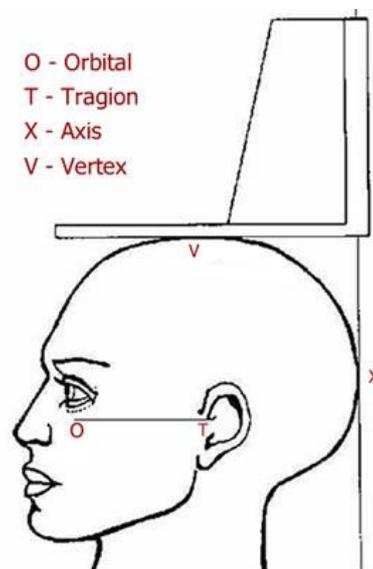
### Head in Frankfort Plane



### Gentle Traction and Marking



### Orientation of head in the Frankfort Plane



- Orbitale - Trignon line perpendicular to the long axis
- Head not necessarily against wall
- When oriented in the Frankfort Plane, the Vertex is the most superior point on the skull

## Waist circumference

### EQUIPMENT

Insertion tape calibrated in mm, with a buckle at one end.

The tape is passed around the circumference and the end of the tape is inserted through the metal buckle at the other end of the tape.



### PREPARING THE RESPONDENT

The researcher will have asked the respondent to wear light clothing for the measurement. (School shirt, vest, t-shirt or ask the respondent to lift up all layers of clothes apart from the last one)

Explain to the respondent the importance of this measurement and that clothing can substantially affect the reading. If possible, without embarrassing you or the respondent, ensure that the following items of clothing are removed:

- all outer layers of clothing, such as jackets, heavy or baggy jumpers, cardigans and waistcoats;
- shoes with heels;
- tight garments intended to alter the shape of the body, such as corsets, lycra body suits and support tights.

If the respondent is wearing a belt, ask them if it would be possible to remove it or loosen it for the measurement.

Pockets should be emptied.

If the respondent is not willing to remove bulky outer garments or tight garments and you are of the opinion that this will significantly affect the measurement, record this.

If possible, ask the respondent to empty their bladder before taking the measurement.

### USING THE INSERTION TAPE

All measurements should be taken to the nearest millimetre. If the length lies halfway between two millimetres, then round to the nearest even millimetre. For example, if the measurement is halfway between 68.3 and 68.4, round up to 68.4. And if the measurement is halfway between 68.8 and 68.9, round down to 68.8. Please note that you must enter the measurement to one decimal place - do not round it to the nearest centimetre. For example, enter '78.2', not just '78'.

Ensure the respondent is standing erect in a relaxed manner and breathing normally. Weight should be evenly balanced on both feet and the feet should be about 25-30cm (1 foot) apart. The arms should be hanging loosely at their sides. If possible, kneel or sit on a chair to the side of the respondent.

Pass the tape around the body of the respondent and insert the plain end of the tape through the metal ring at the other end of the tape.

To check the tape is horizontal you have to position the tape on the right flank and peer round the participant's back from his/her left flank to check that it is level. This will be easier if you are kneeling or sitting on a chair to the side of the respondent.

Hold the buckle flat against the body and flatten the end of the tape to read the measurement from the outer edge of the buckle. Do not pull the tape towards you, as this will lift away from the respondent's body, affecting the measurement.

### **MEASURING WAIST CIRCUMFERENCE**

1. The waist circumference will be measured 2cm above the participant's navel. Ask the participant to point to their navel and using a ruler place the tape 2cm above that point.

2. Ensure the tape is horizontal. Ask the participant to breathe out gently and to look straight ahead (to prevent the respondent from contracting their muscles or holding their breath). Take the measurement at the end of a normal expiration. Shake the tape measure so that it fastens properly around the participant

Measure to the nearest millimetre and record this.

3. Repeat this measurement again.

4. If you are of the opinion that clothing, posture or any other factor is significantly affecting the waist measurement, record this.

## **GENERAL POINTS**

The tape should be tight enough so that it doesn't slip but not tight enough to indent clothing. If clothing is baggy, it should be folded before the measure is taken.

If the respondent is large, ask him/her to pass the tape around rather than having to "hug" them. Remember though to check that the tape is correctly placed for the measurement being taken and that the tape is horizontal all the way around.

If your second waist measurement differs by 3cm or more from the first, take a third measurement.

V1 3/11/11

## **24 hour recall protocol**

The 24 hour recall method will be used for SWITCH to assess young people's drink and snack consumption, in the context of the wider diet. This documentation has been modified from the Low Income Diet and Nutrition Survey (LIDNS).

### **Instructions for conducting 24 hour recall**

Each respondent will be asked to provide four 24-hour recalls on non-consecutive days with at least one weekend day. The first will be completed face-to-face and the subsequent recalls will be made over the telephone or web.

### **OBTAINING A 24 HOUR RECALL**

The 24 hour recall aims to provide a complete record of all food and drink consumed on the previous day between midnight and midnight. The time element is important as this age group may have atypical eating patterns. A 'triple pass' method will be used:

#### **1. A quick list of foods eaten or drunk**

Respondents are asked to report everything they had to eat or drink on the previous day between midnight and midnight. This recall session is not interrupted. At the end of the recall, respondents are invited to add any additional items not initially recalled. If at this stage subjects give you more detail than expected, this should be recorded in brackets.

#### **2. Collection of detailed information concerning the items in the quick list**

For each item of food or drink, respondents are asked to provide additional detail:

- The time at which the food or drink was consumed
- A full description of the food or drink
- Brand name where available/applicable
- The amount of food eaten, based on household measures or photographs of different portion sizes of foods
- The cost of the item
- Any leftovers or second helpings
- Any foods likely to be eaten in combination e.g. milk in coffee
- Recipes and other combinations of foods e.g. sandwiches
- The place where the food was eaten

It is important to work through activities of the previous day to prompt the young person to recall any foods or drinks that were consumed (e.g. being out of the house, visiting friends or relatives, school, travelling to and from school, in-between meal snacking, any food or drink consumed during the night).

#### **3. A recall review in which respondents are given an opportunity to provide additional information and for the interviewer to prompt for information about foods or drink not mentioned**

The interviewer reviews all the food eaten and drunk in chronological order, prompts for any additional eating or drinking occasions or foods/drink possibly consumed and clarifies any ambiguities regarding type of food eaten or portion size. All of the information gathered is recorded by the interviewer in the 24 hour recall template document.

### **Additional questions**

When the respondents have finished recalling the food and drink that they consumed, they are asked questions regarding drinking water. Respondents are also asked whether or not the day recalled was typical of their usual food consumption, or if it was unusual or restricted in any way and if so for what reason.

### **Interviewer feedback questionnaire**

Finally, there is an interviewer evaluation to be filled in by researcher as soon as possible after each 24 hour recall interview. It is very important, as it gives an indication of how complete or accurate you feel the information given by the respondent is.

### **Food coding**

Every item of food and drink recorded during the 24-hour recall has to be coded by you. Coding is not done as part of the interview but as a separate exercise afterwards. It is vital to code the previous 24-hour recall before contacting the respondent for the next interview. This is so that you can gather any extra information needed or resolve any queries as early as possible. Do not to leave all the coding of the 24-hour recalls until the end.

### **Interviewing children**

Older children (of 12 years and over) will themselves be very knowledgeable about their own diets and will be able to provide much of the information required.

### **Respondent sickness**

If the young person is unwell when you call, it may be better to rearrange the appointment if their appetite was affected the day before. Otherwise, make a note of this on the question sheet.

## **DETAILED INFORMATION ABOUT FOOD AND DRINK**

### **Description of food and drink**

During the recall, you will need to enter a description of each food and drink item the young person consumed. As drinks and snacks are our main items of concern, we must ensure comprehensive information is collected on these items. However, for the purpose of reducing bias, some detail must be collected on other food items/eating occasions also. In general the following information is required:

#### **BOX 1**

- Was it unsweetened, or sweetened with sugar or artificial sweeteners (specify name)?
- Was any water or other liquid added to it?
- Was it carbonated or still?
- **How was it bought** e.g. fresh, dried, canned, dehydrated etc?
- If it was a dried or dehydrated product (e.g. hot chocolate) was it reconstituted using water, milk (e.g. skimmed, semi-skimmed, whole) or both etc?
- Was it homemade? If so, what were the ingredients?
- How was it **cooked** – boiled, poached, fried etc?
- If it was cooked in fat/oil, or fat/oil was used or added (e.g. to a sandwich or baked potato), what sort of fat/oil was used?
- Were any toppings added?
- Was the item **coated** e.g. batter, breadcrumbs?
- Was it low/reduced fat, or low/reduced calorie?

### **Prompts and probing**

The information is collected with a series of neutral prompts to encourage recall. You should ask neutral questions which do not encourage a specific response. For example, ask “how was that cooked?” rather than “was that boiled or fried?”. For additional foods, you should not presuppose consumption of foods in specific combinations. For example, ask “what else did you have with that?” rather than “did you have butter on your potatoes?”.

However, where initial neutral prompts do not lead to further information it may be necessary to list a series of specific options e.g. “was that boiled, fried, roasted, grilled etc?” Always list the options.

Where foods come in different varieties e.g. low fat, low calorie, caffeine free etc, always refer to the “normal” or “standard” variety before the low fat/low calorie variety e.g. “so was that standard or diet coke?”

### **Food Description Prompt Sheet**

For many foods, there is a certain amount of detail that can be collected in addition to that specified in Box 1. These foods can be found on the separate Food Description Prompt Sheet. The foods are arranged in alphabetical order along with the information that is required.

### **Commonly Consumed Additional Food Prompts**

Included in the Food Description Prompt Sheet is a table called Commonly Consumed Additional Food Prompts. This lists foods frequently eaten in combination with other foods e.g. sugar on cereal, butter on potatoes, jam on toast. Use this list to probe for foods that a respondent may forget.

### **Usual eating habits**

In the interview, you will obtain some information regarding the respondent’s usual eating habits. You can transcribe this information into the front of the 24-hour recall booklet. This can then be referred to during the recall thereby reducing the burden on both interviewer and respondent when asking about frequently consumed foods such as tea, coffee and bread.

For example, if the respondent says they had tea, you can ask, “*Was that your usual tea?*” If they say yes, you need to confirm the eating habits details with them “*Your usual tea is a cup of weak tea with a dash of whole milk and no sugar. Is that what you had?*” Then you can record ‘tea, usual’ on the recall. If it is not the respondent’s usual tea (often the case if it is drunk outside the home), you must probe as normal i.e. strength of tea, any milk or sugar etc.

### **Evidence of probing**

Recording on the record sheet where you have probed helps clear up ambiguities that may arise when it comes to coding a particular food or drink.

- If a respondent does NOT eat something typically eaten in combination with another food or they break their usual eating habit e.g. they have toast, but no spread, record “no spread” on the recall to indicate that you have probed for that food.
- For foods where low fat or low calorie varieties are available as well as “standard” versions e.g. yoghurts, soft drinks etc, if the respondent has the “standard” version, record “standard” on the recall to show that you have probed for the different types.
- If you have probed and the respondent does not know or cannot remember exactly what they had to eat or drink, indicate this by recording **P** – on the recall (this stands for a negative response when probed).

### **Place eaten**

The respondent should be asked where the child was when he/she had each food and drink item. Jot down what they say in the 'meal place' column and after the interview use card 1 to allocate a code to each place. In some cases, it is important to ascertain the source of food, as well as the place.

### **Brand name**

Where possible, you need to ask the respondent for the brand name of foods they have consumed e.g. Heinz baked beans, Kellogg's Cornflakes etc. During the first home interview, respondents may offer to show you items from their food store. This is very useful in identifying exactly what has been consumed. Make a note during the recall so that you can collect all the information at the end rather than disrupting the interview by the respondent repeatedly going into the kitchen. You should copy down full details of the product, in terms of name, brand name and specific type (where appropriate) e.g. Tesco's High Juice, no added sugar, blackcurrant and apple.

### **Amount of food: estimation of portion size**

At the beginning of the interview the respondent is introduced to the process involved in the 24-hour recall and told that they will be asked to provide details of what they have consumed, and to give an estimate of the amount that they ate or drank (portion size).

A portion size can be described in terms of:

- Packages (e.g. 1 Kit Kat (2 sticks), ½ can of coke)
- Weights (e.g. 420g tin of baked beans, 125 g pot of yoghurt)
- Household measures (e.g. one level teaspoon of sugar)
- Photographs of portion sizes for beverages using images of different sized glasses
- Cost (which can be indicative of size)

The respondent can use whichever method is easiest for him/her. If the food comes in a package of a certain size this is probably the most accurate way of estimating portion size. If the packaging has a weight on, ask to see the package as this will help with identification of the precise type of food and the size. Do NOT let respondents guess weights. For some respondents, photographs provide the most accurate estimate of portion size.

A selection of photographs will be available but they will not cover every type of food. Equivalent foods can be compared to the photographs i.e. foods of sufficiently similar shape and/or consistency. For example, a photograph of chicken curry with sauce could be used to establish the portion size of any meat, chicken or fish curry with sauce.

### **Spoon size**

If a respondent describes the amount they had to eat in spoonfuls, it is important to determine the size of the spoon. Often respondents will say they used a tablespoon when what they actually used was a dessertspoon. To clarify the size of the spoon you should show the respondent the picture of a life size tablespoon, dessertspoon and teaspoon.

### **Leftovers**

After the respondent has given an amount, it is important to remember to ask them whether they ate the whole portion. If not, it is necessary to find out what proportion of the amount was left and enter that in the 'leftovers' column e.g. ½ left. Try to be consistent in how you do this. Remember to ask about any other food not consumed (e.g. spilled or refused). Did the mother offer any alternative foods because of this?

### **Second helpings**

Second servings should be recorded on a separate line of the record sheet, in order to be able to see that it was a second helping. Record the portion size of the second helping in the 'amount' column.

### **Recipes**

As the focus of the recall is on drinks and snacks consumed, minimal detail is required on recipes for main meals or desserts. Some exceptions to this may be if a snack was homemade e.g. Rice Crispie cake, fruit scone; to establish if it is to be classified a high fat and sugar food item. It may be necessary to ask for parent/carer clarification for such recipes.

### **Ethnic foods**

When collecting information about ethnic foods it is important to obtain as much information about a food/dish that is 'unusual'. It is important to check the spelling of the names of ethnic foods as many have unusual spellings and/or alternative names. For example, okra (a vegetable grown in South America, West Indies and India; used in soups and stews) is also called lady's finger; 'moong' beans are also spelt 'mung' beans. Therefore, you should ask for packets or containers (if available) to check the spelling if you or the respondent are not sure. There is also a list of common South Asian foods/dishes at the end of the Food Description Prompt Sheet for Interviewers to help with this.

### **Composite dishes**

When a food contains several different components, the individual components and the amount of each component should be recorded on a separate line on the record sheet. For example, a sandwich would be split into bread, spread and filling.

### **Takeaway foods and fast foods**

If the respondent has consumed any takeaway or fast foods, wherever possible, record the name and address of the food outlet and the price of the item.

### **Food and drink consumed over a long period of time**

The respondent may eat or drink something over an extended period of time such as sipping a litre of water throughout the day. If it is too difficult to separate specific amounts consumed at specific times, you can record the time period and the amount consumed over that period e.g. 13:00 – 16:00, ½ litre of bottled water.

### **Script for use during 24 hour recall**

The following script provides detailed prompts for obtaining information in the individual 24 hour recall of food and drink consumption. Please follow the sequence carefully. **It is very important that the protocol is followed at every interview, even when you feel confident with the method.** You can use additional prompts and clarify details, but do not miss out any of the script.

Where words appear in upper case inside brackets, supply the appropriate word (e.g. if (DAY) appears, say the name of the appropriate day of the week). Words that appear inside square brackets are instructions to you.

### **START**

[COMPLETE COVER SHEET]

### **Introduction at beginning of 24 hour recall**

**Recall 1 – In person:**

[INTERVIEWER SAYS]

My name is (YOUR NAME). I am going to ask you about everything that you ate and drank yesterday. By this I mean, 24 hours from midnight to midnight. I would like to know exactly what was eaten and drank and how much you had.

**Recalls 2-4 - telephone / web interviews:**

[INTERVIEWER SAYS]

My name is (YOUR NAME). I am going to ask you about everything that you ate and drank yesterday. By this I mean, 24 hours from midnight to midnight. I would like to know exactly what was eaten and drank and how much you had.

**Introducing portion size estimation (first recall only)**

[INTERVIEWER SAYS]

When I ask you how much food and drink you had, I would like you to tell me in as much detail as possible in terms of the size of the package, for example half a tin of baked beans. In this case also tell me the size of the tin, for example a small or large tin.

Or you can tell me in terms of household utensils, for example a cup of milk. In this case I would like you to tell me how big the cup was – small, medium or large. Another example would be two spoonfuls of yoghurt. In this case I would ask you for the size of spoon – teaspoon, tablespoon or dessertspoon.

To help you to tell me how much of a drink you had, I have some photographs of different sized glasses. You can tell me how much you ate in relation to these photographs, if that is easier than describing the amount of food. [SHOW PHOTOGRAPHS]

**OR**

**Introducing portion size estimation (recalls 2-4)**

When I ask you how much of each food and drink you had, I would like you to tell me in as much detail as possible. You can describe the amount in terms of the size of the package, household utensils or using the photographs you were given at the first interview.

Do you remember the photos we used in the first session?

## **24 hour recall itself**

### ***Step 1 – Quick List***

[INTERVIEWER SAYS]

I would like you to tell me everything that you had to eat and drink yesterday. By yesterday I mean, from midnight to midnight. Please include everything that you had to eat and drink at home and away from home, including snacks, sweets and any drinks.

- First we'll make a list of the foods you ate and drank all day yesterday (DAY).
- Next I'll ask you about the foods including amounts and then I'll ask you a few questions.
- It may help you to remember what you ate by thinking about where you were, who you were with, or what you were doing yesterday; like playing with friends or watching television. Feel free to keep these activities in mind and say them aloud if it helps you.
- So... if you would like to start at midnight at the beginning of (DAY).

[COMPLETE QUICK LIST WITHOUT INTERRUPTION]

[WHEN SUBJECT STOPS ASK]

What else? Can you think of anything else that you had to eat or drink yesterday?

[ADD ITEMS INTO QUICK LIST AT APPROPRIATE POINTS]

[THEN ASK]

What else?

[CONTINUE UNTIL NO FURTHER ADDITIONS]

There are some foods that people often forget. In addition to what you have already told me about, did you have any:

- Biscuits, cakes, sweets, chocolate bars or other confectionery
- Crisps, peanuts or other snacks
- Fruit juice, squash or fizzy drinks
- Water
- Milk
- Dried fruit
- Bread sticks
- Anything you have not already told me about?

### ***Step 2 – Detailed information***

[INTERVIEWER SAYS]

Now I would like to go through the list you have just given me and ask you some details about each item of food and drink. If while we are talking you remember anything else that you had to eat or drink, please tell me.

Was (FIRST FOOD FROM QUICK LIST) the first thing that you had to eat/drink yesterday?

IF YES: [GO TO BOX 2]

IF NO: What was the first thing you had to eat or drink yesterday? [RECORD ITEM NAMED ON MAIN LIST....GO TO BOX 2]

Was (NEXT ITEM FROM QUICK LIST) the next thing you had to eat/drink?

[CONFIRM IF FOOD IS OBVIOUSLY PART OF SAME MEAL (e.g. milk on cereal) AND GO TO BOX 2]

[CONTINUE UNTIL ALL FOODS ON QUICK LIST HAVE BEEN TICKED]

**BOX 2**

FOR EACH ITEM ASK FOR THE FOLLOWING DETAILS:

<b>Time eaten</b>	Record time in 24 hour clock format e.g. 18.00 for 6pm
<b>Meal place</b>	Code using card 1 after interview
<b>Detailed description of food</b>	Use food description prompt sheet
<b>Brand name (if applicable)</b>	
<b>Amount of food</b>	Use photos and/or household measures
<b>Leftovers</b>	
<b>Second helpings</b>	Record on separate line
<b>Prompt for foods eaten in combination (if necessary)</b>	Record on separate line
<b>Prompt for recipes (if necessary)</b>	Record on recipe pages including amounts of ingredients
<b>Prompt for additions (if necessary)</b>	Use commonly consumed additional food prompts
<b>Place eaten</b>	Use / show card 1 and enter letter

THEN TICK ITEM OFF QUICK LIST AND MOVE ONTO NEXT ITEM

**Step 3 – Review**

[INTERVIEWER SAYS]

Let's see if I have everything. I would like you to try and remember anything else that you had to eat or drink yesterday that you have not already told me about, including anything that you had to eat or drink while you were preparing a meal or waiting to eat.

[USE THE FOLLOWING TIME PROMPTS TO ELICIT ADDITIONAL FOODS]

- Did you have anything to eat or drink between midnight yesterday and (FIRST TIME/OCCASION)?
- At (FIRST TIME/OCCASION) you had (FOODS/DRINKS). Do you recall having anything else to eat or drink?
- Did you have anything to eat or drink between (FIRST TIME/OCCASION) and (NEXT TIME/OCCASION)?

[REPEAT UNTIL LAST TIME/OCCASION]

- At (LAST TIME/OCCASION) you had (FOODS/DRINKS). Do you recall having anything else to eat or drink?
- Did you have anything else to eat or drink between (LAST TIME/OCCASION) and midnight last night?

[WHERE BRAND HAS NOT BEEN RECALLED AT FIRST REQUEST BUT RESPONDENT HAS PRODUCT IN CUPBOARD, FRIDGE ETC, ASK IF YOU CAN CHECK PRODUCT AND ENTER BRAND NAME ON RECALL – FOR TELEPHONE RECALLS ASK THEM TO GO AND CHECK OR REFER TO PREVIOUS RECALL AND ASK WAS IT THE SAME?]

[NOW GO THROUGH ADDITIONAL QUESTIONS]

# CARD 1

## Place

- A** Home, own food supply
- B** Home, take-away brought in
- C** Home, other food brought in, paid for
- D** Home, other food brought in, free
- E** Friend's or Relative's house
- F** Restaurant or Cafe
- G** School (bought food or drink)
- H** School (food or drink from home)
- I** School (free/other)
- J** Work (bought food or drink)
- K** Work (food or drink from home)
- L** Work (free/other)
- M** Pub, bar, lounge, hotel, club
- N** Take-away eaten away from home
- O** Other place (bought food or drink)
- P** Other place (food or drink from home)
- Q** Other place (free/other)

Participant ID	
Parent ID	
Date R'cd	
Date Entered	

## SWITCH QUESTIONNAIRE

### Thank you for agreeing to help us with this survey.

This is a questionnaire about you and some of your habits. Your answers will be looked at by the researchers and no-one else. They will not be seen by your parents. Because the questions being asked are about different subjects, some of them may seem strange to you. Please take your time to answer the questions and answer as honestly as you can. This is not a test and there are no right or wrong answers.

1. What is your date of birth?	d	d	m	m	y	y
2. How would you describe your ethnicity? (CARD A)	code					

These questions are about the physical activity you do. Physical activity is anything you do that increases your heart rate and may make you get out of breath some of the time. Please include brisk walking or biking, dancing, skateboarding, doing sports, school activities during PE or during school breaks, and going to the gym.

3. Over the past 7 days, on how many days were you physically active for a total of at least an hour per day?	code	
4. OUTSIDE SCHOOL HOURS: How <u>OFTEN</u> do you usually exercise in your free time so much that you get out of breath or sweaty? (CARD B)	code	
5. OUTSIDE SCHOOL HOURS: How many <u>HOURS</u> a week do you usually exercise in your free time so much that you get out of breath or sweaty? (CARD C)	code	
6. How many hours a <u>day</u> do you usually watch TV (including DVDs) in your free time? (CARD D)	<b>Weekdays:</b>	code
	<b>Weekends:</b>	code
7. About how many hours a <u>day</u> do you usually play on a games console (e.g. Playstation, Nintendo DS), spend on social network sites (e.g. Facebook), or use a computer in general in your free time? <b>Note:</b> Do not include time spent on 'active' video gaming such as the Wii or Kinect (CARD E)	<b>Weekdays:</b>	code
	<b>Weekends:</b>	code

8. Using the ruler, please tell me how <u>ready</u> you are to make a change to your <u>eating</u> habits, on a scale of 1 to 10 (CARD F)	scale
9. Using the ruler, please tell me how <u>ready</u> you are to make a change to the <u>sorts of drinks</u> you have (CARD F)	scale
10. How <u>confident</u> are you that you can change your <u>eating</u> habits? (CARD G)	scale

<b>11.</b> How <u>confident</u> are you that you can change the <u>sorts of drinks</u> you have? (CARD G)	scale	
<b>12.</b> In the past 3 months, how much have your family and friends encouraged you to eat or drink healthily, on a scale of 1 to 10? (CARD H)	<b>Family:</b>	scale
	<b>Friends:</b>	scale

That is the end of the questionnaire. Thank you very much for answering my questions. It would be useful for us to have your mobile phone number and email address so we can remind you of your appointments and send you useful information.

<b>13.</b>	What is your mobile phone number?	
<b>14.</b>	What is your email address?	
<b>15.</b>	What is your preferred method of contact?	

Participant ID	
Parent ID	
Date R'cd	
Date Entered	

## SWITCH QUESTIONNAIRE 6 month follow-up Intervention

### Thank you for agreeing to help us with this survey.

This is a questionnaire similar to the one you did before and it's about you and some of your habits. Your answers will be looked at by the researchers and no-one else. They will not be seen by your parents. Because the questions being asked are about different subjects, some of them may seem strange to you. Please take your time to answer the questions and answer as honestly as you can. This is not a test and there are no right or wrong answers.

These questions are about the physical activity you do. Physical activity is anything you do that increases your heart rate and may make you get out of breath some of the time. Please include brisk walking or biking, dancing, skateboarding, doing sports, school activities during PE or during school breaks, and going to the gym.

1. Over the past 7 days, on how many days were you physically active for a total of at least an hour per day?		code
2. OUTSIDE SCHOOL HOURS: How <u>OFTEN</u> do you usually exercise in your free time so much that you get out of breath or sweaty? (CARD B)		code
3. OUTSIDE SCHOOL HOURS: How many <u>HOURS</u> a week do you usually exercise in your free time so much that you get out of breath or sweaty? (CARD C)		code
4. How many hours a <u>day</u> do you usually watch TV (including DVDs) in your free time? (CARD D)	<b>Weekdays:</b>	code
	<b>Weekends:</b>	code
5. About how many hours a <u>day</u> do you usually play on a games console (e.g. Playstation, Nintendo DS), spend on social network sites (e.g. Facebook), or use a computer in general in your free time? <b>Note:</b> Do not include time spent on 'active' video gaming such as the Wii or Kinect (CARD E)	<b>Weekdays:</b>	code
	<b>Weekends:</b>	code

### EATING HABITS

6. Using the ruler, please tell me how <u>ready</u> you are to make a change to your <u>eating</u> habits, on a scale of 1 to 10 (CARD F) Code "already" as 11	scale
<b>If rated 1 – 10, go to question 7</b> <b>If rated 11, go to question 8</b>	
7. How <u>confident</u> are you that you can change your <u>eating</u> habits? (CARD G) <b>GO STRAIGHT TO <u>DRINKS</u> SECTION</b>	Scale

8. What changes did you make?

9. How confident are you to maintain these changes in the future? (Card G)

Scale

**DRINKS**

10. Using the ruler, please tell me how ready you are to make a change to sorts of drinks you have, on a scale of 1 to 10 (CARD F) Code “already” as 11

scale

**If rated 1 – 10, go to question 11**

**If rated 11, go to question 12**

11. How confident are you that you can change the sorts of drinks you have? (CARD G) **GO STRAIGHT TO SUPPORT SECTION**

Scale

12. What changes did you make?

13. How confident are you to maintain these changes in the future? (Card G)

Scale

**SUPPORT**

14. Using the ruler, please tell me how much do you feel that the MI sessions helped you to change the way you eat on a scale of 1 to 10? (Card H)

scale

15. Using the ruler, please tell me how much do you feel that the MI sessions helped you to change the way you drink on a scale of 1 to 10? (Card H)

scale

16. In the past 3 months, how much have your family and friends encouraged you to eat or drink healthily, on a scale of 1 to 10? (CARD I)

**Family:**

scale

**Friends:**

scale

17. In the past 6 months, have you attended any weight management or healthy eating programmes or appointments?

Y or N

18. If yes, what type or programme or appointment did you attend? (prompt for name)

19. Do you have any further comments for the research team?

That is the end of the questionnaire. Thank you very much for answering my questions.

Participant ID	
Parent ID	
Date R'cd	
Date Entered	

## SWITCH QUESTIONNAIRE 6 month follow-up Control

### Thank you for agreeing to help us with this survey.

This is a questionnaire similar to the one you did before and it's about you and some of your habits. Your answers will be looked at by the researchers and no-one else. They will not be seen by your parents. Because the questions being asked are about different subjects, some of them may seem strange to you. Please take your time to answer the questions and answer as honestly as you can. This is not a test and there are no right or wrong answers.

These questions are about the physical activity you do. Physical activity is anything you do that increases your heart rate and may make you get out of breath some of the time. Please include brisk walking or biking, dancing, skateboarding, doing sports, school activities during PE or during school breaks, and going to the gym.

1. Over the past 7 days, on how many days were you physically active for a total of at least an hour per day?		code
2. OUTSIDE SCHOOL HOURS: How <u>OFTEN</u> do you usually exercise in your free time so much that you get out of breath or sweaty? (CARD B)		code
3. OUTSIDE SCHOOL HOURS: How many <u>HOURS</u> a week do you usually exercise in your free time so much that you get out of breath or sweaty? (CARD C)		code
4. How many hours a <u>day</u> do you usually watch TV (including DVDs) in your free time? (CARD D)	<b>Weekdays:</b>	code
	<b>Weekends:</b>	code
5. About how many hours a <u>day</u> do you usually play on a games console (e.g. Playstation, Nintendo DS), spend on social network sites (e.g. Facebook), or use a computer in general in your free time? <b>Note:</b> Do not include time spent on 'active' video gaming such as the Wii or Kinect (CARD E)	<b>Weekdays:</b>	code
	<b>Weekends:</b>	code

## EATING HABITS

6. Using the ruler, please tell me how <u>ready</u> you are to make a change to your <u>eating</u> habits, on a scale of 1 to 10 (CARD F) <b>Code "already" as 11</b>	scale
<p><b>If rated 1 – 10, go to question 7</b></p> <p><b>If rated 11, go to question 8</b></p>	
7. How <u>confident</u> are you that you can change your <u>eating</u> habits? (CARD G) <b>GO STRAIGHT TO <u>DRINKS</u> SECTION</b>	Scale

8. What changes did you make?

9. How confident are you to maintain these changes in the future? (Card G)

Scale

**DRINKS**

10. Using the ruler, please tell me how ready you are to make a change to sorts of drinks you have, on a scale of 1 to 10 (CARD F) Code “already” as 11

scale

**If rated 1 – 10, go to question 11**

**If rated 11, go to question 12**

11. How confident are you that you can change the sorts of drinks you have? (CARD G) **GO STRAIGHT TO SUPPORT SECTION**

Scale

12. What changes did you make?

13. How confident are you to maintain these changes in the future? (Card G)

Scale

**SUPPORT**

14. In the past 3 months, how much have your family and friends encouraged you to eat or drink healthily, on a scale of 1 to 10? (CARD I)

**Family:**

scale

**Friends:**

scale

15. In the past 6 months, have you attended any weight management or healthy eating programmes or appointments?

Y or N

16. If yes, what type or programme or appointment did you attend? (prompt for name)

17. Do you have any further comments for the research team?

That is the end of the questionnaire. Thank you very much for answering my questions.

## SWITCH QUESTIONNAIRE - PARENTS

We would be very grateful if you could answer the following questions.

The information you provide us will help us understand and explain the results of the study. Your answers will be kept confidential and looked at only by the researchers and no-one else. You should not write your name on the questionnaire.

Please take your time to read the questions and answer as honestly as you can.

### 1. What is your age (years)?

---

### 2. What is your gender?

- Male
- Female

### 3. Which of these best describes your employment status?

- |  |   |
|--|---|
| <input type="checkbox"/> Employed full-time          | <input type="checkbox"/> Full time parent/homemaker |
| <input type="checkbox"/> Employed part-time          | <input type="checkbox"/> Long term sick or disabled |
| <input type="checkbox"/> Self-employed or freelance  | <input type="checkbox"/> Carer                      |
| <input type="checkbox"/> Unemployed-looking for work | <input type="checkbox"/> Other (please describe)    |
| <input type="checkbox"/> Full-time student           | <hr/>   |

### 4. Do you receive any of these benefits? (tick all that apply)

- |   |  |
|---|--|
| <input type="checkbox"/> No benefits            | <input type="checkbox"/> Income Support          |
| <input type="checkbox"/> Child Tax Credits      | <input type="checkbox"/> Housing Benefit         |
| <input type="checkbox"/> Job Seeker's Allowance | <input type="checkbox"/> Other (please describe) |
| <input type="checkbox"/> Child Benefit          | <hr/>  |

**5. What is your highest qualification?**

- No qualifications
- BTEC/NVQ Level 1 or 2
- GCSE or O Level
- BTEC/NVQ Level 3
- A Level or AS Level
- BTEC/NVQ Level 4, 5 or 6
- Higher National Diploma (HND)
- University Degree
- Postgraduate
- Other qualification (please describe)  
\_\_\_\_\_

**6. Is your home:**

- Owned outright
- Mortgaged
- Shared ownership (part rent and part mortgage)
- Rented
- Rent free (in a friend's or relative's property)

**7. Please provide one or both of the following:**

Mobile phone number:

Home phone number:

**This is the end of the questionnaire. Thank you for completing it.**

Parent ID:	
Child ID:	
Date R'cd	
Date Entered:	

## 24 Hour recall Coding- SWITCH

The 24 hour recall method will be used for SWITCH to assess young people’s drink and snack consumption, in the context of the wider diet. This method has been modified from the Low Income Diet and Nutrition Survey (LIDNS).

Each respondent will be asked to provide four 24-hour recalls on non-consecutive days with at least one weekend day. The first will be completed face-to-face and the subsequent recalls will be made over the telephone or web. Dietary data will be collected at baseline and at 6-months.

The 24 hour recall aims to provide a complete record of all food and drink consumed on the previous day between midnight and midnight. The time element is important as this age group may have atypical eating patterns. A ‘triple pass’ method will be used for the recalls.

Each recall will be coded twice, by two different researchers, to reduce the likelihood of errors. A systematic approach will be taken:

1. All drinking and snacking incidents are highlighted
2. All drinks and snack are coded using the tables below (also see appendix 1)
3. Recalls are coded by a second researcher for accuracy
4. Codes are entered onto an excel database
5. Data entry is checked by a second researcher for accuracy

Any queries regarding correct coding will be put to one side before the data entry stage and will be discussed within the team. The team may use online or supermarket research to aid decision making on certain products based on their nutritional information or packet sizes.

### 1. Drinks

Drinks will be coded by type, drinking occasions and total volume per day.

The following data will be collected:

Number of each type

Drink type code x drinking occasions of this type = total volume of this drink type for the day (for each drink type consumed) e.g.



**Table 1: Drink type codes**

Drink type	Drink group	Code
Carbonated full sugar drink (including sports or energy drinks)	Fizzy full sugar	C+
Carbonated no sugar drink	Fizzy diet	C-
Pure fruit juice (100% fruit)	Limited	F
Fruit juice drinks (between 25-99.9% fruit content)	Full sugar	F+
Full sugar squash drinks (including those between 0-24.9% fruit content)	Full sugar	S+
No sugar squash drinks	Diet	S-
Full sugar flavoured water	Full sugar	FW+
No sugar flavoured water	Diet	FW-
Water	Unlimited	W
Fruit smoothies (100% fruit)	Limited	FS
Fruit smoothies with other ingredients e.g. added sugar, honey	Full sugar	FS+
Milkshake / yoghurt drinks	Full sugar	MS+

Milkshakes/yoghurt drinks with no added sugar e.g. blended fruit milkshake	Limited	MS-
Milk	Unlimited	M
Tea or coffee	Unlimited	T
Tea or coffee with sugar / hot chocolate / malt drinks	Full sugar	T+

**Table 2: Drink volume codes**

Vessel type	Volume (ml)	Code
Small glass*	150	150
Standard glass*	200	200
Large glass*	300	300
Half pint	284	285
Full pint	568	570
Small bottle	250	250
Standard bottle	500	500
Large bottle	1000	1000
Small can (e.g. energy drink)	250	250
Standard can	330	330
Large can	500	500
Carton	200	200
Cup	190	190
Mug	260	260

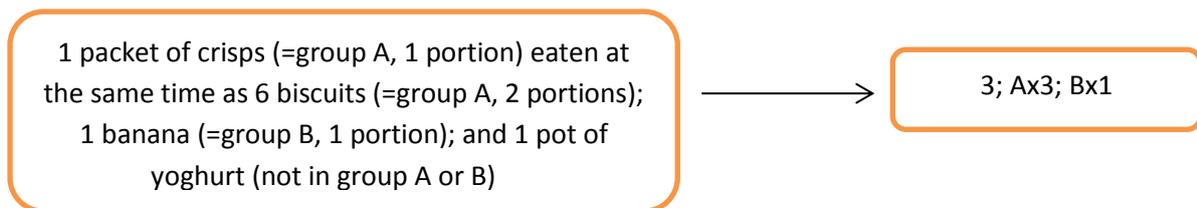
\*Standard measures taken from LINDNS

### Snacks

Snacks will be coded firstly by total number of snacking occasions, and secondly any snacks from these occasions that fall into the following two categories (A & B) will be coded along with frequency. Frequency is determined by the portion size of the item consumed; one frequency is classed as one standard portion size (detailed below). Portions above or below the standard size will be classed as a proportion of the standard portion size i.e. 1 biscuit = a snacking frequency of 0.3; 2 slices of pizza = a snacking frequency of 2. The coder should use brand information provided in the recall to determine actual sizes of packets, if required.

#### Coding format:

number of snacking occasions; frequency of group A snacks; frequency of group B snacks e.g.



Notes: The crisps and biscuits were eaten together, so this is classed as one eating occasion. Two portions of biscuits were eaten, so the snack frequency for biscuits becomes 2. Yoghurt is not a group A or B snack, so its frequency is not included, however it is still counted in the 'number of snacking occasions' figure.

### Snacking occasions

A snacking occasion is considered to be any food item that falls an hour outside of a mealtime. Foods are allocated to a 'mealtime' occurrence based on their timing within the structure of the day e.g. first meal (breakfast), second meal (lunch), third meal (dinner); as well as their type and grouping e.g. a mealtime occurrence is made up of a number of foods, and of typical types of foods e.g. rice, pasta, sandwich, cereal, burger, pizza, potatoes. Sweet foods that occur within an hour of a mealtime will be considered a dessert and therefore part of the meal. Snacking occasions are those eating occasions that are not mealtimes or drinking occasions. Numbers of occasions are counted independently of portion sizes.

**Table 3: Snack type codes**

<b>Group A snacks</b>	<b>1 portion</b>	<b>Group B snacks</b>	<b>1 portion</b>
Crisps (including potato, corn and maize snacks)	standard packet (30g)	Any fruit except dried	80g
Popcorn	half a regular tub from cinema (90g)	Dried fruit	30g
Chips	medium carton of fries or small portion of chips from chip shop (110g)	Any vegetable except potatoes	80g
Burger	1 burger (110g)		
Pizza	1 slice (¼ of 7" pizza)		
Fried chicken	1 piece (100g)		
Biscuits	3 standard (digestive)-sized biscuits (30g)		
Chocolate	1 standard bar (50g)		
Sweets	1 tube, small packet or handful (40g)†		
Cake	1 slice or 1 individual serving‡ (60g)		
Pastries/doughnuts	1 regular item§ (75g)		
Ice cream	1 average scoop/tub (60g)		

Source of weights: Food Standard Agency's 'Food Portion Sizes: Third Edition'

†based on fruit gums

‡ based on a slice of sponge cake

§based on a jam doughnut

## Appendix 1

### List of drink type codes and their criteria

Carbonated full sugar drink (including sports or energy drinks)	<p>ANY CARBONATED BEVERAGE CONTAINING ANY SUGAR (INCLUDING FRUIT SUGARS)</p> <p><b>Examples:</b> Coke drinks; lemonade drinks; Dr Pepper; Orange fizzy drinks; fizzy sports drink e.g. Boost, Red Bull; fizzy sports drinks e.g. Lucozade Energy, Boost Active; Vimto; sparkling fruit drinks e.g. Sparkling Rubicon, KA, Orangina;</p>
Carbonated no sugar drink	<p>ANY CARBONATED BEVERAGE NOT CONTAINING SUGAR (0g)</p> <p><b>Examples:</b> 'Diet drinks' e.g. Diet Coke, Diet Fanta; 'Zero' or 'Max' drinks; 'Sugarfree' drinks; fizzy energy drinks with no added sugar e.g. Red Bull Sugarfree</p>
Pure fruit juice (100% fruit)	<p>ANY STILL DRINK CONTAINING 100% REAL FRUIT JUICE (PURE OR FROM CONCENTRATE)</p> <p><b>Examples:</b> Includes diluted and non-diluted versions</p>
Fruit juice/nectar drinks (between 25-99.9% fruit content)	<p>ANY NON-CARBONATED BEVERAGE CONTAINING 25-99.9% FRUIT CONTENT</p> <p><b>Examples:</b> Both ready-made and those requiring dilution e.g. 5alive, J20</p>
Full sugar squash drinks (between 0-24.9% fruit content)	<p>ANY STILL DRINK CONTAINING ANY SUGAR (INCLUDING FRUIT SUGARS) AND NOT FITTING INTO ANOTHER CATEGORY</p> <p><b>Examples:</b> Squash/cordial drinks to be diluted with water e.g. Robinsons; still fruit flavoured drinks e.g. Rubicon, Oasis, Oasis Light; still sports drinks (inc. low sugar) e.g. Boost Sport, Lucozade Sport, Lucozade Sport Lite, Lucozade Revive, Gatorade</p>
No sugar squash drinks (with no fruit content)	<p>ANY STILL DRINK NOT CONTAINING SUGAR (0g) AND NOT FITTING INTO ANOTHER CATEGORY</p> <p><b>Examples:</b> Some squash/cordial drinks to be diluted with water no-added sugar versions e.g. Robinsons; some still fruit flavoured drinks no-added sugar versions e.g. Oasis Light; some still no added sugar sports drinks e.g. Powerade Zero;</p>
Full sugar flavoured water	<p>ANY STILL FLAVOURED DRINK LABELLED WATER CONTAINING ANY SUGAR (INCLUDING FRUIT SUGAR)</p> <p><b>Examples:</b> e.g. Vitamin Water, Volvic Strawberry, flavoured Drench</p>
No sugar flavoured water	<p>ANY STILL FLAVOURED DRINK LABELLED WATER NOT CONTAINING SUGAR (0g)</p> <p><b>Examples:</b> e.g. Sugar free Volvic flavoured water</p>
Water	<p>ANY NON-FLAVOURED NON-CARBONATED WATER</p> <p><b>Examples:</b> e.g. tap water, mineral water, spring water</p>
Fruit smoothies (100% fruit)	<p>ANY DRINK CONTAINING BLENDED WHOLE FRUIT WITH NO ADDED SUGARS AND NO ADDITIONAL INGREDIENTS (WITH THE EXCEPTION OF FRUIT JUICE/PUREE)</p> <p><b>Examples:</b></p>

	Shop-bought and homemade smoothies not containing honey
Fruit smoothies with other ingredients e.g. added sugar, honey	ANY DRINK CONTAINING BLENDED WHOLE FRUIT WITH ANY ADDITIONAL INGREDIENTS INCLUDING SUGAR AND HONEY <b>Examples:</b> Shop-bought and homemade smoothies with added sugar (including honey) NB: see 'milkshakes' before coding
Milkshake / yoghurt drinks	ANY MILKSHAKE /YOGHURT DRINK CONTAINING ANY SUGAR <b>Examples:</b> Ready to buy e.g. Yazoo, YOP; powdered shakes to be made up with water (including straws); probiotic yoghurt drinks e.g. Yakult (blue and red); homemade drinks containing added sugar, honey, flavoured milk or flavoured yoghurt
Milkshakes/yoghurt drinks with no added sugar e.g. blended fruit milkshake	ANY MILK/YOGHURT DRINK WITH NO ADDED SUGAR (USING ONLY NATURAL, NON-FLAVOURED MILK & YOGHURT) <b>Examples:</b> Those blended with fruit, milk and yoghurt smoothies
Milk	ANY PLAIN NON-FLAVOURED MILK <b>Examples:</b> Cow's milk; goat's milk; soya milk
Tea or coffee	PLAIN TEA AND COFFEE (WITH OR WITHOUT MILK) WITH NO ADDED SUGARS <b>Examples:</b> Homemade or shop-bought
Tea or coffee with sugar / hot chocolate / malt drinks	ANY HOT DRINKS WITH ADDED SUGARS (OR COLD TEAS AND COFFEES CONTAINING SUGAR) <b>Examples:</b> Flavoured teas containing sugar; tea or coffee with table sugar; hot chocolate drinks including low calorie ones; other drinks with added sugar made up with hot water or milk e.g. Ovaltine, Horlicks; chilled tea or coffee drinks containing any sugar e.g. iced tea, Frappuccino

## Appendix 2

List of fruit and vegetable weights based on household measures

Fruit item	Household measure	Weight (g)
Apple	1 medium raw eating apple (without core)	100
Apricot	1 raw without stone	40
Banana	1 medium without skin	100
Clementine	1 medium without skin	60
Currants / raisins / sultanas	1 heaped tbsp., dried	30
Fruit salad	Fresh with syrup or juice, average serving	140
Grapes	Small bunch	100
Kiwi	1 raw medium without skin	60
Mango	1 without stone or peel	150
Melon	1 slice, without skin	200
Orange	1 medium without skin	160
Peach	1 medium without stone	110
Pear	1 medium conference	170
Raspberries	15 (average portion)	60
Strawberries	Average portion	100
Tangerine / satsuma	1 medium without skin	70

Fruit item	Household measure	Weight (g)
Baked beans, in sauce	Medium portion	135
Cucumber	1" piece	60

Pepper	1 medium	160
Tomato	1 medium 1 cherry tomato	85 15

## References

Low Income National Diet and Nutrition Survey Program Documentation: Interviewer Schedule.  
Food Standards Agency (2002) *Food Portion Sizes, Third Edition*. The Stationary Office: London.

Participant ID	
Coding date	
Coding ID	

### 24 Hour Recall – Data Entry Sheet

Interviewer	
Day recalled	
Date recalled	
Recall no.	

Ramadan/Fasting	
Usual Diet	

#### Drinks

Drink type	Occasions	Volume
Carbonated full sugar drink		
Carbonated no sugar drink		
Pure fruit juice		
Fruit juice drinks (25-99.9%)		
Full sugar squash drinks (0-24.9%)		
No sugar squash drinks		
Full sugar flavoured water		
No sugar flavoured water		
Water		
Fruit smoothies (100% fruit)		
Fruit smoothies with added sugar		
Milkshake/yog drinks		
Milkshakes/yog drinks -no added sugar		
Milk		
Tea or coffee		
Hot drinks with sugar		
Alcohol		

#### Snacks

	Occasions	Portions
Total		
Category A		
Category B		
Category C		

Date of entry	
Entry ID	

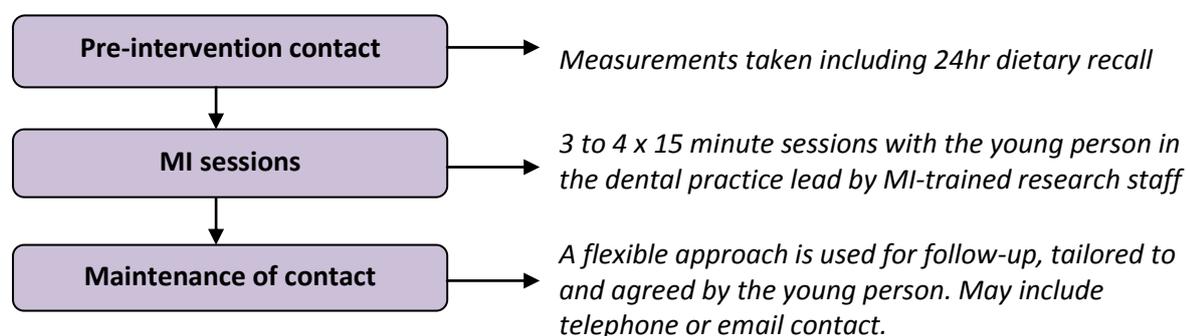
## SWITCH Motivational Interviewing Guidelines

### BACKGROUND

- Motivational interviewing (MI) is a **collaborative conversation** to strengthen a person's own motivation for and commitment to change (Miller & Rollnick, 2012).
- It is a person-centered approach aimed at dealing with ambivalence to change and minimising resistance to change. Empathy and compassion are important practitioner traits.
- It explores a person's own reasons for change, with the philosophy that people are better persuaded by their own arguments than those of others. The practitioner aims to help the person articulate what is in their own true best interests.
- MI is targeted towards a specific goal. The person is more likely to reach their goal if the practitioner enables independence and choice.
- The 'language of change' is a key to increasing motivation and commitment. The practitioner helps to evoke the case for change from within the person.

### MOTIVATIONAL INTERVIEWING AS PART OF SWITCH

SWITCH is an intervention for 12 – 14 year olds delivered by trained MI practitioners within dental care settings. The aim of SWITCH is to reduce the young person's consumption of soft drinks (see appendix 1 for definition of soft drinks), by frequency and amount. MI is the behaviour change method employed in the intervention to strengthen the young person's motivation to reduce their consumption of fizzy drinks.



### PRACTITIONER TRAINING

Practitioners have undergone a 2-day theory-based training course followed by on-going one-to-one coaching in delivery of MI, using role play. The practitioners will be assessed on their 'MI consistency' (fidelity) using the **MITI programme** (appendix 2). The programme assesses the practitioner's performance in digitally-recorded sessions with young people, based on consistency in the following core skills:

- Evocation – the practitioner takes the initiative to ask about the participant's reasons for change and how change should happen
- Collaboration – the participant's understanding & ideas influence the conversation
- Autonomy – the practitioner encourages participant's expression of control & choice
- Direction – the practitioner steers the conversation towards focal issues
- Spirit of MI

## Core Skills for Motivational Interviewing

The practitioner should employ the following skills throughout the intervention.

### 1. USE OPEN ENDED QUESTIONS

The participant should do the majority of the talking. This is useful for gathering information as well allowing the young person a sense of control. Open-ended questions help the young person to articulate their thoughts on the issue.

#### Examples

*“What do you think about that?”*

*“What is your understanding of the programme?”*

*“What would you like to get out of the programme?”*

*“Tell me about...”*

*“What would you like to talk about today?”*

*“What do you know about the consequences of what you are drinking?”*

*“What will you do?”*

*“How will you do it?”*

*“How long have you been doing this for?”*

### 2. OFFER AFFIRMATIONS

The aim of this method is to build confidence and self-efficacy in the young person. Offer appreciative comments and observations, and be sincere.

#### Examples

*“I can see you have tried hard to make changes”*

*“I know this has been difficult for you but you have been coming in every week and doing very well”*

### 3. LISTEN REFLECTIVELY

Use reflection to demonstrate to the young person that you have heard and are trying to understand their concerns. Reflecting helps to clarify understanding and can also be used to guide the conversation in a focused direction – to pick up on and explore specific concerns. This can be demonstrated by paraphrasing.

### Types of reflection:

<b>Simple reflection</b>	<b>Person:</b> I'm not going to stop drinking coke anytime soon. <b>Practitioner:</b> You don't think it would help you right now.
<b>Amplified reflection</b>	<b>Person:</b> I don't know why mum is worried. <b>Practitioner:</b> So your mum shouldn't worry at all?
<b>Double-sided reflection</b>	<b>Patient:</b> I know you want me to stop drinking fizzy drinks, but I'm not going to! <b>Practitioner:</b> You don't want to stop drinking fizzy drinks, though you can see it's a big concern.
<b>Shifting focus</b>	<b>Person:</b> I can't drink water when all my friends are having sugary drinks! <b>Practitioner:</b> You're ahead of me – we were exploring your concerns about the soft drinks. Shall we talk about how they fit into your life later?
<b>Agreement with a twist</b>	<b>Person:</b> Why is everyone so stuck on me drinking soft drinks? You'd go out all the time, too, if your family were nagging you. <b>Practitioner:</b> That's a good point. It's not as simple as you not drinking soft drinks. I understand that you're feeling hassled by your family. It sounds like it involves the whole family.
<b>Reframing</b>	<b>Person:</b> My mum is always nagging me about my diet. <b>Practitioner:</b> It sounds like mum is really worried, although she expresses it in a way that gets to you. Maybe we can help you both deal with it better.

#### Examples of reflecting listening

"You're saying that..."

"It sounds like you..."

"It seems that you..."

"You're thinking perhaps that..."

"You're wondering if..."

"You feel..."

#### 4. SUMMARISE

Summaries show that you have heard and understood their concerns and provide an opportunity to highlight the contradicting views or balance in their responses i.e. the case for sustaining versus the case for change. They can be used throughout the session or at the end.

The summary should be clear, concise and balanced. The practitioner can orchestrate the arguments in favour of change i.e. it is best to place the view you would like to elicit a response about at the end of this summary.

**Examples:**

*"You've discussed quite a few concerns there. Can I just re-cap to make sure I have understood you correctly? You enjoy the taste of fizzy drinks, but your parents are concerned because it is causing you to put on weight"*

Each session should end with a short summary and checking with the young person what they have understood and gained from the session.

**Examples**

*"Is there anything from our conversation so far that stands out to you, something you would like to talk about more?"*

**5. DEALING WITH AMBIVALENCE**

Hesitation and indecision is an anticipated part of the process. The young person will use phrases that favour the continuation of the behaviour (sustain talk) e.g. *"I couldn't cope without a cigarette. It's not that bad for my health. It helps me deal with my stress. Nothing could make me stop."*

MI gives the young person an opportunity to articulate 'sustain talk' i.e. their reasons, needs and abilities in relation to their behaviour.

**Solutions:**

Avoid arguing with or coaxing the young person. The young person must change their own attitudes and behaviour; the practitioner can only support the process. The practitioner should show acceptance and compassion when ambivalence is encountered, to demonstrate they understand the difficult situation the young person is in. The practitioner should also seek out 'change talk' to guide the young person out of ambivalence.

- Treat ambivalence as normal
- Reflect the ambivalence
- Show acceptance and compassion
- Seek and evoke 'change talk'
  - Encourage the young person to elaborate
  - Reflect and affirm the 'change talk'
  - Summarise the discussion to provide the young person with their own arguments for change

**Examples**

*"Part of you wants to stop having so many drinks, but you're worried that you'll miss it too much"*

*"On the one hand you feel..., on the other ..."*

*"What do your family / friends think about your drinking patterns?"*

- If ambivalence persists to the point it becomes a barrier to progress, respect the young person's standpoint. Taking any other approach is unlikely to change the person's mind.

### Examples

*"I respect that you don't want to make any changes right now, you are the best judge of what is right for you. If there comes a time when you decide to make changes to your drinking habits, then I am here to help you. In the meantime, I would like to stay in touch...."*

*"Is there anything from our conversation so far that stands out to you, something you would like to talk about more?"*

## 6. ROLLING WITH RESISTANCE

If the young person feels they are losing control, independence and choice in the situation, resistance is a common reaction. People would often rather assert their own freedom than comply with an external command. Arguing or disengagement is often used to re-assert independence.

**Signs of resistance include:** missed appointments, arguing, interrupting, false agreement, side-tracking, blaming, excusing, aggression and poor compliance.

**Causes of resistance:** 'arm-twisting', coming across as 'knowing what's best', having a prescriptive approach to their problem, criticising, shock-tactics, being forceful, 'telling off'

### Solutions:

- Agree with the young person/side with the negative
- Avoid arguing
- Reflect ambivalence/be compassionate
- Avoid being authoritative
- Emphasize choice & independence
- Change tactics

### Examples

**YP:** *"I didn't want to come here my mum told me to do it"*

#### Response:

*"You don't want someone else telling you what's a problem for you"*

*"Sometimes people find that being in a programme like this helps them get more information to decide for themselves whether this a problem for them or not."*

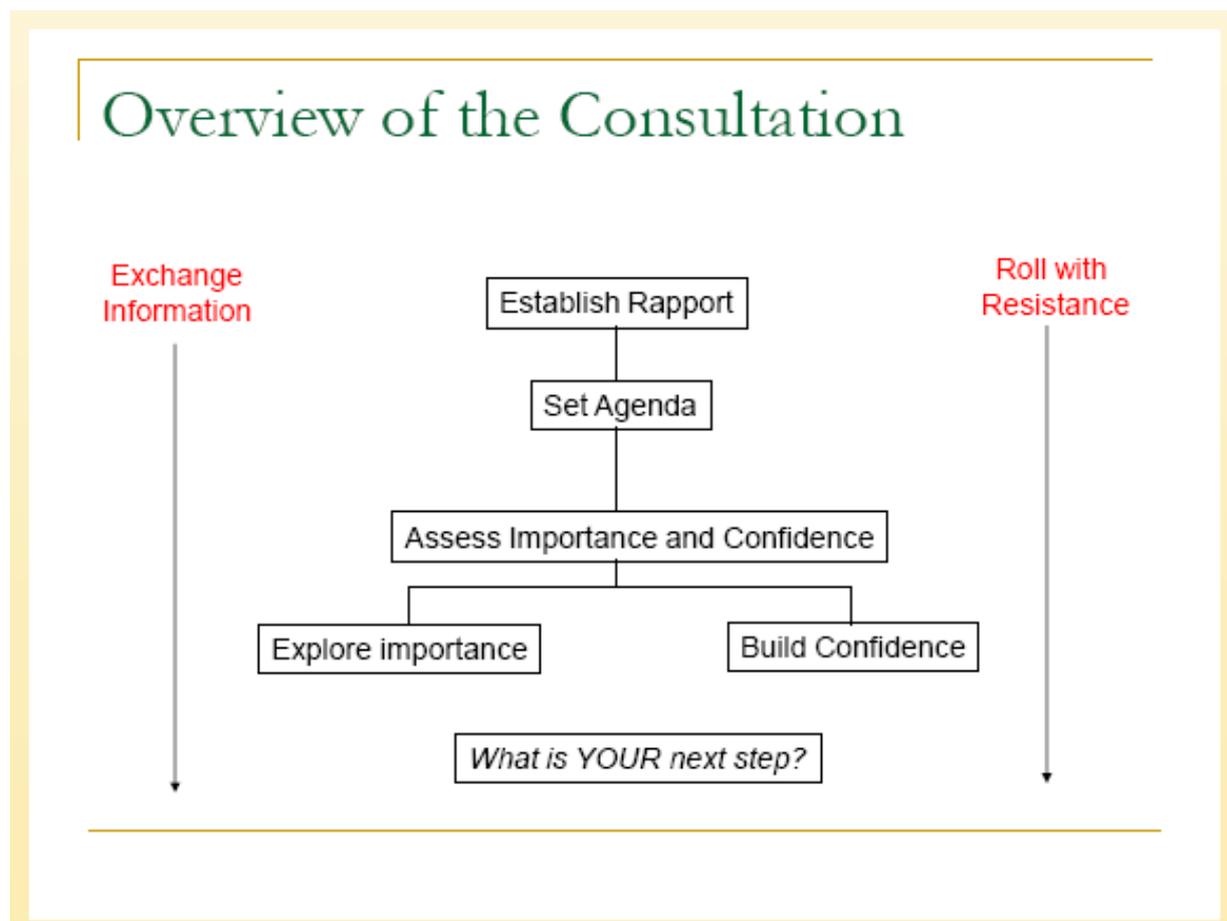
**YP:** *"My parents bug me all the time"*

**Response:** *"It sounds like it's annoying to you"*

## Overview of SWITCH Consultations

In the philosophy of motivational interviewing, it would be inappropriate to provide a prescriptive programme of sessions for the practitioner to adhere to. Instead an overview of steps is provided that lead from establishing rapport with the young person to setting of goals. A range of 'tools' which can be utilised within each step is described.

The practitioner must be aware that each young person will progress at a different rate through these steps, and some may not progress to the final step. It is crucial to go at the young person's pace, although it is the practitioner's responsibility to guide the conversation in a focused manner (using reflections and summaries). A **flexible approach** must be utilised in following this overview, and the practitioner should be prepared to go back-and-forth through their steps.



*Dr Gary Latchford, University of Leeds*

### SWITCH AS A BRIEF INTERVENTION

SWITCH is considered a brief intervention relative to traditional motivational interviewing interventions. A consequence of this approach is that the practitioner must keep the conversation focused in order to keep the sessions short. A number of tactics or tools can be employed in brief interventions at various stages of the process, and are displayed in the relevant step in more detail.

- **Agenda setting** negotiates an ‘order of business’ within the conversation. It presents a series of topics that the practitioner feels would be useful to address, and gives the young person control over which of these topics they would like to discuss. There should also be blank options for the young person to offer an alternative topic that is related to their issue, that the practitioner may not have considered.
- **A typical day** encourages the young person to provide more detail on how their issue fits into their day-to-day life to improve the practitioner’s understanding. This places the behaviour under focus in a realistic context. It is important to avoid an ‘interrogation’ approach when using this tool.
- **Importance and confidence** explores the factors behind the behaviour that are encouraging and restraining change. It also helps to establish readiness.
- **Ask-Tell-Ask** provides information and advice to the young person in a more acceptable manner, which is less prone to resistance. It provides a collaborative approach to exchanging and building knowledge. It is opposed to the traditional medical model of the practitioner providing advice or information in a prescriptive way. A person is more likely to understand and use the practitioner’s advice if they have asked for it and if it is tailored to their current level of knowledge.
- **Two possible futures** helps the young person to appreciate the consequences of their current behaviour by encouraging them to articulate these themselves.
- **Route planning** uses a collaborative approach to coming up with solutions.

## OVERVIEW OF STEPS

### 1. ESTABLISHING RAPPORT (ENGAGE)

**Aim:** Build the relationship, outline the intervention in more detail and establish their understanding of the intervention.

#### INTRODUCTIONS

Practitioner to introduce themselves and their role and to find out more about the young person.

- *“My name is ... and I am a researcher at University College London. My role in the ‘SWITCH programme’ is to talk with young people their eating and drinking habits”*

#### PARTICIPANT’S UNDERSTANDING / EXPECTATIONS OF SWITCH

Establish what the young person knows about the intervention

- *“What is your understanding of the SWITCH?”*
- *“Why have you come along to the programme?”*

- *“What would you like to get out of the programme?”*

### **PRACTITIONER’S EXPECTATIONS**

Provide a description and summary of SWITCH intervention:

- *“Would you find it useful if I explained SWITCH in a little more detail for you?”*
- *“SWITCH is a programme that explores young people’s eating and drinking habits. We are not here to tell you what to do or force you into change. This is done through a few meetings between the young person and the researcher, and these meetings are an opportunity for you to talk freely and openly about that.”*
- No. of sessions and length of the intervention
- Confidentiality and ethics

Outline for the young person what we expect of them if they decide they would like to take part:

- *“We ask that you could try and come on time to your appointments. If you need to cancel, please phone...so we can re-book you”*
- *“We hope that you will come to all of your sessions.”*

### **PLAN FOR TODAY’S SESSION**

- *“We have about 20 minutes today, if you would like to continue at the end of the session, we will arrange another appointment.”*

### **LINKING TO MEASUREMENT SESSION:**

It may be useful to make a link with the measurement session to initiate conversation and focus the conversation on current dietary patterns (to set the tone for the intervention).

- *“I see that you have completed a 24 hr recall, what do you make of that?”*
- *“What did you notice anything about your eating and drinking habits?”*
- *“Would it be helpful to you to talk about that some more?”*

#### **Tips:**

- Say as little as possible about the intervention. We are trying to find out the best way of talking to young people about what they eat and drink
- Talk about ‘eating and drinking habits’ rather than ‘healthy eating’
- Relate eating and drinking habits to the ‘mouth’ rather than ‘weight’ (unless this is raised by the YP)
- There are about 140 young people taking part.

## 2. SET AGENDA (FOCUS)

**Aim:** Focuses the conversation whilst giving the young person a sense of choice.

Ask the YP what they would like to focus the conversation on.

### TOOL - AGENDA SETTING

Negotiate an 'order of business' for the conversation. Use the '**agenda setting sheet**' (appendix 3) for the young person to select what they would like to focus the conversation on.

*"What would you like to talk about today?"*

## 3. EXCHANGE INFORMATION (FOCUS AND EVOKE)

**Aim:** To improve the young person's knowledge and understanding of their behaviour and its consequences in a way that is acceptable to the young person and does not elicit resistance.

It is important as a practitioner to gauge the young person's knowledge, understanding and skills relating to the behaviour change. This allows the practitioner to be aware of any gaps in knowledge, understanding or skills which may be affecting a person's motivation to change. The practitioner may be able to help fill any of those gaps so the person has a stronger motivation to change their behaviour. However, the way in which the practitioner imparts this information has an impact on how it is received. Unsolicited advice leads to resistance. It is important for the practitioner to exercise restraint and avoid overwhelming the young person with science.

Throughout MI, information can be **gathered** from the young person with a sense of 'respectful curiosity' and information should only be **given** to the young person in the right circumstances, where the young person has asked for it or has given the practitioner permission to provide information.

### UNDERSTANDING CURRENT DIETARY PATTERNS

- *"Tell me a little about the things you like eating and drinking during the day"*
- Try to understand about circumstances e.g. boredom, hunger, friends etc.
- Encourage the YP to think of any situations where they could see their eating and drinking escalating.
- *"Is there anything else that might make you drink more soft drinks besides people around you?"*
- *"What about if you were bored or...?"*
- *"Were you drinking that much before, or less? Or were you having something different? Why is that?"*

### TOOL - A TYPICAL DAY

Invite the young person to describe a typical day from morning to night.

*"Do you mind if we go through a typical school day and you can tell me a bit more about breakfast/lunch/dinner and the sort of snacks or drinks that you have?"*

*"Why do you think you had ... in those particular situations?"*

**Tip:** If the young person has trouble remembering, ask if yesterday/other specific day was a 'typical day' and to describe what they had to eat/drink then.

## **OFFER INFORMATION**

The most important thing before giving information is to **always ask permission first**. This helps to avoid resistance and ensures the young person is in the right frame of mind to receive information.

### **TOOL - 'ASK-TELL-ASK'**

- **Ask:** Elicit current knowledge and understanding from the young person  
e.g. *"What do you know about soft drinks?"*  
*"What do you know about their effect?"*
- **Tell:** Provide information to fill any gaps in knowledge or correct misunderstandings. Use affirmations to boost confidence of person's current understanding.  
e.g. *"You seem to have a good awareness of that. Would it be ok for me to tell you more about this? There are a couple of comments I could make..."*  
**(Use the visual aids below to deliver the messages)**
- **Ask:** Elicit any new understanding as a result of information given. It is important for the young person to verbalise this new understanding.  
e.g. *"What sense do you make of this / how does that influence you / your understanding?"*

### **VISUAL AND INTERACTIVE AIDS**

It is well established that visual and interactive aids can improve understanding in young people and maintain their engagement. The following visual and interactive aids can be utilised during this step of the intervention:

- **Effects of soft drinks sheet** (appendix 4) – *a tool for talking about the consequences of soft drinking consumption. Ask the young person to point out which of these issues are caused by having too many soft drinks? Give them an opportunity to explain how soft drinks might have these effects. If they have missed any, explain that soft drinks can also cause those issues too and give a brief explanation of why, if it is appropriate.*
- **Sugar models** (appendix 5) – *displays of how much sugar is contained in popular soft drinks. From the 'typical day' tool, the practitioner should have an idea of the specific drinks that the young person drinks regularly. Ask the young person if they can guess how many teaspoons / cubes of sugar are in those drinks. Using the **drinks list**, demonstrate how many teaspoons / cubes of sugar are in those particular drinks (the most sugary drink should go last). You could ask the young person to measure out how many tea spoons they think is in the drink, and then tell them to keep going until they reach the right amount.*

### **Key Dietary Messages**

These are detailed in full in appendix 6

### **DEVELOPING DISCREPANCY (EVOKE - change talk vs sustain talk)**

It is the practitioner's role to highlight the contradictions in the young person's discourse. Through this discussion, the practitioner can help tip the decision to make a change. Evoke from the YP reasons for change and risks of not changing.

- *"Is there anything that concerns you about your current drinking habits?"*
- *"Is anyone else concerned about your habits? (parents, dentist etc.)"*
- Any previous change attempts?
- *"You mentioned earlier that ... is important to you. How do your drinking habits / weight (if mentioned) cause any difficulties with this?"*
- *"What would you say is the most important reason for you to monitor your drinking X?"*
- *"So, where does that leave you?"*
- Like and dislikes about the habit

### **4. ASSESS IMPORTANCE AND CONFIDENCE (EVOKE - change talk vs sustain talk)**

**Aim:** to encourage the young person to explore their reasons for sustaining and changing.

Discussing the reasons for both continuing the behaviour and the reasons for changing the behaviour is a fundamental part of the process of MI (change talk vs sustain talk). Summaries are a useful tool for articulating the contradictions in a young person's mind-set.

During this step, ambivalence and resistance may occur. The practitioner should bear in mind the advice in the core skills section of this manual when this occurs.

#### **TOOLS – IMPORTANCE AND CONFIDENCE SCALES**

Explore importance and build confidence. What is encouraging them to make a change? What is preventing them from making a change? Ask the young person to circle this on the **scale rulers** (appendix 7).

- *"On a scale of 1 to 10, how important is it to you to change your drinking habits at the moment?"*
- *"On a scale of 1 to 10, how confident are you that you can make a change at the moment?"*
- Explore the scales (sustain talk and change talk i.e. why not a 1? Why not a 10?) and offer summaries throughout to clarify their response.

*e.g. "Why give yourself a 7 and not a 1?"*

*"What would have to happen for it to become more important?"*

*"What would have to happen to move your confidence to a 10?"*

*"Is there anything I can do to help you?"*

## TOOLS - DECISIONAL BALANCE

The decisional balance is a way to explore with clients the pros and cons of changing. Use the **'decisional balance activity sheet'** (appendix 8) and work on the list compilation together, making the YP as active as possible, for example by having them record points. Use costs of change as initial basis for identification of difficulties.

Practitioners ask the client

- *"What are some of the good things about\_?"*
- *"What are some of the things you dislike about \_\_\_\_\_?"*
- *"What are some reasons for keeping things the way they are?"*
- *"What are some reasons for making a change?"*

## TOOL: 'TWO POSSIBLE FUTURES'

Explore the probable contrasting outcomes of maintaining the behaviour or changing the behaviour.

*"If things continue as they are, what do you think will be the likely effects on your health?"*

*"The choice will always be yours, but if you make the changes, what do you think could improve for you?"*

## CHANGE TALK

Seize opportunities to discuss change and encourage 'change talk'. The more frequent and unrestrained the 'change talk', the more likely it will influence behaviour.

### **Examples of change talk:**

**Reasons for change:** *"If I didn't eat junk food, I wouldn't be fat"*

**Desire to change:** *"I would like to be more healthily"*

**Need for change:** *"I really should try to change my diet"*

**Ability to change:** *"I'm sure I could be more healthily if I really tried"*

## 5. WHAT IS YOUR NEXT STEP? (PLANNING)

**Aim:** For the young person to establish their own solutions for behaviour change, whilst building in coping strategies for relapses. It is the role of the practitioner to help the young person create realistic goals and consider the practicalities of their next steps.

It is important that this step is only reached if the young person indicates that they are at a stage where they are ready to make a change. If a practitioner raises the issue before that stage has been reached by the young person, it is unlikely that the goal will be achieved, as the young person will not be fully committed (they may not have been swayed enough by their own arguments yet).

### Signs a person is ready to make a change

**Commitment:** the person expresses statements about their intentions with promises, declarations, and assurances.

*"I've decided to make a change."*

**Activation:** the person makes statements about their readiness / preparations.

*"I'm ready to do this. I've asked my mum to stop buying fizzy drinks."*

**Action:** The person reports back on what they've done.

*"I've been following your suggestions"*

*"I didn't have any soft drinks yesterday"*

### READY FOR CHANGE?

If the participant indicates they are ready to make a change, work with them to plan their next steps. The young person should provide the solutions, but if they get stuck, offer your suggestions. Remember to ask permission.

*"What are your ideas for making a change in \_\_\_\_\_?"*

*"What could you do? What are your options? What's your goal?"*

*"What's your vision? How would you like things to turn out?"*

*"What could you do?"*

*"How might you do it?"*

Emphasize choice and independence:

- *"I'm not here to make your decision, it's your choice"*
- *"Is there anything I can help you with?"*
- *"Any information I can give you?"*
- *"Would you like to discuss what is available to you locally?"*
- *"Would you like any suggestions?"*

### TOOL - ROUTE PLANNING

Explore, clarify and agree possibilities for action by **brainstorming** of possible changes, encouraging as many as possible. Write each solution on a separate piece of paper. Ask the young person to consider the **pros and cons** of each of their solutions, write these on post it notes and stick next to the solution. Summarise the discussion.

## **AGREEMENT**

The young person may now have their own idea about what solution will work best for them. The practitioner should support the young person in structuring a realistic plan and preparing for any difficulties that may arise.

- *“We have discussed a number of different ways of ...which of these do you think would work best for you?”*
- *“What do you think is the first step you have to take?”*
- *“What might make it difficult for you?” “How would you deal with that?”*
- *“Who can support you with this?”*

## **FOLLOW-UP ON GOALS**

This is an opportunity to talk about any barriers or unsuccessful attempts and offer additional support. It is important for the practitioner to keep a hopeful tone when discussing ‘failures’ and to use affirmations. Establish what has been learnt from these experiences and what can be changed.

- *“Have you had a chance to try out your goal this week?”*
- *“Tell me how that has been going”*
- *“What changes have you noticed?”*
- *“What could get in the way of you carrying on?”*
- *“Would you like to make any changes to your goals?”*
- *“Is there any more information I can give you?”*

If goals have been unsuccessful:

- *“It seems like you have really been trying, but...”*
- *“What do you think is getting in your way?”*
- *“What do you think you would do differently if you decided to aim for the same goal again?”*
- *“Would you like to look back at your other options and come up with a new plan?”*
- *“Can I help in any way?”*

## **6. CLOSING STATEMENTS**

- At the end of each session, a summary should be given by the practitioner and the young person should also be asked to summarise the key points themselves.
- Make an appointment for the next session, if the young person wishes to continue the conversation.

### **In the final session**

- Have the YP summarise the change plan, ensuring that they give attention to anticipated difficulties. Ask them if they would like to write it down.
- Ensure the young person has all the information they need.
- Make follow-up arrangements.

*“What would be the best way to stay in touch with you?”*

*“If you would like some support, you can get in touch through phone or email”*

## Proposed Session Structure

The following structure is not a prescriptive programme of sessions. The practitioner should use their judgements to assess when the next step should be taken. A flexible approach is required.

### SESSION ONE

**Goals:**

- Establish rapport with client
- Provide an overview of the SWITCH programme
- Exchange information (a typical day, visual and interactive aids)
- Assess importance and confidence (using scales)



### SESSION TWO / THREE

**Goals:**

- Summarize key ideas from first session
- Consider reasons for changing (decisional balance and two futures)
- Utilize evocative questions as a way of eliciting change talk from the client
- Consider what the solutions are and the pros and cons of these



### SESSION THREE / FOUR

**Goals:**

- Summarize key ideas from second session
- Develop goals and an action plan with the client
- Check on the YP's progress, the barriers to their goals and discuss solutions
- Make follow-up arrangements

SESSION 1

**INTRODUCTION**

**What is SWITCH?**

**Confidentiality and tape recording**

**Expectations**

**Diet history**

- *What is a typical day?*
- *What did you notice about your eating and drinking habits?*
- *Who are you with when you have soft drinks?*
- *How much do you have? What makes you drink more?*
- *Does that seem quite typical to you?*
- *Would it be helpful to talk about that some more?*
- *Is that something you're concerned about?*

**INFORMATION**

**What do you know?**

- *What do you know about soft drinks? What effect do they have?*

**Permission**

- *Would you like me to tell you more about that?*
- *There are a couple of comments I could make*
- *Effects of soft drinks*
- *Sugar images*

**New understanding?**

- *What sense do you make of this? How does that change your opinion? How does that influence you?*

**DEVELOPING DISCREPANCY**

**Likes and Dislikes**

**Concerns**

- *Is there anything that concerns you about your drinking habits?*
- *Is anyone else concerned about your habits?*
- *You mentioned earlier that ... is important to you. How do your drinking habits / weight cause any difficulties with this?*
- *It seems like you have an ideal/goal of how you would like things to be but things are getting in the way – what do you think needs to happen to get to that?*
- *Is there anything you can do avoid these temptations?*
- *So you are wondering about making some change?*

**IMPORTANCE AND CONFIDENCE**

**On a scale of 1 to 10, how important is it to you to change your eating and drinking habits at the moment?**

- *Why give yourself a ... and not a 1?*
- *What would have to happen for it to become a 10?*

**On a scale of 1 to 10, how confident are you that you can make a change at the moment?**

- *What is it is ... and not a 1?*
- *Why is it a ... and not a 10?*
- *What would help to move your confidence to a 10?*
- *Is there anything I can do to help you?*

## SESSION 1

### DIFFICULT / AMBIVALENT / RESISTANT RESPONSES

#### **Reflect:**

- *What do you mean by that?*

#### **Amplified reflection:**

- *You would have to become ill before deciding to change you drinking habits?*
- *You feel there's nothing you can do to drink less soft drinks / you feel it's not within your power to change your drinking habits? It's out of your control.*
- *You feel like other people are the cause of your drinking habits?*

#### **Autonomy:**

- *It's for you to decide – you are the best judge of what is right for you*
- *We're not talking about changing / we're not here to force you to change*
- *It's clear that you're not ready to make a change / it's not important to you at the moment*
- *You don't want someone else telling you what's a problem for you*
- *You have an ideal/goal in your head... but what would have to happen for you to get to that?*
- *You feel like you can't do anything about that. Is there anything you can do something about?*

#### **Two futures**

- *If things continue as they are, what do you think will be the likely effects on your health?*
- *The choice will always be yours, but if you make the changes, what do you think could improve for you?*

## SESSION 2

**INTRODUCTION****Review**

- *What do you remember from last session?*
- *What did you find most useful / interesting / what stood out?*
- *We might find it useful to recap what we talked about last week*
- *What thoughts have you had about that?*
- *Has anything changed?*

**Agenda Setting**

- *Where should we begin?*
- *I could make some suggestions about what we could talk about today*

**IF HESITANT ABOUT CHANGE****Decisional balance (use sheet)**

- *What are some of the good things about...?*
- *What are some of the things you dislike about...?*
- *What are the reasons for keeping things the way they are?*
- *What are some of the reasons for making a change?*

**Two possible futures**

- *If things continue the way they are, what will be the likely effects for the future?*
- *The choice will always be yours, but if you make the changes, what do you think could improve for you?*
- *You sound like you're a bit stuck here*
- *On the one hand..., but on the other hand...*

**IF READY FOR CHANGE****Explore options**

- *What are your ideas for making a change to...?*
- *What is your goal?*
- *How would you like things to turn out?*
- *What would be the easiest thing to change?*
- *If you could have one, what would it be?*
- *Who could support you?*
- *Would you like me to give you some of my ideas?*
- *Make a list of options with pros & cons of each*

**Explore barriers**

- *What might get in your way? What is holding you back?*
- *How might you overcome that?*

**Getting stuck**

- *It is a difficult question to answer*
- *You haven't really had a chance to think about this before*
- *Would it be helpful to have suggestions?*
- *What wouldn't help the situation?*

**PLAN****Set a goal**

- *You seem to have some ideas about what to do*
- *What are you going to do this week?*
- *What is your first step?*
- *Would you like to write down your plan so you can keep on track?*
- *How confident are you that you can do it?*
- *If it doesn't work, we can talk about it next time*

## SESSION 2

### DIFFICULT / AMBIVALENT / RESISTANT RESPONSES

#### **Reflect:**

- *What do you mean by that?*

#### **Amplified reflection:**

- *You would have to become ill before deciding to change your drinking habits?*
- *You feel there's nothing you can do to drink less soft drinks / you feel it's not within your power to change your drinking habits? It's out of your control.*
- *You feel like other people are the cause of your drinking habits?*

#### **Autonomy:**

- *It's for you to decide – you are the best judge of what is right for you*
- *We're not talking about changing / we're not here to force you to change*
- *It's clear that you're not ready to make a change / it's not important to you at the moment*
- *You don't want someone else telling you what's a problem for you*
- *You have an ideal/goal in your head... but what would have to happen for you to get to that?*
- *You feel like you can't do anything about that. Is there anything you can do something about?*

## SESSION 3

**INTRODUCTION****Review**

- *What do you remember from last session?*
- *We might find it useful to recap what we talked about last week*
- *What thoughts have you had about that?*
- *Has anything changed?*
- *How have your goals been going this week?*

**Agenda Setting**

- *Where should we begin?*
- *I could make some suggestions about what we could talk about today*

**IF NO GOALS SET PREVIOUS SESSION****Explore options**

- *What are your ideas for making a change to...?*
- *What would be the easiest thing to change?*
- *If you could have one, what would it be?*
- *Who could support you?*
- *Would you like me to give you some of my ideas?*
- *Make a list of options with pros & cons of each*

**Explore barriers**

- *What might get in your way? What is holding you back? How might you overcome that?*

**Getting stuck**

- *It is a difficult question to answer*
- *Would it be helpful to have suggestions?*

**IF GOALS WERE SET IN PREVIOUS SESSION****Review**

- *Have you had a chance to try out your goal this week?*
- *Tell me how that has been going*
- *What changes have you noticed?*
- *What could get in the way of you carrying on?*
- *Would you like to make any changes to your goals?*
- *Is there any more information I can give you?*
- *Is there anything else you feel you could work on?*

**If goals have been unsuccessful**

- *It seems like you have really been trying, but...*
- *What do you think is getting in your way?*
- *What do you think you would do differently if you decided to aim for the same goal again?*
- *Would you like to look back at your other options and come up with a new plan? Use pros and cons sheet*
- *Would you like any ideas? It seems... what could you do about that?*

**PLAN****Set a goal**

- *We have discussed a number of different ways of ...which of these do you think would work best for you?*
- *Some people find it useful to set a goal and check back on how they're doing. Would you like to do that?*

**Follow-up**

- *What would be the best way to stay in touch with you?*
- *If you would like some support, you can get in touch through... provide contact details*

## SESSION 3

### DIFFICULT / AMBIVALENT / RESISTANT RESPONSES

#### **Reflect:**

- *What do you mean by that?*

#### **Amplified reflection:**

- *You would have to become ill before deciding to change your drinking habits?*
- *You feel there's nothing you can do to drink less soft drinks / you feel it's not within your power to change your drinking habits? It's out of your control.*
- *You feel like other people are the cause of your drinking habits?*

#### **Autonomy:**

- *It's for you to decide – you are the best judge of what is right for you*
- *We're not talking about changing / we're not here to force you to change*
- *It's clear that you're not ready to make a change / it's not important to you at the moment*
- *You don't want someone else telling you what's a problem for you*
- *You have an ideal/goal in your head... but what would have to happen for you to get to that?*
- *You feel like you can't do anything about that. Is there anything you can do something about?*

Agenda Setting



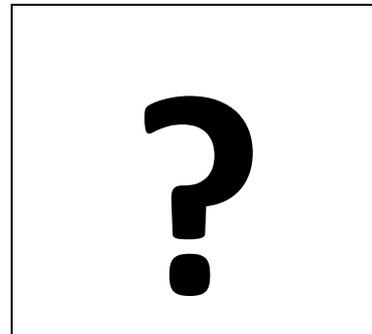
**My teeth**



**Making a change to my drinking & eating habits**



**Soft drinks**



**Something else – My topic**



**Healthy drinks options**



**What are the effects of unhealthy drinks?**

Decisional Balance

<p><b>What are the things you like about this?</b></p>	<p><b>What are the things you dislike about this?</b></p>
<p><b>What are the reasons for keeping things the way they are?</b></p>	<p><b>What are the reasons for making a change?</b></p>

How important is it to you to change your eating and drinking habits at the moment?

Not important  
at all

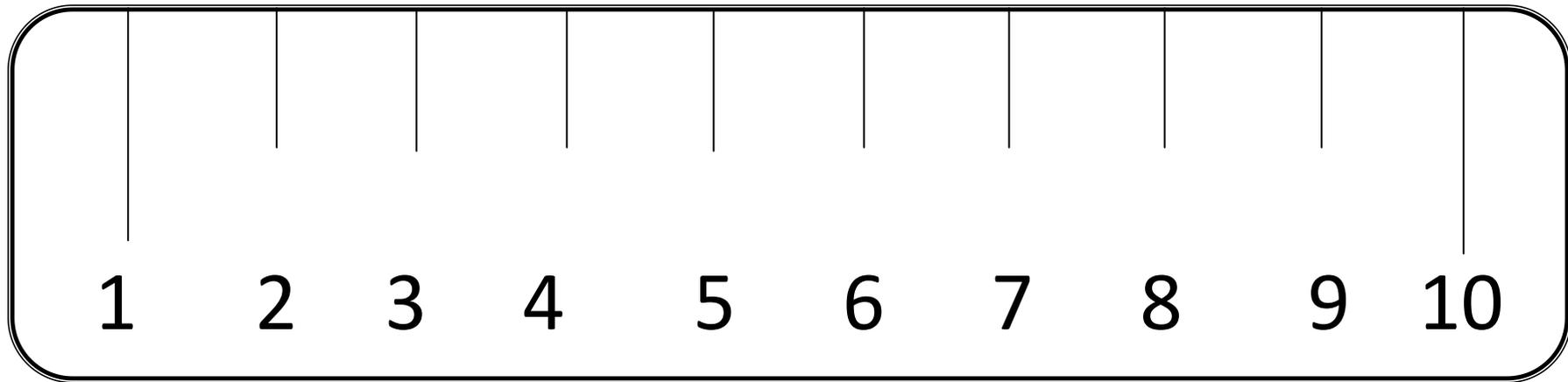
Very  
important

A horizontal scale with 10 numbered positions. The scale is enclosed in a rounded rectangular border. Vertical tick marks extend upwards from each number. The numbers are: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.

**How confident are you that you can make the change at the moment?**

**Not confident  
at all**

**Very  
confident**



A horizontal scale with 10 numbered positions. The scale is enclosed in a rounded rectangular border. Vertical tick marks extend from the top of the scale down to the numbers. The numbers are: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.





**What are the effects of having too many soft drinks?**

**Tooth decay (holes in the teeth)**

**Obesity**

**Weight gain**

**They can make it difficult  
to sleep**

**Tooth erosion (tooth enamel  
wears away making teeth  
sensitive)**

**Diabetes**

**Feel sluggish**

**Feel restless**

## Dietary Guidelines for SWITCH

### EIGHT TIPS FOR HEALTHY EATING (DH)

#### 1. Base meals on starchy foods.

- Starchy foods are a good source of energy and nutrients and are filling. Starchy foods include potatoes, bread, rice, pasta and cereals.
- Choose wholegrain varieties of starchy foods. They are high in fibre, which keeps your bowels healthy and keeps you fuller for longer. Some fibre can also help reduce cholesterol in the blood.
- Avoid adding fats to starchy foods as this can make them more calorific, for example frying potatoes to make chips, creamy sauces on pasta dishes or using lots of butter on bread.

#### 2. Eat lots of fruit and vegetables. Aim for 5 portions a day.

- F & V are typically low in calories, high in fibre (filling) and full of vitamins and minerals.
- A portion of fresh fruit or veg is around 80g (roughly a handful), a portion of dried fruit is 30g and a portion fruit juice is 150ml. This roughly equates to 1 banana, 2 Satsumas, 3 heaped tablespoons of peas or a cereal bowl of salad.
- Beans count as a maximum of one portion of veg. 100% pure fruit juice also counts as a portion of fruit.
- Fresh, frozen, canned and dried fruit all count towards your five a day.

#### 3. Eat more fish. Aim for two portions a week, including one oily fish.

- Fish is relative low in calories compared to meat. Oily fish also provide essential omega 3 fatty acids which help to prevent heart disease.
- Types of oily fish include salmon, mackerel, trout, herring, tuna steak (not tinned), sardines, pilchards

#### 4. Cut down on saturated fat and sugar.

- Having too much saturated fat can increase the amount of cholesterol in the body and increase your risk of heart disease. Sugary foods and drinks can lead to weight gain and dental caries.
- Choose foods containing unsaturated fats such as vegetable oils and oily fish.
- Use reduced fat spread and cheese and choose lean cuts if meat.
- Cut down on foods with added sugar, such as sugary drinks, cakes and biscuits, rather than foods with natural sugars such as fruit or milk.
- To help prevent dental caries, limit the consumption of foods and drinks with added sugars to a maximum of four times a day (including fruit juice and dried fruit).
- To reduce the damaging effects of sugary foods and drinks on teeth, eat or drink these items alongside a meal.

- Saturated fat is found in many animal-based foods and processed foods such as dairy products (cheese, cream etc.), butter, meat, sausages, pastry e.g. pies, cakes and biscuits.

## **5. Eat less salt.**

- Salt can increase blood pressure.
- Foods with a high salt content include cereals, soups, bread, sauces, ready meals and biscuits.
- Check the label for the lower varieties.
- Teens should eat no more than 6g salt per day.

## **6. Get active and be a healthy weight.**

- Being overweight or obese can lead to health conditions such as type 2 diabetes, certain cancers, heart disease and stroke.
- Physical activity will help to maintain a healthy weight.
- To lose weight, aim to eat fewer calories and do more activity.

## **7. Don't get thirsty.**

- We need around 1.2 litres of fluid each day to stop us getting dehydrated. When the weather is warm or when we are active, we need more.

## **8. Don't skip breakfast.**

- Eating a healthy breakfast can help control weight by keeping us full in the morning, so we avoid snacking on high calorie food later on.

# **ADDITIONAL GUIDELINES**

## **Drinks**

- The best drinks for teeth and a healthy weight are water and skimmed or semi-skimmed milk.
- Drinks with added sugar should be avoided as they are calorific, leading to weight gain, and cause tooth decay. These include:
  - Fizzy drinks such as coke and lemonade
  - Squashes and 'fruit flavoured' drinks
  - Shop-bought milk shakes
- 'Diet' drinks or drinks with an added sweetener should also be avoided as, although they are low in calories, there is some evidence that they increase consumption of other high calorie foods and drinks. These include:
  - 'Diet' fizzy drinks such as Diet Coke, Pepsi Max, Coke Zero
  - No-added sugar squashes

- Bottled flavoured water
- Fruit juice is also high in sugar, despite counting as a portion of fruit and veg – it is recommended to drink no more than one glass per day, and to have this with a meal to reduce the damage to teeth
- Sugary drinks and drinks with added sweetener should be substituted with plain water and skimmed or semi-skimmed milk.

### **Physical Activity**

- It is recommended that young people do at least 60 mins of physical activity every day. This should be a mixture of moderate-intensity aerobic activity and vigorous-intensity aerobic activity.
- On 3 days a week, these activities should include muscle-strengthening activities, and bone-strengthening activities.
- Moderate-intensity activity means getting a little out of breath, a little hot and a little sweaty. They include:
  - Fast walking
  - Riding your bike
  - Skateboarding
- Vigorous-intensity activity means your heart rate has gone up quite a bit and you may only be able to say a couple of words before pausing for breath. They include:
  - Running
  - Dancing
  - Gymnastics
  - Aerobics
  - Karate
  - Football or netball
  - Swimming
- Muscle-strengthening activity involves lifting your own body weight or working against a resistance, such as:
  - Rope climbing
  - Sit-ups and push-ups
  - Gymnastics
  - Climbing
  - Resistance exercises with equipment such as weight machines or hand-held weights
- Bone-strengthening activity involves those that have an impact on your bones, such as:
  - Jumping and skipping
  - Running
  - Sports such as gymnastics, football, volleyball and tennis

- The amount of time spent in sedentary activity such as watching the TV or playing on the computer should be limited to no more than 2 hours per day

### Sleep

- Getting the right amount of sleep is important for health. A lack of sleep has been linked to weight gain. Young people aged 12-14 years should aim for 9 – 9.5 hours of sleep a night.

### Labels

- Reading the labels on food packets can be a useful guide to whether a product is high in sugar or fat.
- It is most reliable to use the back-of-pack panel and find the 'per 100g' column, as this means you can compare the product to another one and make a healthy choice.
  - A product that has more than 20g of total fat per 100g is considered high in fat.
  - A product that has more than 5g of saturated fat per 100g is considered high in saturated fat.
  - A product that has more than 15g of sugars (usually written as 'of which sugars') per 100g is considered high in sugars.
    - If a product is classed as high in sugar, you should check if the sugars come mostly from naturally occurring sugars such as the ones found in fruit, or are added sugars. Check the ingredients list, and if added sugars are near the top of the list, it is best to avoid the food. Some other words used for 'added sugar' are sucrose, glucose, fructose, maltose, hydrolysed starch, invert sugar, corn syrup and honey.
  - If a product has more than 1.5g of salt per 100g it is considered high in salt.
- Be careful when choosing products labelled 'low fat' or 'reduced fat', as this does not automatically make it a healthy choice. It may still be higher in fat than an alternative food item, and often when products have reduced fat, more sugar is added to improve the flavour, so it can still contain a lot of calories.

## DIETING MYTHS

**“Carbohydrates are fattening”**. Carbohydrates have less calories gram for gram than fat. In the right quantities, carbs will not cause weight gain. Starchy foods, especial wholegrain ones, can contribute to a healthy weight-reducing diet by helping you feel fuller for longer.

**“Bananas are high in calories”**. A medium sized banana has around 95 calories, which is similar to a slice of toast or two plain biscuits. They are a low-calorie and filling snack and count towards one of your five fruit and veg a day.

**“You have to go to the gym to be physically active”**. There are lots of ways to be active. One way is to use the gym. Another way is to increase your day-to-day activity such as walking instead of catching the bus, using the stairs instead of lifts, riding your bike to the shops, playing in the park and helping with housework. You could also join an activity club or group such as karate, dance or basketball.

**“Skipping meals will help me to lose weight”.** Skipping meals usually makes people feel very hungry. When we feel hungry, we often make bad food choices or eat the most convenient food available, which are often fatty or sugary items. This can mean eating more calories than we may have otherwise had in a prepared meal.

**“Low carb diets will help me to lose weight”.** Low carb diets usually involve cutting out starchy foods. These diets tend to be high in fat. Diets high in fat (especially saturated fat, found in meat and cheese as well as cake and biscuits) can increase your risk of heart disease.

**“Eating late at night causes weight gain”.** It doesn’t matter at what time you eat calories, what matters is the amount of calories you eat and the amount of calories we burn off day-to-day. Often the foods people eat late at night are high fat and sugar snacks such as crisps, biscuits or chocolate. If you are hungry later in the evening it is better to snack on lower calorie foods such as fruit, plain popcorn or toast. Having said that, eating late at night can cause disruption to sleep as the body digests the food, and evidence shows that having less sleep can lead to weight gain, so it is sensible not to eat large amounts of food before bedtime.

**“Starving yourself is the only way to lose weight”.** Crash diets rarely lead to long-term weight loss as they are very difficult to maintain. Your body will be low in energy, so will crave high fat and sugar foods. Most people give in to the cravings and end up eating more calories than they need, adding to weight gain.

### Soft Drinks

(Taken from the British Soft Drinks Association) ([www.britishsoftdrinks.com](http://www.britishsoftdrinks.com))

The main categories of soft drink products are [carbonates](#), [fruit juices](#), [dilutables](#), [still and juice drinks](#) and [bottled waters](#) (see Table 1).

Types of soft drinks by market share

Drink type	Market share
Carbonated drinks	42%
Dilutable drinks	23%
Bottled waters	16%
Fruit juices	10%
Still & juice drinks	9%

Health issues and changing lifestyles have influenced shifts in UK consumption, most significantly a shift from regular variants to low calorie and no added sugar variants (see Table 2).

Low calorie & no added sugar drinks vs regular

Drink variant	Market share
Low calorie & no added sugar	61%
Regular	39%

### Bottled water

The soft drinks industry provides consumers with choice based on grounds of taste, price and convenience. Bottled water is not a replacement for tap water but an alternative that consumers might like to choose on some occasions.

There are three main types of bottled waters as defined in the Natural Mineral Water, Spring Water and Bottled Drinking Water Regulations 2007. Only products which meet the specifications within these regulations may use one of these terms.

### Natural mineral water

Natural mineral waters are one of the most popular types of bottled water. They must come from a protected source and by law may not undergo any treatment except filtration to remove sand particles or the addition of carbon dioxide to create a sparkling product. Therefore what goes into the bottle is the same as what comes out of the ground.

All natural mineral waters have a mineral analysis on the label so that consumers can know exactly what they are drinking. Natural mineral waters must be officially recognised through a local authority after a qualifying period of two years, during which time it is repeatedly analysed. It must also be registered with the Food Standards Agency (FSA). A list of UK natural mineral water companies is available on the [FSA website](#).

### Spring water

Spring waters can come from a single non-polluted ground water source. Unlike natural mineral waters,

spring waters may undergo permitted treatments in order to meet the microbiological criteria and to comply with standards based on the Drinking Water Regulations. Unlike natural mineral waters there is no formal recognition process required for spring water although they must still be registered with the local authority.

### **Table water**

Table water applies to bottled water which may come from more than one source and may include the public water supply. Treatment is permitted which results in the water achieving the compositional or microbiological requirements of the regulations. Some companies may also add mineral salts to their waters to replace those minerals lost during treatments or to enhance those which already exist.

### **Carbonates**

Unlike fruit juices and bottled waters, there is no formal legal definition or compositional standard of a carbonated drink but they can be defined as *"a manufactured drink, optionally sweetened, acidulated, which may contain fruit, fruit juice and other salts; the flavour may derive from vegetable extracts or flavourings"*. This includes sparkling juices, colas, mixers, tonic and bitter drinks, shandy, and flavoured waters to name but a few.

### **Dilutables, still and juice drinks**

#### **Dilutables**

Dilutable drinks, including squashes and cordials, are sold in concentrate form and are typically mixed with four parts water to one part syrup. This category of soft drink claims the second largest share of overall soft drink consumption with 23%. The main reason for their popularity is that they offer a low cost, easy to carry and reliable standby for kitchen shelves, as well as the launch of new flavours such as blueberry and pomegranate, which reflect the increasing popularity of superfruits. Furthermore, a dominance of low and no-added sugar variants provides lower calorie refreshment for adults and children alike.

#### **Still and juice drinks**

Still and juice drinks are simply soft drinks made with varying quantities of different types of fruit juice. Therefore the blend of fruit juice with other ingredients such as sweeteners and preservatives means that they are covered by different regulations from pure fruit juices.

They consist of a range of sub-segments such as high juice drinks with 25% to 99% juice, 5% to 24% juice drinks and lower juice concentrations often found in still flavoured waters, sports drinks and iced teas.

Consumer desire for health minded alternatives, has meant that the consumption of still and juice drinks has greatly increased over the years. New products have emerged including: superfruit juice drinks, enriched waters, dairy and soy juice blends, all of which meet the consumer demand for nutritious refreshment with the benefits of added functionality.

### **Energy drinks**

#### **What are energy drinks?**

Energy drinks are non-alcoholic drinks containing ingredients such as glucose, caffeine or taurine, that provide functional benefits by boosting energy and alertness. The code of practice for high caffeine content soft drinks relates to soft drinks that contain more than 150 mg of caffeine per litre. Such drinks contain about as much caffeine as a cup of coffee.

## How much caffeine is there in a high caffeine content soft drink?

Caffeine is found in many popular foods and drinks. The exact amount in any food or drink will depend on the recipe and method, e.g. how long a cup of tea is steeped, but the table below shows typical amounts.

Mug of filter coffee	140 mg
Mug of instant coffee	100 mg
Can of energy drink high in caffeine	80 mg
Mug of tea	75 mg
Small bar of chocolate	50 mg
Can of cola	40 mg

(figures from the Food Standards Agency)

## Fruit juice

Fruit juices consist of 100% pure juice made from the flesh of fresh fruit or from concentrates and contain no flavourings, colours, preservatives or any other added ingredients. A few minor exceptions exist in order to ensure that the final product is of an acceptable taste. These exceptions are very specific and are controlled by government legislation in the form of The Fruit Juices & Nectars Regulations, 2003.

Fruit juices which contain added unauthorised ingredients are adulterated and cannot be called fruit juice. To ensure that such products do not get into the marketplace, BSDA established an independent [Quality Control Scheme](#) in order to protect consumers as well as to prevent the adulteration of fruit juice supplies.

## Types of fruit juice

The fruit juice market is generally sub-divided into three main types:

- long life juice
- short life juice
- freshly squeezed juice

Long life and short life products are pasteurised to varying degrees which then has a direct effect on their shelf life. Long life juices usually keep for 6-12 months while the packaging is kept sealed, and because of the pasteurisation process applied and packing method, do not require chilling. Short life juices have a shelf life of up to 30 days and must be kept chilled.

Freshly squeezed fruit juices must have a shelf-life of not more than 14 days and undergo little or no pasteurisation treatment; they are usually packed and delivered to retailers within 24 hours. Therefore freshly squeezed juice must be kept chilled and has a shelf life of only a few days.

## Juice from concentrate vs not from concentrate juice

Fruit juices can further be described on pack as being juice from concentrate or not from concentrate. In the case of juice from concentrate, the fruit has been picked, squeezed and concentrated (by evaporating the water naturally present in the juice) in the country of origin.

The concentrated juice is then frozen and shipped to the country of use for packing. Fruit juice packers then reconstitute the juice restoring it to its original strength by adding the same amount of water to meet the standards set down in the EU Directive 2009/106/EC.

Not from concentrate juice is taken from fruit which is squeezed in the country of origin and then pasteurised and frozen or aseptically packed for shipment to the country where it will be sold.

## **Smoothies**

Fruit smoothies usually contain crushed fruit, purees and fruit juice to produce a premium fruit juice product.

Smoothies labelled as pure or 100% fruit juice, contain no other added ingredients and are subject to the same regulations as fruit juice. Other smoothies (ie not pure fruit) may contain additional ingredients such as yoghurt or milk – all ingredients must be labelled.

Smoothies count towards at least one portion of the recommended five portions of fruit and vegetables a day. In 2007 the smoothies category grew by more than 44% as health and wellbeing became a key driver of soft drinks sales.

## **Sports drinks**

It is important to distinguish between sports and energy drinks as the two are often confused. Sports drinks are designed to meet particular sporting requirements, whilst energy drinks usually contain high caffeine levels to stimulate alertness.

## **Sports drinks**

Sports drinks may be categorised as hypotonic, isotonic or hypertonic and each have their own specific purpose.

### ***Hypotonic***

These are intended to quickly replace water lost during exercise. Rehydration is the major requirement during exercise as performance deteriorates rapidly with even low levels of dehydration. Minerals such as sodium and potassium are also frequently added to replace those lost through sweat. Hypotonic drinks have very low carbohydrate content and are best drunk after exercise

### ***Isotonic***

These also quickly replace the fluid lost by sweating. However, unlike hypotonic drinks, isotonic drinks have a very high level of carbohydrate to provide the body with an energy boost.

### ***Hypertonic***

These are designed to supplement the body's daily carbohydrate intake. They contain high levels of carbohydrate in order to provide maximum energy uptake.

They are best drunk after exercise as it is important to replace glycogen levels quickly after exercise and hypertonic drinks can help to achieve this. However, they can be drunk during exercise, alongside isotonic drinks to meet energy requirements.

## Energy Drinks

### Lucozade Energy Blackcurrant 500ml



#### Ingredients

Carbonated Water, Glucose Fructose Syrup (24%), Blackcurrant Juice from Concentrate (2%), Citric Acid, Flavouring, Preservatives (Potassium Sorbate, Sodium Bisulphite), Caffeine (0.012%), Colour (Anthocyanins), Antioxidant (Ascorbic Acid).

#### Nutrition

	per 250ml serving	per 100ml
Energy, kJ / kcal	731 / 172	292 / 69
Protein, g	Trace	Trace
Carbohydrate, g	42.5	17.0
of which sugars, g	33.9	13.6
Fat, g	Nil	Nil
of which saturates, g	Nil	Nil
Fibre, g	Nil	Nil
Sodium, g	Trace	Trace

## Monster Energy 500ml



### Ingredients

Carbonated Water, Sucrose, Glucose Syrup, Citric Acid, Natural Flavourings, Taurine (0.4%), Acidity Regulator (Sodium Citrate), Colour (Anthocyanins), Panax Ginseng Root Extract (0.08%), L-Carnitine L-Tartrate (0.04%), Caffeine (0.03%), Preservatives (Sorbic Acid, Benzoic Acid), Vitamins (B3, B6, B2, B12), Sodium Chloride, D-Glucuronolactone, Guarana Seed Extract (0.002%), Inositol, Sweetener (Sucralose), Maltodextrin. High caffeine content (32mg/100ml)

### Nutrition

Per 100ml	
Energy	203 kJ (48 kcal)
Protein	0 g
Carbohydrate	12 g
of which Sugars	11 g
Fat	0 g
of which Saturates	0 g
Fibre	0 g
Sodium	0.08 g
Vitamins	
Per 100ml	
Riboflavin (Vit B2)	0.7 mg/50 % RDA
Niacin (Vit B3)	8.5 mg/53 % RDA
Vitamin B6	0.8 mg/57 % RDA
Vitamin B12	2.5 µg/100 % RDA
Other Ingredients	
Per 100ml	
Taurine	0.4%
Panax Ginseng	0.08%
L-Carnitine L-Tartrate	0.04%

## Mountain Dew Energy 1L, 500ml bottle, 440ml can



### Ingredients

Carbonated Water, Sugar, Citric Acid, Antioxidant (Ascorbic Acid), Caffeine, Flavourings, Preservative (Potassium Sorbate), Stabiliser (Gum Arabic), Colour (Beta Carotene).

### Nutrition

	Per 100ml	Per 250ml
Energy	200kJ(48kcal)	500kJ(120kcal)
Protein	Nil	Nil
Carbohydrate	12g	30g
of which Sugars	12g	30g
Fat	Nil	Nil
of which Saturates	Nil	Nil
Fibre	Nil	Nil
Sodium	Nil	Nil

## Powerade Energy, Berry 500ml



### Ingredients

Carbonated Water, Glucose, Fructose, Fruit Juices from Concentrates 5% (Orange 2.5%, Blackberry 2.5%), Citric Acid, Minerals Salts (Sodium Chlorides, Magnesium Chloride, Calcium Chloride, Potassium Phosphate), Fruit Concentrates (Chokeberry, Elderberry), Natural Flavouring, Caffeine, Acidity Regulator (Potassium Citrate), Preservative (Potassium Sorbate), Sweeteners (Sucralose, Acesulfame K), Vitamins (Niacin, Thiamin, B12), Anti-Foaming Agent (E900).

### Nutrition

	Per 100ml
Energy:	186 kJ, 44 kcal
Protein:	0g
Carbohydrate:	10.5g
of which Sugars:	10.5g
Fat:	0g
of which Saturates:	0g
Fibre:	Trace
Sodium:	0.05g
Other Nutrients:	
	Per 100ml
Thiamin:	0.17mg (15%*)
Niacin:	2.4mg (15%*)
Vitamin B12:	0.38µg (15%*)

\* RDA - Recommended Daily Allowance Per 100ml

## Red Bull Energy 250ml, 355ml, 473ml



### Ingredients

Carbonated Water, Sucrose, Glucose, Acidity Regulator Sodium Citrates, Taurine (0.4%), Glucuronoactone (0.24%), Caffeine (0.03%), Inositol, Vitamins (Niacin, Pantothenic Acid, B6, B12), Flavourings, Colours (Caramel, Riboflavin).

### Nutrition

per 100ml	
Energy	192 kJ (45kcal)
Protein	0 g
Carbohydrate	11.3 g
Fat	0 g
Vitamins:	
per 100ml	
Niacin	8 mg/44% RDA
Pantothenic acid	2 mg/33% RDA
Vitamin B6	2 mg/100% RDA
Vitamin B12	2 µg/200% RDA

## Relentless Devotion 500ml



### Ingredients

Carbonated Water, Fruit Juices from Concentrate (50%) (Apple 35%, Blackcurrant 11%, Red Grape 2%, Raspberry 1%, Strawberry 1%), Sugar, Taurine (0.4%), Glucuronolactone (0.24%), Flavourings, Acidity Regulator (E331), Colour (Anthocyanins), Citric Acid, Caffeine, Inositol, Vitamins (Niacin, Pantothenic Acid, B6, B12), Guarana, High Caffeine Content (32mg/100ml).

### Nutrition

	per 100ml
Energy	197kJ (46kcal)
Protein	Trace
Carbohydrate	10.7g
of which sugars	10.7g
Fat	0g
of which saturates	0g
Fibre	Trace
Sodium	0.03g
Niacin	3.6mg
B6	0.1mg
B12	0.2µg
Pantothenic acid	1.2mg

Sparkling Berry Fruit Energy Drink with Caffeine.

Taurine 4000mg/l.

Glucuronolactone 2400mg/l.

Inositol 120mg/l.

## Rockstar Juiced 248ml, 500ml, 710ml



### Ingredients

Carbonated Water, Sucrose, Fruit Juices from Concentrate 10% (a blend of 9.3% Apple, 0.3% Mango, 0.3% Orange, 0.1% PassionFruit), Glucose, Citric Acid, Taurine (0.4%), Glucuronolactone (0.23%), Flavourings, Stabilisers (Pectin, Gum Arabic, Xanthan Gum, Glycerol Ester of Wood Rosin), Caffeine (0.03%), Inositol, Guarana (Paullina Cupana), Seed Extract (0.01%), Ginseng Root Extract (0.01%), Colour (Caramel E150d, Beta Carotene), Vitamins (Niacin, Calcium Pantothenate, B6, B12).

### Nutrition

	Per 100ml	Per 500ml Serving
Energy	281kJ	1405kJ
	66 kcal	330 kcal
Protein	0.4g	2.0g
Carbohydrate	15.3g	76.5g
of which sugars	15.2g	76.0g
Fat	0g	0g
of which saturates	0g	0g
Fibre	0g	0g
Sodium	0.02g	0.1g
Niacin	3.20mg (20% RDA)	16mg (100% RDA)
Pantothenic acid	1.20mg (20% RDA)	6mg (100% RDA)
Vitamin B6	0.28mg (20% RDA)	1.4mg (100% RDA)
Vitamin B12	0.50µg (20% RDA)	2.5µg (100% RDA)

High Caffeine Content - 32mg/100ml

## Fizzy Drinks

7Up 330ml, 500ml, 1.5L, 2L



### Ingredients

Carbonated Water, Sugar, Natural Flavourings, Citric Acid, Acidity Regulator (Sodium Citrate), Malic Acid.

### Nutrition

PER 100 ML	
Energy	182 kJ (43 kcal)
Protein	0 g
Carbohydrate	11.3 g
Of Which Sugars	11.2 g
Fat	0 g
Of Which Saturates	0 g
Fibre	0 g
Sodium**	Trace
**Equivalent as Salt	Trace

Ben Shaw's Shandy 6 x 330ml, 330ml, 500ml, 2L



### Ingredients

Carbonated Water, Beer (12%), Sugar, Citric Acid, Colour (Caramel E150c), Flavourings, Preservatives (Sodium Benzoate), Sweetener (Sodium Saccharin), Stabiliser (Quillaia Extract).

### Dietary Information

Contains Barley  
Contains Wheat

### Nutrition

PER 100g	
Energy	112kJ/26kcal
Protein	Trace
Carbohydrate	5.5g
Fat	Nil

CARBONATED LEMON FLAVOUR SOFT DRINK WITH BEER, SUGAR AND SWEETENER.  
LESS THAN 0.5% ALCOHOL BY VOLUME.

**Coca Cola 330ml, 375ml, 500ml bottle, 1.5L, 2L**



**Ingredients**  
Carbonated Water, Sugar, Colour (Caramel E150d), Phosphoric Acid, Natural Flavourings including Caffeine.

**Nutrition**

Per 100ml	
Energy:	180kJ, 42kcal
Protein:	0g
Carbohydrate:	10.6g
Of which Sugars:	10.6g
Fat:	0g
Of which Saturates:	0g
Fibre:	0g
Sodium:	0g

**Cherry Vimto Fizzy 250ml, 330ml, 500ml, 725ml, 2L**



**Ingredients**  
Carbonated Water, Sugar, Mixed Fruit Juices from Concentrate 3% (Grape, Blackcurrant, Cherry, Raspberry), Citric Acid, Vimto Flavouring (including Natural Extracts of Fruits, Herbs, Barley Malt and Spices), Natural Colour (Anthocyanins), Preservatives (Potassium Sorbate, Sodium Benzoate), Flavourings, Antioxidant (Ascorbic Acid), Acidity Regulator (Sodium Citrate), Sweeteners (Acesulfame K, Sucralose).

**Dietary Information**  
No Added Sugar

**Nutrition**

per 100 mls	
Energy	109kJ/26kcal
Protein	Trace
Carbohydrate	6.3g
Fat	Trace

**Coca Cola Cherry Coke 330ml, 500ml, 2L**



**Ingredients**  
Carbonated Water, Sugar, Colour (Caramel E150d), Phosphoric Acid, Flavourings (including Caffeine).

**Nutrition**

per 100ml	
Energy	191kJ (45kcal)
Protein	0g
Carbohydrate	11.2g
of which sugars	11.2g
Fat	0g
of which saturates	0g
Fibre	0g
Sodium	

**Coca Cola, Diet 330ml, 375ml, 500ml, 1.25L, 2L**



**Ingredients**

Carbonated Water, Colour (Caramel E150d), Sweeteners (Aspartame, Acesulfame K), Flavourings (including Caffeine), Phosphoric Acid, Citric Acid, Contains a source of Phenylalanine.

**Nutrition**

Per 100ml	
Energy:	2.0 kJ, 0.5 kcal
Protein:	trace
Carbohydrate:	0 g
Of which sugars:	0 g
Fat:	0 g
Of which Saturates:	0 g
Fibre:	0 g
Sodium:	trace

**Coke Zero 330ml, 375ml, 500ml, 1.25L, 2L**



**Ingredients**

Carbonated Water, Colour (Caramel E150d), Phosphoric Acid, Sweeteners (Aspartame, Acesulfame K), Flavourings (including Caffeine), Acidity Regulator (E331), Contains a Source of Phenylalanine.

**Nutrition**

Per 100ml	
Energy:	1.5 kJ, 0.5 kcal
Protein:	0 g
Carbohydrate:	0 g

Of which Sugars:	0 g
Fat:	0 g
Of which Saturates:	0 g
Fibre:	0 g
Sodium:	trace

## Dr Pepper 240ml, 500ml



### Ingredients

Carbonated Water, Sugar, Colour (Caramel E150d), Flavourings (including Caffeine), Phosphoric Acid, Preservative (E211).

### Nutrition

Per 100ml	
Energy:	177kJ, 42kcal
Protein:	0g
Carbohydrate:	10.3g
Of which Sugars:	10.3g
Fat:	0g
Of which Saturates:	0g
Fibre:	0g
Sodium:	trace

## Fanta Beach 330ml, 500ml, 1.25L and 2L



### Ingredients

Carbonated Water, Sugar, Lemon Juice from Concentrate (3%), Citric Acid, Natural Kiwi Flavouring with other Natural Flavourings, Vegetable Concentrates (Carrot, Safflower), Stabilisers (Acacia Gum, Glycerol Esters of Wood Rosins), Preservative (Potassium Sorbate).

### Dietary Information

Free From Artificial Colours

### Nutrition

Per 100ml	
Energy:	177 kJ, 42 kcal
Protein:	trace
Carbohydrate:	10.2 g
Of which Sugars:	10.2 g
Fat:	0 g
Of which Saturates:	0 g

Fibre:	Trace
Sodium:	0 g

### Fanta Fruit Twist Drink 330ml, 500ml



#### Ingredients

Carbonated Water, Sugar, Orange Fruit from Concentrate (3%), Citric Acid, Flavourings, Preservatives (E202, E211), Stabilisers (E445, E412, Acacia Gum), Colours (E104, E122, E124).

#### Nutrition

per 100ml	
Energy	224kJ (53kcal)
Protein	Trace
Carbohydrate	13.6g
of which sugars	13.6g
Fat	0g
of which saturates	0g
Fibre	Trace
Sodium	0g

### Fanta Lemon Z 6 x 330ml, 2L



#### Ingredients

Carbonated Water, Lemon Juice from Concentrate (5%), Citric Acid, Sweeteners (Acesulfame K, Aspartame, Sodium Saccharin), Stabilisers (Acacia Gum, Glycerol Esters of Wood Rosins), Preservative (Potassium Sorbate), Antioxidant (Ascorbic Acid), Acidity Regulator (Sodium Citrate), Natural Lemon Flavouring with other Natural Flavourings, Contains a source of Phenylalanine.

#### Dietary Information

Free From Artificial Colours

#### Nutrition

Per 100ml	
Energy:	7.6 kJ, 1.9 kcal
Protein:	trace
Carbohydrate:	0.2 g
Of which Sugars:	0.2 g
Fat:	0 g
Of which Saturates:	0 g
Fibre:	trace
Sodium:	trace

## Fanta Orange Sparkling Drink 150ml, 330ml, 500ml, 2L



### Ingredients

Carbonated Water, Sugar (from Beet and/or Cane), Orange Fruit from Concentrate (5%), Citric Acid, Vegetable Extracts (Carrot, Pumpkin), Preservative (Potassium Sorbate), Flavourings, Sweeteners (Sodium Saccharin, Aspartame), Acidity Regulator (Sodium Citrate), Stabiliser (Guar Gum), Contains a source of Phenylalanine.

### Nutrition

Per 100ml	
Energy	126kJ (30kcal)
Protein	Trace
Carbohydrate	7.1g
of which sugars	7.1g
Fat	0g
of which saturates	0g
Fibre	Trace
Sodium	Trace

## Juicy Drench Apple & Blackcurrant 440ml



### Ingredients

Spring Water\* (82%), Fruit Juices from Concentrate (Blackcurrant 3%, White Grape 3%, Apple 2%), Sugar, Citric Acid, Natural Colour (Anthocyanins), Natural Flavourings, Preservatives (Potassium Sorbate, Dimethyl Dicarboxylate), \*Sourced at Norwich.

### Dietary Information

Free From Artificial Colours  
Free From Artificial Sweeteners  
Free From Artificial Flavours

Still blackcurrant and apple juice drink.

### Nutrition

per 100ml	
Energy	164kJ/38kcal
Protein	Trace
Carbohydrate	9.2g
of which sugars	9.2g
Fat	Trace
of which saturates	Nil
Fibre	Nil
Sodium	Nil

## Old Jamaican Ginger Beer 6 x330ml, 330ml, 1.5L



### Ingredients

Carbonated Water, Sugar, Ginger Root Extract and other Flavouring, Citric Acid, Preservative (Sodium Benzoate), Stabiliser (Quillaia Extract).

### Nutrition

per 100ml	
Energy	274kJ 64kcal
Protein	Less than 0.1g
Carbohydrate	16g
Fat	Less than 0.1g

## Schweppes Lemonade 6x330ml, 500ml, 1.25L, 2L



### Ingredients

Carbonated Water, Sugar, Lemon Juice from Concentrate (2%), Citric Acid, Flavourings, Acidity Regulator (E331), Sweeteners (Aspartame, Sodium Saccharin), Preservative (E202), Antioxidant (Ascorbic Acid), Contains a source of Phenylalanine.

### Nutrition

Per 100ml	
Energy:	78 kJ, 18 kcal
Protein:	trace
Carbohydrate:	4.2 g
Of which Sugars:	4.2 g
Fat:	0 g
Of which Saturates:	0 g
Fibre:	trace
Sodium:	0.01

## SoBe V Water Forti-Fight 500ml



### Ingredients

Spring Water, Sugar, Citric Acid, Natural Flavouring, Carrot and Hibiscus Concentrates, Vitamin C, Zinc Sulphate.

Blackcurrant and goji berry flavour spring water drink with vitamin C and zinc.

### Nutrition

per 100ml	
Energy	70kJ/17kcal
Protein	0g
Carbohydrate	4.3g
- of which sugars	4.2g
Fat	0g
- of which saturates	0g
Fibre	0g
Sodium	0g
Vitamin C	24mg 40% RDA*
Zinc	0.75mg 5% RDA*

**\*Recommended Daily Allowance**

## Sprite Sparkling Lemon & Lime Drink 330ml, 500ml, 1.5L, 2L



### Ingredients

Carbonated Water, Sugar, Citric Acid, Acidity Regulator (E331), Flavourings, Preservative (E211).

### Nutrition

Per 100ml	
Energy	185kJ (44kcal)
Protein	0g
Carbohydrate	10.6g
of which sugars	10.6g
Fat	0g
of which saturates	0g
Fibre	0g
Sodium	

## Irn Bru Original 250ml, 500ml, 750ml



### Ingredients

Carbonated Water , Sugar (Carbohydrate) , Citric Acid , Flavourings (including Caffeine & Quinine) , Preservative (E211) , Colours (Sunset Yellow & Ponceau 4R) , Ammonium Ferric Citrate (0.002%) .

### Other information

Original & best Bru'd in Scotland to a secret recipe for over 100 years Sparkling flavoured soft drink

### Nutritional Values

Typical values	Per 100ml
Energy	182 kJ/ 43 kcal
Protein	Trace
Carbohydrate	10.5g
Fat	0g

## KA Sparkling Fruit Punch Flavour Drink 330ml, 500ml, 2L



### Ingredients

Carbonated Water , Sugar , Citric Acid , Flavourings , Fruit and Vegetable Concentrates , Acidity Regulator (Sodium Citrate) , Preservative (E211) .

### Other information

Sparkling mixed fruit flavour soft drink. A taste of the Caribbean

### Nutritional Values

Typical values	Per 100ml
Energy	236 kJ/55 kcal
Protein	Trace
Carbohydrate	13.7g
Fat	Trace

## Levi Roots Fiery Root Ginger Beer 2L, 330ml



### Ingredients

Carbonated Water , Sugar , Natural Flavourings , Stabiliser (Gum Arabic) , Citric Acid , Preservatives (Potassium Sorbate, Sodium Benzoate) , Sweeteners (Sucralose, Acesulfame-K) , Caramel Sugar Syrup .

### Other information

Carbonated ginger beer with lime 'n' honey flavours with sugar & sweeteners

### Storage

Store in a cool, dry place. Refrigerate after opening and consume within 3 days.

### Nutritional Values

Typical values	Per 100ml:
Energy	125 kJ / 30 kcal

Typical values	Per 100ml:
Protein	Trace
Carbohydrate	7.2g
of which sugars	7.2g
Fat	Trace
of which saturates	Trace
Fibre	Trace
Sodium	Trace

## Ribena Blackcurrant 500ml, 330ml



### Ingredients

Water , Sugar , Blackcurrant Juice from Concentrate (6%) , Vitamin C , Citric Acid , Colour (Anthocyanins) .

### Nutritional Values

Typical values	Per 250ml serving	Per 100ml
Energy, kJ/ kcal	453 / 108	181 / 43
Protein, g	Trace	Trace
Carbohydrate, g	26.3	10.5
of which sugars, g	26.3	10.5
Fat, g	Nil	Nil
of which saturates, g	Nil	Nil
Fibre, g	Nil	Nil
Sodium	Trace	Trace
Vitamin C, mg	60 -100% RDA	24 - 40% RDA*
*RDA = Recommended Daily Allowance		

## Rubicon Sparkling Mango Juice 330ml, 288ml, 500ml, 1L, 2L



### Ingredients

Carbonated Water , Sugar , Mango Puree (8%) , Malic Acid , Flavourings , Preservative (E211) , Colour (Beta-Carotene) .

### Other information

Suitable for Vegetarians. Free From Artificial Sweeteners.

### Nutritional Values

Typical values	Per 100ml
Energy	218kJ/52kcal

Typical values	Per 100ml
Protein	0.1g
Carbohydrate	13g
Fat	Trace

## Tango Orange (4x330) 330ml, 500ml



### Ingredients

Carbonated Water , Orange Fruit from Concentrate (5%) , Sugar , Acids (Citric, Malic) , Natural Orange Flavouring , Acidity Regulator (Sodium Citrate) , Sweeteners (Aspartame, Saccharin) , Preservative (Potassium Sorbate) , Antioxidant (Ascorbic Acid) , Natural Colour (Carotenes) , Contains a source of Phenylalanine .

### Other information

Free From Artificial Colours. Free From Artificial Flavours.

### Nutritional Values

Typical values	Per 100ml
Energy	79kJ/19kcal
Protein	0.1g
Carbohydrate	4.3g
of which sugars	4.3g
Fat	Trace
of which saturates	Nil
Fibre	Trace
Sodium	Trace

## Vimto Fizzy (No Added Sugar) (6x330ml), 250ml, 1L, 2L



### Ingredients

Carbonated Water , Mixed Fruit Juices from Concentrate 3% (Grape, Blackcurrant, Raspberry) , Citric Acid , Vimto Flavouring (including Natural Extracts of Fruits, Herbs, Barley Malt and Spices) , Natural Colour (Anthocyanins) , Malic Acid , Preservatives (Potassium Sorbate, Sodium Benzoate) , Acidity Regulator (Sodium Citrate) , Sweeteners (Sucralose, Acesulfame K) , Antioxidant (Ascorbic Acid) .

### Other information

#### Dietary Information

No Added Sugar.

### Nutritional Values

Typical values	Per 100mls
Energy	7kJ/2kcal
Protein	Trace
Carbohydrate	0.4g
of which sugars	0.4g
Fat	Trace

Typical values	Per 100mls
of which saturates	Trace
Fibre	Trace
Sodium	Trace

## Vimto Fizzy Original (6x330ml) 250ml, 1L, 2L



### Ingredients

Carbonated Water , Sugar , Mixed Fruit Juices from Concentrate 3% (Grape, Blackcurrant, Raspberry) , Citric Acid , Vimto Flavouring (including Natural Extracts of Fruits, Herbs, Barley Malt and Spices) , Natural Colour (Anthocyanins) , Preservatives (Potassium Sorbate, Sodium Benzoate) , Antioxidant (Ascorbic Acid) .

### Nutritional Values

Typical values	Per 100 mls
Energy	183kJ/43kcal
Protein	Trace
Carbohydrate	10.6g
Fat	Trace

## Britvic V Water Glow (500ml)

### Ingredients

Spring Water , Sugar , Pomegranate and Blueberry Juice Concentrates , Citric Acid , Natural Blueberry Flavouring with other Natural Flavourings , Vitamins: C, E , Carrot and Hibiscus Concentrates , Minerals: Zinc Sulphate, Sodium Selenite, Burdock Root Extract .



### Nutritional Values

Typical values	Per 100ml
Energy	69kJ/17kcal
Protein	0g
Carbohydrate	4.3g
- of which sugars	4.2g
Fat	0g
- of which saturates	0g
Fibre	0g
Sodium	0g
Vitamin E	1mg 10% RDA*
Vitamin C	12mg 20% RDA*

Typical values	Per 100ml
Zinc	1.5mg 10% RDA*
Selenium	3.4µg 6% RDA*
*Recommended Daily Allowance	
Burdock Root Extract	100mg

## Yazoo Strawberry (475ml)

### Ingredients



Semi-Skimmed Milk , Skimmed Milk , Sugar (4.5%) , Strawberry Juice from Concentrate (1%) , Natural Flavouring , Stabiliser: Gellan Gum , Colour: Beta-Carotene (contains Soya Lecithin) .

### Other information

Suitable for Vegetarians. Free From Artificial Sweeteners. Free From Artificial Flavours.

### Nutritional Values

Typical values	Per 100ml
Energy	260kJ/60kcal
Protein	3.1g
Carbohydrate	9.5g
- of which sugars	9.5g
Fat	1.2g
- of which saturates	0.9g
Fibre	Trace
Sodium	0.05g
Calcium	120mg (15% RDA*)
	Per 1/2 bottle
Calcium	285mg (35% RDA*)
*RDA: Recommended Daily Allowance	
Some sugars are naturally found in milk	

## Fruit Shoot Summer Fruits (8x200ml) (4x200ml) 300ml

### Ingredients

Water , Fruit Juices from Concentrate (Strawberry 5% , Raspberry 5%) , Citric Acid , Acidity Regulator (Sodium Citrate) , Natural Flavouring , Natural Colour (Anthocyanins) , Preservatives (Potassium Sorbate, Dimethyl Dicarboxylate) , Sweeteners (Aspartame, Acesulfame K) , Contains a source of Phenylalanine .

### Other information

Suitable for Vegetarians. Free From Artificial Colours. Free From Artificial Flavours.

### Nutritional Values



Typical values	PER 100ml
Energy	20kJ/5kcal
Protein	0.1g
Carbohydrate	0.6g
of which sugars	0.6g
Fat	Trace
of which saturates	Nil
Fibre	Nil
Sodium	Trace

## Boost Energy 250ml, 500ml, 1L



### Ingredients:

Carbonated Water, Sugar, Glucose-Fructose Syrup, Citric Acid, Taurine (0.4%), Flavourings (Including Caffeine (0.03%)), Acidity Regulator (Sodium Citrate), Colours (Ammonia Caramel), Inositol, Preservative (Sodium Benzoate), Vitamins (Niacin, Pantothenic Acid, B6, B12).

	Per 100ml
Energy	200kJ/47 Kcal
Protein	Nil
Carbohydrate	10.9g
Fat	Nil
Caffeine	30mg

## Boost Sport Mixed Berry 500ml



### Ingredients:

Water, Glucose-Fructose Syrup, Maltodextrin, Citric Acid, Acidity Regulator (Sodium Citrate), Preservatives (Dimethydicarbonate, Potassium Sorbate), Flavouring, Fruit & Vegetable Concentrates (Black carrot, Hibiscus), Sweeteners (Aspartame, Acesulfame K), Stabiliser (Gum Arabic), Vegetable Oil, Antioxidant (Ascorbic Acid), Vitamins (Niacin, Pantothenic Acid, B6, B12).

	Per 100ml
Energy	119kJ/28Kcal
Protein	Trace
Carbohydrate	6.5g
Fat	Trace

## Boost Active original 500ml



### Ingredients:

Carbonated Water, Glucose-Fructose Syrup (20%), Dextrose, Citric Acid, Lactic Acid, Flavouring (Including Caffeine), Acidity Regulator (Sodium Citrate), Colour (Carminic Acid), Preservatives (Potassium Sorbate, Sodium Metabisulphite), Antioxidant (Ascorbic Acid), Vitamins (Niacin, Pantothenic Acid, B6, Riboflavin, Biotin, B12).

	Per 100ml
Energy	294kJ/69kcal
Protein	Nil
Carbohydrate	16.6g
Fat	Nil

## Supermalt Original (6x330ml)



### Ingredients

Water , Barley Malt , Glucose Syrup , Carbon Dioxide , Colour (E150c) , Acid (Citric Acid) , Liquorice , Nicotinamide , Pantothenol , Thiamin Hydrochloride , Sodium Riboflavin Phosphate , Pyridoxin Chloride .

### Other information

THE NON-ALCOHOLIC QUALITY MALT DRINK WITH B VITAMINS. Tasty & highly digestible health drink, which helps restore lost energy

### Nutritional Values

Typical values	100ml	Bottle / % of RDA
Energy	270kJ (65kcal)	900kJ (210kcal)
Protein	0.8g	2.6g
Carbohydrate	15g	50g
Fat	nil	nil
Thiamin (vitamin B1)	1.40mg	4.6mg / 100%
Riboflavin (vitamin B2)	0.80mg	2.6mg / 50%
Niacin (vitamin B3)	7.40mg	24mg / 40%
Vitamin B6	0.70mg	2.3mg / 35%
Pantothenic acid (vitamin B5)	1.50mg	5.0mg / 25%

## Kool-aid bursts - soft drink - bursts cherry 200ml bottles



### Ingredients:

water, high fructose corn syrup, citric acid (for tartness), artificial flavor, potassium sorbate and sodium benzoate (to preserve freshness), red 40, sodium citrate (controls tartness), sucralose (sweetener), calcium disodium edta (to protect flavor), natural flavor, blue 1.

Typical values	Per 200ml	% Daily value*
Calories	35kcal	
Total fat	0	0%
Sodium	30mg	1%
Total carbohydrate	9g	3%
Sugars	9g	
Protein	0g	

\*based on a 2000kcal diet.

<http://www.kraftrecipes.com/Products/ProductInfoDisplay.aspx?SiteId=1&Product=4300095368>



# You are what you eat

Treat yourself well by eating right and being physically active and your body will thank you for it

**Stay healthy: what you eat and drink has a big impact on your health both now and in the future**

You've probably heard people talking about a 'balanced diet'. To be healthy it's very important to eat a balanced diet. But what does it actually mean?

The perfect balance is:



Eat fruit and vegetables at every meal and as snacks. Aim for at least 5 different types a day



Eat starchy foods like bread, potatoes, rice and pasta at all your main meals and have wholemeal and wholegrain varieties when you can



Milk and dairy foods provide calcium and some other important minerals and vitamins so have 3 portions a day



These foods provide some important vitamins and minerals so have at least two portions of these a day

Keep foods high in fat, salt and sugar to a minimum



## 5-A-DAY



Fruit and veg provide us with essential vitamins & minerals. It may not be as hard as you think to get your 5-a-day: fruit juices and beans count as up to 1 portion a day and smoothies up to 2. All these count as a portion:

- 1 heaped tablespoon of raisins on your cereal
- A glass (150ml) of 100% fruit juice with a meal
- 1 sliced tomato in your sandwich
- 3 tbsp of kidney beans in a chilli
- Half a pepper (fresh or frozen) in a fajita
- 3 tablespoons of sweetcorn on top of home-made pizza
- ¼ tin of peaches in their own juice with yoghurt

## BREAKFAST

Wake up your body by tucking-in to breakfast. By this time, you probably haven't eaten for quite a few hours, so your body needs an energy boost. Eating a wholegrain breakfast keeps your energy going for hours. Having some fruit or veg also helps get one of your 5-a-day in early. Some healthy ideas include:



- wholegrain cereal with milk and berries or chopped fruit
- toast with low-fat spread, chopped banana and a glass of 100% fruit juice
- beans, mushrooms or a poached egg on toast
- natural yoghurt with fresh fruit and museli

## IRON

If you're feeling tired and run down, you may need more iron in your diet.

Teenage girls are at higher risk of being low on iron, because they lose iron when they have their monthly period, and they are still growing.

Good sources of iron include:

- red meats
- breakfast cereals
- baked beans
- nuts
- dried fruit
- green leafy veg

## CALCIUM

90% of your adult skeleton is formed by the time you're 18, so it's important to get plenty of this mineral when we're young.

- Aim for around 3 portions of dairy foods (milk, yoghurt and cheese) a day
- Go for low fat varieties to avoid eating too much unhealthy saturated fat throughout the day
- Get enough vitamin D (which helps the body absorb calcium) through getting outdoors in the summer and eating oily fish and eggs
- Taking regular exercise will also help to build strong bones

## SNACKS

Sometimes we get hungry between meals and we can use snacking opportunities to grab some extra nutrients. Good snacks provide energy and the nutrients we need to use that energy well.

- Any fresh fruit or vegetables
- Unsalted nuts and seeds
- Rice cakes
- Unsalted popcorn
- Scones, currant buns or malt loaf
- Wholegrain cereals with milk
- Yoghurt with fruit
- Sandwiches or pitta bread with houmous, peanut butter and salad filling



## DRINKS

Keeping hydrated helps with physical and mental performance, and you should aim for 6-8 glasses

of fluid a day. The best drinks are water and skimmed or semi-skimmed milk.

Drinks with added sugar are best avoided as they contain a lot of calories but very little nutrition, and can causing tooth decay. These include:

- Fizzy drinks such as coke and lemonade
- Squashes and 'fruit flavoured' drinks
- Shop-bought milk shakes

'Diet' drinks or those with added sweetener should also be avoided as they can still cause damage to teeth.

Fruit juice is also high in sugar, even though it counts as a portion of fruit and veg – it is recommended to drink no more than one glass per day, and to have this with a meal to reduce the damage to teeth.

## WEIGHT

If you are worried about your weight, talk to the school nurse or your GP about whether you are too heavy for your height and age.

It is important to eat well when you are a teenager as you are still growing and need lots of nutrients every day, but you might need to cut out foods and drinks that don't provide many useful nutrients (like soft drinks, sweets, fried foods and takeaway foods) and eat lots more fruit and vegetables and the sorts of healthy foods we recommend here.

### Constantly hungry?

Eat more high fibre foods such as wholemeal bread, beans, fruit & veg and wholegrain breakfast cereals and pasta. These are bulky and fill us up for longer.

### Handy websites:

[www.nhs.uk/LiveWell/](http://www.nhs.uk/LiveWell/)

- Take a Life Check @

[www.nhs.uk/Tools/Pages/LifeCheck](http://www.nhs.uk/Tools/Pages/LifeCheck)

- Find sports near you:

[www.activeplaces.co.uk](http://www.activeplaces.co.uk)

- Try a new recipe

[www.teenweightwise.com/recipes](http://www.teenweightwise.com/recipes)

## TAKEAWAYS

Eating out or having a takeaway doesn't have to mean abandoning healthy eating – a few careful choices will ensure your tempting treat isn't a dietary disaster.

- Go for boiled rice rather than fried / pilau rice
- Fried starters like samosas, pakoras and bhajis, or spring rolls are high in fat, so go for options like chicken tikka instead
- Creamy curries like korma or masala are also high in fat so choose tandoori or madras dishes or try a dahl
- Opt for a stir fried main course like chow mein with an extra portion of vegetables rather than battered dishes like sweet & sour
- Order a serving of mushy peas or baked beans with fish & chips and share a portion of chips
- When ordering pizza, ask for less cheese and more vegetable toppings like mushrooms, peppers, pineapple and sweetcorn

## GET ACTIVE

Physical activity builds strong bones, muscles and a healthy heart, and can help us to feel happier and more confident too.

For physical activity to be working, you should feel warm and a little out of breath. You should aim to be active for at least 60 mins a day (this can be done in bursts of 15 minutes if you like).

### On your own:

Walking  
Running  
Dancing  
Climbing  
Cycling  
Skateboarding  
Swimming

### With others:

Football & rugby  
Netball  
Karate & martial arts  
Basketball & volleyball  
Street dance  
Hockey & Ice hockey  
Tennis, table tennis & badminton



## Quick Recipe Idea 5 minute Pizza

### Ingredients

- 1 or 2 slices of bread (experiment with sliced bread, French sticks, English muffins and pitta breads)
- 1 tbsp tomato paste
- 3 spring onions, roots trimmed
- 1 tbsp tinned sweetcorn (no added salt or sugar), drained
- 1 tbsp tinned pineapple chunks, drained
- Small handful of low-fat cheddar cheese, grated

1. Spread the tomato paste onto the bread
2. Snip the spring onions into small pieces with a pair of scissors and sprinkle on top
3. Add your other vegetable & fruit toppings
4. Sprinkle the cheese over the top
5. Place under the grill until the cheese is bubbling
6. Enjoy!

Designed by the SWITCH team at  
University College London.

T: 0207 679 1996

E: [switchinfo@ucl.ac.uk](mailto:switchinfo@ucl.ac.uk)

## Protocol for post MI follow up

### Aims of the post MI follow-up sessions:

1. Booster session of MI by telephone at week 4 to monitor progress and offer support
2. Subsequent follow-up by text/email to act as a reminder, increase likelihood of adherence with the set goals, as well as offering support
3. Improve participant retention for follow-up

It has been shown that MI can be effective even in brief encounters and more than one encounter as well as prolonged follow-up period increases the likelihood of effect. ( Berg-Smith et al., 1999; Rubak et al., 2005)

Telephone MI sessions have been recommended as a time efficient adjunct and has been shown to be effective (Resnicow et al., 2001; Lando et al., 1992; Lichenstein et al., 1996).

## Protocol

### Message 1

**Communication:** SMS/email

**Time:** Week 2

**Content:** Hi. This is the SWITCH team. How are things going with your eating and drinking since we last saw you?

Going well

That's great to hear! Sticking to changes like the ones we discussed is not always easy and it sounds like you are working very hard. Well done and we will speak to you in 2 weeks' time.

### Response from YP

Not going well

Lots of things can get in the way of our goals. In the mean time, you might find it useful to think of ways of overcoming these obstacles. We will speak to you in 2 weeks.

### Telephone MI

**Time:** Week 4

**Content:** Assess Progress: Was YP able to sustain drinking goals?  
Assess any challenges/setbacks/ or things that went well

Yes

- Reinforce and support
- Praise and build confidence/self-efficacy

No

- Acknowledge that change is difficult
- Support efforts to change and address barriers
- Set new goals

### Message 2

**Communication:** SMS/email

**Time:** Week 12

**Content:** It is the SWITCH team. We have some resources which you may find useful. Check them out on the following website [www.nhs.uk/LiveWell/](http://www.nhs.uk/LiveWell/)

No reply from YP

### Message 3

**Communication:** SMS/email

**Time:** Week 22

**Content:** Hi. This is the SWITCH team. Just a reminder that we will be contacting next week to invite you to measurement session. Speak to you soon..

### Message 4

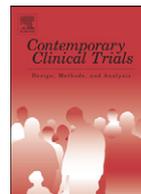
**Communication:** Telephone

**Time:** Week 23

**Content:** Book measurement session

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## Contemporary Clinical Trials

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## Considerations and lessons learned from designing a motivational interviewing obesity intervention for young people attending dental practices: A study protocol paper<sup>☆</sup>

Marie Murphy<sup>a</sup>, Jessie Porter<sup>a,\*</sup>, Huda Yusuf<sup>a</sup>, Antiopi Ntouva<sup>a</sup>, Tim Newton<sup>b</sup>, Anna Kolliakou<sup>c</sup>, Helen Crawley<sup>d</sup>, Georgios Tsakos<sup>a</sup>, Hynek Pikhart<sup>a</sup>, Richard G. Watt<sup>a</sup>

<sup>a</sup> UCL Research Department of Epidemiology and Public Health, University College London, 1–19 Torrington Place, London WC1E 6BT, UK

<sup>b</sup> Division of Health and Social Care Research, King's College London, Dental Institute, Caldecot Road London SE5 9RW, UK

<sup>c</sup> Department of Psychosis Studies, Institute of Psychiatry, King's College London, De Crespigny Park, SE5 8AF, UK

<sup>d</sup> First Steps Nutrition Trust, 112 Queens Road, London SW19 8LS, UK

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## ABSTRACT

**Background:** With the prevalence of child obesity increasing worldwide, and the consumption of sugar-sweetened beverages identified as a major contributor to obesity in adolescents, there is a need for effective interventions aimed at dietary behaviour change in this group. Primary dental care settings are in an ideal position to influence adolescents' dietary behaviours, yet have been under-utilised for this purpose. Motivational Interviewing (MI) has shown promise in influencing other health behaviours. However, there is lack of published methodologies on which to base the design of such interventions, and limited evidence on its effectiveness in influencing dietary change. We undertook a study to test the feasibility of a MI intervention aimed at reducing soft drink consumption in adolescents attending dental surgeries. We present the study design for the development and evaluation of the intervention.

**Method:** Ten dental practices in north London were randomised into control or intervention. Adolescent participants in control settings received routine advice and intervention participants received a brief MI intervention. The intervention was designed using comprehensive stakeholder engagement and consisted of 3–4 short MI sessions and a maintenance phase delivered by trained researchers through the use of age-specific resources. Process evaluation was carried out using qualitative and quantitative methods to assess intervention feasibility in a primary dental care setting.

**Discussion:** By focussing on the development and evaluation of the intervention, this paper contributes to the limited available knowledge and identifies methodological considerations for undertaking a MI intervention for dietary change in adolescents in primary dental care settings.

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### 1. Background

Childhood obesity is increasing worldwide, with rates doubling over the past three decades, including in the UK [1]. Evidence has shown that obesity which tracks from childhood to adulthood, is a leading cause of preventable deaths and a

major risk factor for cardiovascular disease, type 2 diabetes and cancers [2]. Obesity also has a significant impact on self-esteem and quality of life [3]. The increase in obesity has resulted in escalating healthcare costs and is a significant burden on healthcare systems globally [4].

A substantial body of evidence suggests that a major contributing factor to the obesity epidemic, especially amongst children, is the consumption of sugar-sweetened beverages (SSBs) [5–8]. A recent meta-analysis showed that children with the highest intakes of SSBs have an increased risk of being

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\* Corresponding author. Tel.: +44 207 679 1253.

E-mail address: [jessie.porter@ucl.ac.uk](mailto:jessie.porter@ucl.ac.uk) (J. Porter).

overweight compared to those with the lowest intakes [9]. SSBs have a high sugar content and low satiation response leading to increased energy intakes [7,10,11]. Consumption has increased dramatically in recent years; in the UK, 79% of 11–18-year-olds consume regular calorie soft drinks with mean intakes of 354 g/day [12].

Numerous systematic reviews on obesity prevention have highlighted the paucity of effective interventions [13–18]. A significant gap in the literature exists for interventions aimed at reducing SSB consumption amongst children and adolescents in primary care, as the majority of interventions were delivered in schools or communities [15]. Interventions aiming to reduce SSB consumption are beneficial for both obesity prevention and oral health promotion [19]. A high proportion of young people use dental services, with 78% of 15-year-olds attending for check-ups, yet they have been under-utilised as a research site [20].

Traditional health education has been used in primary care with limited success [21]. More patient-centred techniques such as Motivational Interviewing (MI) are now being widely used in health promotion to elicit behaviour change. MI is an evidence-based, people-centred form of counselling, aimed at helping build and strengthen motivation for change [22,23]. MI in primary care is becoming more common [24], but has not been widely tested in dental settings, with only a few studies conducted in the US with specific populations [25–28].

In order to contribute to the evidence base and address gaps in research on obesity prevention amongst adolescents, more guidance is needed on the methodological development and evaluation of these complex interventions [18,29]. Although other studies have reported MI methodologies in the prevention or treatment of adolescent overweight and obesity, these have not been carried out in primary dental care settings, and MI was used as an adjunct to other programmes, rather than a stand-alone intervention [30]. A review by Martins and McNeil [31] called for more MI trials in the oral health field. Furthermore, it highlighted the need for addressing methodological issues, such as training procedures and treatment integrity, and for more comprehensive reporting of intervention design. In this paper we present the methodology and intervention design for an exploratory MI intervention study aimed at reducing sugary drink consumption in adolescents attending dental surgeries in north London.

## 2. Methodology

### 2.1. Study design, setting and population

The SWITCH (Smart Weight in Teenagers Choosing Health) study was a cluster randomised control trial in NHS dental practices across three boroughs of north central London, with 10 dental practices recruited and randomised into control or intervention clusters. The methodology was informed by the MRC guidance on the development and evaluation of complex interventions (29). The primary outcomes were anthropometric measures of body mass index (BMI) and waist circumference (WC) and the secondary outcome was mean daily consumption of soft drinks, measured at baseline and 6 months. Eligibility was determined by the participants being aged between 11 and 16 years, attending one of the dental

practices that participated in the study, classified as overweight or obese (BMI at or above 85th centile) and consuming at least 1 can (or equivalent) of soft drink per day. Full parental and young person consent was also required. Subjects were excluded on the basis of having a serious underlying medical condition or eating disorder, being unable to communicate effectively in English or being on a special prescribed diet.

Prior to commencing the study full ethics approval was received from the Camden and Islington Community Research Ethics Committee. The study also received Research and Development approval from the North Central London Research Consortium.

### 2.2. Sample size

As this is an exploratory RCT, there is no need for a sample size calculation based on estimates of the effect of the intervention. This will be done for the main definitive RCT based on the results of this study. However, based on a previous similar pilot obesity intervention targeting soft drink consumption with young people [19], we aimed to recruit 140 subjects in this study. In pragmatic terms based upon the assumption that the average NHS dental practice list consists of 2500 patients, it was estimated that each practice had approximately 300 patients aged 11–16 years on their list. Assuming 20% of this age group were overweight and 40% of those approached agreed to participate, the involvement of 10 dental practices was considered more than sufficient to meet the target sample size.

### 2.3. Recruitment and data collection

Recruitment and data collection appointments took place in dental practices. Whilst methodologically desirable, blinding of the participants in relation to group allocation was not possible due to the nature of the intervention (Motivational Interviewing to reduce SSB consumption). Baseline measures were collected (Fig. 1) and follow-up measures will be collected at 6 months.

### 2.4. Intervention group

In dental practices randomised to the intervention group, young people were invited to take part in 3–4 MI sessions aimed at increasing their motivation to reduce their consumption of soft drinks, in addition to usual dental health care advice from their dentist. These sessions were followed up with a maintenance phase which included text, email and phone follow-up.

### 2.5. Control group

Participants in the dental clinics randomised to the control group did not receive any components of the intervention. The young people attending these surgeries received usual dental health care advice from their dentist, and received a healthy eating leaflet at the 6 month follow-up.

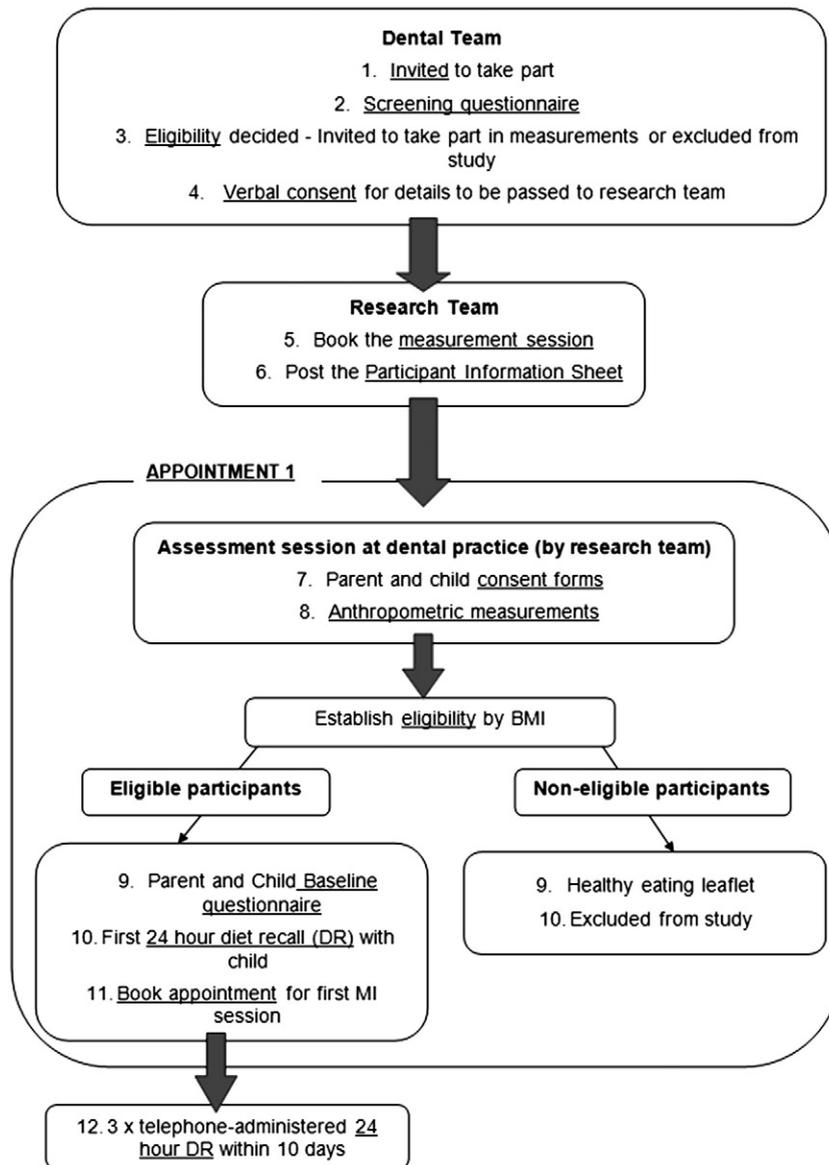


Fig. 1. Recruitment and baseline data collection pathway.

## 2.6. Assessment

Protocols were developed for anthropometric measurements and dietary assessment.

Height without shoes was measured to the nearest 0.1 cm using the portable Leicester height measure. Weight in light clothing was measured to the nearest 0.1 kg on calibrated portable electronic scales (Seca 770) and WC was measured at 2 cm above the naval. The mean of two measurements was used for each participant, and z-scores were calculated for BMI and WC using the LMS method (abbreviation refers to smooth curve-L, mean-M and coefficient of variation-S) [32]. Measurements were carried out by four members of the research team. The measurers maintained a low level of inter-observer

variability, with an intra-class correlation coefficient of 0.986 for measures of height and 0.972 for measures of WC.

Fluid consumption was assessed through repeated 24-hour recalls. Four recalls were made on non-consecutive days with at least one weekend day at baseline and follow-up using the multiple-pass method, which has been validated [33] and used in the Low Income National Diet and Nutrition Survey [34]. The first recall was completed face-to-face with subsequent recalls over the telephone. The recalls were conducted by four trained researchers, with young people asked about their own consumption, and clarification from a parent if required. The recalls were coded by: 1) types of drinks consumed by number and volume per day, and 2) total number of snacking occasions, types of snacks consumed and number of portions per day.

Participants completed an interview-administered young person's questionnaire which included date of birth, sex, ethnicity, physical activity levels, readiness and confidence to change, and social support. Physical activity levels and sedentary behaviour were assessed using the validated physical activity questions from the World Health Organisation Health Behaviours in School-Aged Children survey [35] and assessment of social support was based on questions from the 'Friend/Family Support for Heart Healthy Behaviours Scale' [36]. The follow-up young person's questionnaire additionally collected qualitative data on dietary goals and attendance at weight management programmes.

Parents were asked to complete a short parental questionnaire which included age, sex, employment status, benefits received, educational attainment and home ownership status at baseline only.

## 2.7. Development of a motivational interviewing intervention

The intervention was developed by the research team with support from external experts and following consultation with key stakeholders.

## 2.8. Exploratory phase

### 2.8.1. Consultation

A steering group was set-up to advise on different aspects of the trial, including the measurement tools, study outcomes and intervention design, with members including those in the fields of statistics, nutrition, psychology, health services and research policy, MI and local population health. The research team consulted with a number of experts on MI prior to designing the intervention, including one of the leading proponents in the field of MI.

A 'Young People's Research Forum' was established at a local secondary school, made up of approximately twenty Year 9 students (aged 13–14 years). The aim of the forum was to provide a platform for discussion on all aspects of the study, from the viewpoint of adolescents, to aid decision-making on the study design and enhance the intervention's effectiveness and relevance for the participants. Consultation with the forum included questionnaire design, measurement methods, intervention structure and resources, and appropriate methods of engagement and communication with adolescents. Furthermore, we undertook focus groups with dental teams to understand the barriers to providing prevention in primary dental care and ways of developing their preventive role.

### 2.8.2. MI training and support

Members of the research team attended a two-day tailored MI training course with on-going supervision and follow-up training, as recommended by the guidelines on MI brief interventions for weight management from the National Obesity Observatory [37]. The trainer was a member of the international Motivational Interviewing Network of Trainers. The research team continued to have the support of the trainer through a series of distance tuition sessions. These featured role play sessions to practice the skills and tactics used in MI, and feedback on digital audio recordings of real intervention sessions with the study participants. The practitioners also met regularly for peer support.

## 2.9. MI intervention structure and content

The intervention was designed to be delivered as a MI brief intervention in the dental practice, with appointments lasting 15–20 min, with 3 or 4 sessions per participant. Sessions were delivered on an individual basis, usually in a clinic room or another quiet room within the practice. The maintenance phase consisted of a text message or email at two weeks and 12 weeks post-intervention, and a follow-up MI session delivered over the telephone four weeks after the final face-to-face session. The participants were also provided with reminder text messages or phone calls in between appointments, detailing their upcoming sessions.

The practitioners used MI-consistent skills and 'brief tactics' to direct the conversation, increase internal motivation and reduce ambivalence [24]. The practitioners based their sessions with the participants on core communication skills; using open-ended questions, affirmations for desirable behaviours, reflective listening and summaries. The practitioners also used a number of tools and techniques that are often used in brief primary care interventions of MI [24] where time is limited. These included agenda setting, exploring a typical day, importance and confidence rulers, 'ask-tell-ask', exploring two possible futures, route planning, a 'decisional balance' exercise and agreeing upon goals (Fig. 2).

Although the format of the sessions was non-prescriptive, they broadly consisted of an introduction/review of the previous session, a participant-centred discussion directed by the practitioner using the skills and tools detailed above, and a summary of the session. The practitioners were allocated time following the sessions to make notes and reflect on what had been discussed. Sessions were audio-taped with verbal permission from the participant for the purposes of reviewing sessions, distance tuition and fidelity testing. Three members of the research team delivered the intervention across the five intervention practices.

## 2.10. Intervention resources

### 2.10.1. MI guidelines and materials

The intervention was not 'manualised', as studies using this approach have shown to be less effective than those without a manual [22]. Instead, intervention-specific MI guidelines were designed, detailing the characteristics that were consistent with MI, along with an intervention 'pathway' which involved 1) establishing rapport, 2) setting the agenda, 3) exchanging information, 4) assessing importance and confidence/developing discrepancy, 5) planning for change (setting goals) and 6) summary and closing statements. The practitioners used their judgement to decide if the participant was ready to move to the next stage of the pathway, and not all participants were expected to complete the pathway. Prompt sheets were designed for use by the practitioner during the MI session, which pointed to possible questions and tools to use with the participants (Fig. 3). A number of sheets were designed for delivery of the MI tools: an 'agenda setting' image sheet, a 'decisional balance' worksheet and visual rulers for assessing importance and confidence.

### 2.10.2. Visual aids

Two aids were developed; firstly, images of common drinks with their sugar content displayed, and secondly, a list

<b>Tool</b>	<b>Aim</b>
<b>Agenda setting</b>	Presents a series of topics that the practitioner feels would be useful to address, and gives the young person control over which of these topics they would like to discuss.
<b>A typical day</b>	Encourages the young person to provide more detail on how their issue fits into their day-to-day life, to improve the practitioner's understanding. This places the behaviour under focus in a realistic context. It is important to avoid an 'interrogation' approach when using this tool.
<b>Importance and confidence</b>	Explores the factors behind the behaviour that are encouraging and restraining change. It also helps to establish readiness.
<b>Ask-Tell-Ask</b>	Provides information and advice to the young person in a more acceptable manner, which is less prone to resistance. It provides a collaborative approach to exchanging and building knowledge.
<b>Two possible futures</b>	Helps the young person to appreciate the consequences of their current behaviour by encouraging them to articulate these themselves.
<b>Route planning</b>	Uses a collaborative approach to coming up with solutions.

**Fig. 2.** MI brief intervention tools and techniques.

of the effects of over-consumption of soft drinks. These were used only in the context of 'ask-tell-ask' i.e. permission is sought from the participant before providing any information followed with a discussion of their understanding of that information and how it influences them.

#### 2.10.3. Dietary resources

Dietary and physical activity guidelines were produced, based on the Department of Health's '8 tips for healthy eating'.

Alongside this, a 'drinks directory' was produced in collaboration with the Young People's Research Forum – this is a reference file of common drinks consumed by adolescents along with their nutritional information.

#### 2.10.4. Take-home materials

A leaflet was produced by the research team consisting of dietary and physical activity advice and useful websites. Feedback was sought from nutrition professionals on the

*“Why do you think you had [soft drinks] in those particular situations?”*

*“On a scale of 1 to 10, how important is it to you to change your drinking habits at the moment?”*

*“Why give yourself a 7 and not a 1?” “What would have to happen for it to become more important?”*

*“If things continue as they are, what do you think will be the likely effects on your health?”*

*“What are some reasons for keeping things the way they are?”*

*“What are some reasons for making a change?”*

*“The choice will always be yours, but if you make the changes, what do you think could improve for you?”*

*“What are your ideas for making a change” “What is your goal?”*

*“What is the first step for you?”*

**Fig. 3.** Examples of MI prompt questions.

steering group and the leaflet was adapted accordingly. This leaflet was offered to all intervention participants during the intervention, and to all control participants at the follow-up measurement appointment.

### 2.11. Intervention fidelity

Fidelity of the intervention was based on the practitioner's consistency with the MI approach, and has been tested via the Motivational Interviewing Treatment Integrity (MITI) code version 3.1, which is recommended as a reliable method of evaluating fidelity [38]. This is a systematic technique testing a practitioner's adherence to the primary concepts of MI; evocation, collaboration, autonomy, direction and empathy. Sessions were coded and assessed by an external MITI assessor. A sample of 10% of all fully recorded MI sessions with a duration of 10 min or longer was selected for each practitioner, using a purposive sampling method in order to ensure a representative proportion of males and females. Suggested thresholds for proficiency and competency are detailed in the MITI code [39]. The purpose of fidelity testing is to provide an insight into the adequacy of training and support provided to the practitioners delivering the intervention. A failure to take into account the treatment fidelity can result in a type III error, where negative results are wrongly

attributed to an ineffective intervention, rather than the standard of its delivery [40].

### 2.12. Process evaluation

The process evaluation consisted of mixed methodology using qualitative and quantitative methods. There is no standardised protocol for process evaluation of exploratory trials; a number of frameworks were utilised, including one proposed by Steckler and Linnan [41]. This included recruitment, reach, satisfaction amongst participants and dental teams, and MI fidelity.

The experiences and views of four groups were assessed: dentists, dental nurses or receptionists, participants and the research team. One dentist and one dental nurse or receptionist from each practice had a semi-structured interview with a member of the research team that was not involved in recruiting from that practice. The interview collected views and attitudes around five key areas; their recruitment onto the study, the training session delivered to staff by the research team, the practice's recruitment of participants, the anthropometric measurement sessions and MI sessions performed in the dental practice, and general perceptions around their participation in research.

Evaluation of the participant experience was undertaken through a short questionnaire and a researcher-administered

interview. The questionnaire was carried out in the intervention group only, as it collected feedback on the structure and nature of the intervention and how well it was delivered by the research team. Furthermore one-to-one interviews were carried out with a purposive sample of both control and intervention participants (males and females, 11–13 years and 14–16 years), and focussed on their experiences of recruitment, the measurement sessions, the intervention (where appropriate) and general perceptions around participation in research. The researcher conducting the interview had not had any prior face-to-face contact with the participants.

Finally, the research team was interviewed on a one-to-one basis by an external interviewer. Discussion was around recruitment of dental teams and participants, training of dental teams, training in MI, measurement and MI sessions, and general perceptions about the organisation of the study.

### 2.13. Planned analyses

In addition to assessing the feasibility of the study, primary and secondary outcomes will be analysed using the statistical package Stata 12.0. As this is a cluster RCT, results could be affected by the clustering as different dental clinics could potentially serve different sections of the population. Whilst this should be less of a concern in this case as the study was conducted across three inner London areas which have similar populations, we will also compare the demographic and socioeconomic profiles of both arms of the trial at baseline to ensure that they are similar. Intention-to-treat analysis will be performed to calculate the intra-cluster correlation and sample size for a definitive trial. Differences in baseline condition between control and intervention will be tested using an adjusted independent *t*-test. Changes in BMI z-score, WC z-score, drink consumption and readiness to change at 6 months will be tested between intervention and control groups using repeated measures ANOVA.

## 3. Discussion

Excessive sugar intake through the consumption of soft drinks is one of the main contributors to overweight and obesity in children and young people [7,8]. Dental teams are in a good position to influence patients on their dietary behaviours and therefore can play a role in obesity prevention, although very little research has explored this topic. Motivational interviewing as a behaviour change method shows promise in improving health outcomes in primary care settings [24–28,34,42,43]. The MI approach makes it an ideal tool for overcoming some of the challenges in working with young people to improve their health and dietary behaviours, with its collaborative, non-confrontational approach aimed at increasing intrinsic motivation and respecting autonomy [30,40,44–46].

This paper describes the study methodology and intervention design for an exploratory RCT of a MI intervention in primary dental care settings in north London, aimed at reducing soft drink consumption in overweight and obese adolescents aged 11–16 years. The planned analyses will provide us with information on the feasibility and acceptability of the intervention, and the findings of the study will contribute towards the limited evidence base for using MI in

dental settings and for eliciting dietary behaviour change [31]. Data from a thorough process evaluation and fidelity testing of the intervention will provide an insight into the acceptability of the intervention design and adequacy of MI training methods and intervention delivery, recommended by the recent Cochrane review on interventions for preventing obesity in childhood [18].

Through this study we have gained a number of insights into the design and delivery of an MI intervention for young people in primary dental settings.

### 3.1. Engagement

A comprehensive exploratory phase involving consultation, stakeholder engagement and training was essential in supporting the design and delivery of the intervention. Qualitative research with dental teams identified the barriers to delivering prevention in general dental practice, which could be taken into account when designing the intervention. Engagement with dentists included promotional evening events and personal visits to dental practices. The aim of this engagement was to convey the message that involvement in research is both accessible to primary care dentists and adds value to their practice. The delivery of training in research methods to the whole dental team ensured that all team members were engaged with the research process. Throughout the duration of the study regular newsletters were sent to practices to keep them informed of progress. Furthermore, dental practices were adequately compensated for the space used within the practice and the time the dental team spent conducting the study. Financial remuneration was provided based on the costing template compiled by the NHS Primary Care Research Network [47]. Engagement with dentists was fundamental to successfully recruiting dental practices and maintaining a good relationship for the duration of the study.

The establishment of a Young People's Research Forum at a local secondary school enabled pilot assessment methods and intervention resources to be tested, and identification of appropriate recruitment and retention techniques for this age group, such as vouchers for participation.

User-involvement is recommended in the Cochrane review on preventing obesity in children [18] and ensured the intervention was acceptable to the age group and in dental settings.

### 3.2. Recruitment of participants

Initial estimations on the number of young people who would be eligible to take part in the study were based on the proportion of young people classed as overweight or obese in north central London (National Child Measurement Program). The sample of young people attending dental practices and recruited for screening in this study however exhibited a lower proportion of overweight or obese teenagers when compared to regional estimates. Three possible explanations can be considered; self-selection bias may have played a part, with overweight and obese young people reluctant to participate. There are well-established challenges in the recruitment and retention of overweight or obese individuals [48,49]. Adolescents are already body-conscious; an overweight or obese adolescent may also have experienced weight-based bullying [50] therefore may be more hesitant to subject themselves and

their health behaviours to potential examination. It may also be the case that overweight and obese young people are less likely to attend dental practices and receive preventive care on a routine basis, as there is evidence of clustering of health compromising behaviours amongst the more deprived sections of society in adolescents [51]. Furthermore, health professionals are reported to experience concern about raising the issue of weight due to the sensitive nature of this topic, therefore potentially eligible participants may not have been approached [52,53]. Some practitioners carry the belief that overweight and obesity are solely a behavioural issue and sometimes view their patients as lazy, non-compliant and lacking in willpower [54], another reason potential participants may not have been approached to take part.

### 3.3. Challenges of working with young people

There are a number of challenges in working with young people which should be considered when designing future interventions. Research with adolescents involves issues of recruitment and retention, consent and parental involvement, in addition to the issues faced when recruiting overweight and obese participants. Adolescents are typically a difficult age group to engage in health research [48,49] and therefore a flexible approach is needed. Protocols need to be designed with young people in mind and should make use of appropriate methods of communication including phone calls, texts and emails [48]. The method of data collection also needs to be considered carefully. There is little consensus on the most appropriate method of dietary assessment for adolescents and self-reported measures of diet can lead to misreporting of dietary intake [55]. The 24 hour recall method has relatively high validity [56] and has a lower burden on participants than other methods [57], which is important in this age group in which participants are less motivated and less cooperative compared to younger children [55]. Another factor is the need for support from parents, whilst adolescents are seeking to gain independence. Parents still play a large role in supporting participation in research, providing consent and facilitating attendance at appointments, so the study team had to communicate and make acceptable arrangements with both the participants and their parents. Another effect of this parent–adolescent relationship is its impact on recruitment and retention projections, with a large number of parents offering initial verbal consent, but the adolescent consequently declining to participate.

## 4. Conclusions

By focussing on the design and implementation, this paper contributes to the limited available practical knowledge and identifies methodological considerations for undertaking a MI intervention for dietary change amongst 11–16-year-olds in primary dental care settings. Stakeholder engagement and addressing the challenges of working with adolescents have been an essential part of the developmental stages of the study. The insights gained from this study will help inform future research designed to assess the effectiveness of MI dietary interventions delivered in dental practices.

## Competing interests

None.

## Author's contributions

RW, HY, GT, TN, AK, HC and HP designed and wrote the original study proposal. RW, HY, MM, AN and HC developed the assessment methodology. RW, MM, HY, JP, AN, TN and AK developed the MI intervention and MM, HY and JP delivered the MI intervention. AN, JP, MM and HY carried out the data collection. JP and MM prepared the paper and RW, AN and HY critically revised the draft manuscript. All authors read and approved the final version of the manuscript.

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# Study design for a motivational interviewing intervention for the prevention of obesity in adolescents attending dental practices: An exploratory cluster RCT

Murphy M, Porter J, Yusuf H, Ntouva A, Kolliakou A\*, Newton T\*, Watt RG  
 Department of Epidemiology and Public Health,  
 University College London  
 King's College London\*



## Introduction

- Childhood obesity has become a significant public health problem worldwide, and there is a need for effective preventive interventions in primary care.
- Soft drink consumption is high in the UK, with 79% of 11-18 year olds consuming non-low calorie soft drinks with mean intakes of 354g/day [1].
- A high proportion of young people use primary dental services, with 78% of 15-year-olds attending for regular check-ups [2].
- As sugary drinks are a common risk factor for both obesity and dental caries, the dental practice provides an ideal setting to talk to young people about their diet.
- Motivational interviewing (MI) shows promise as a health behaviour change technique in primary care and with young people.
- There is a need for further research into the effectiveness of MI, and a more systematic approach in the design of MI interventions, in primary dental care settings.

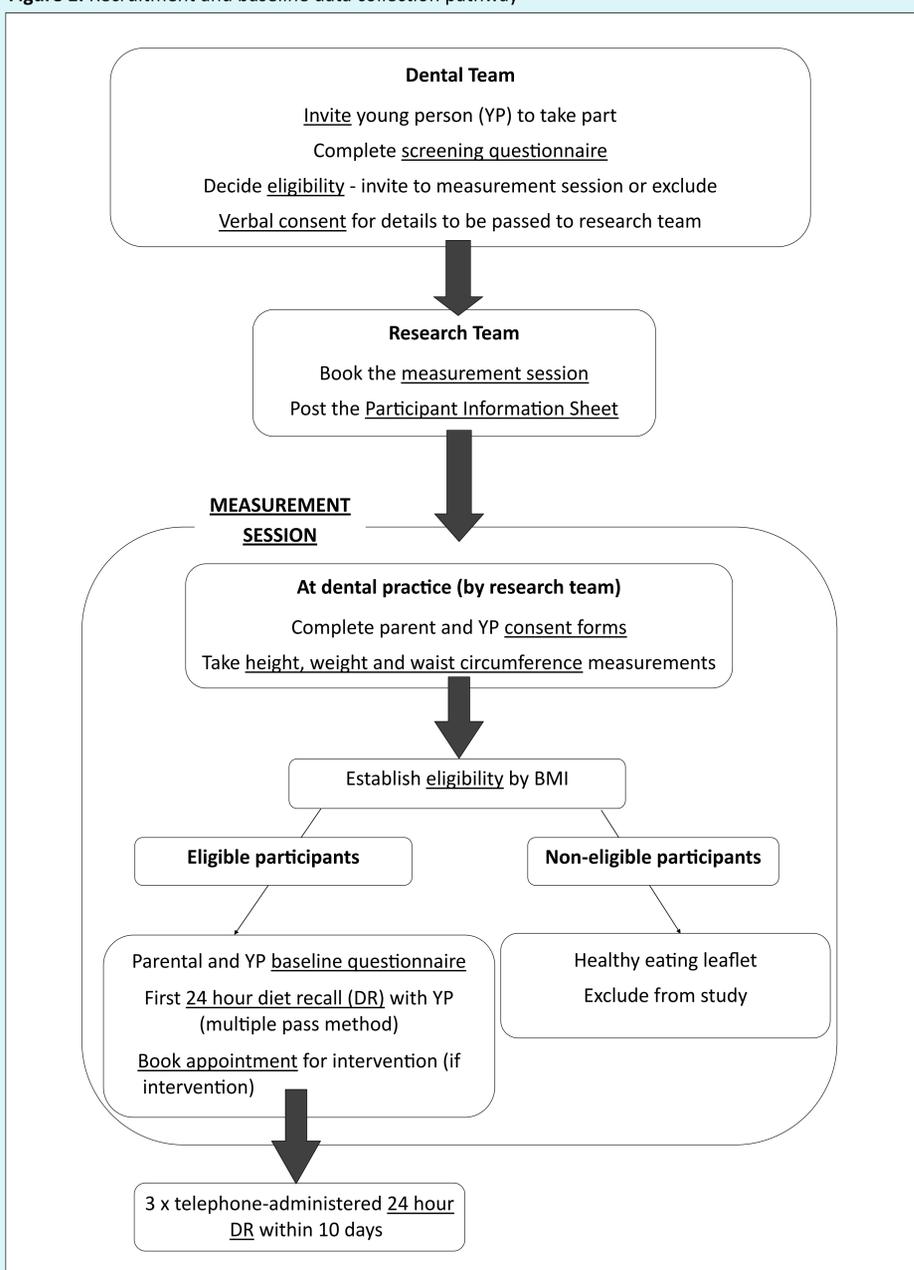
## Aim

To conduct an exploratory RCT to test the feasibility of a MI intervention aimed at reducing soft drink consumption in young people attending primary dental care.

## Methods - Trial Design

- **Cluster design:** Ten National Health Service (NHS) dental practices across North Central London were randomised into control or intervention.
- **Eligibility:** Young people aged between 11 and 16 years, classified as overweight or obese (BMI  $\geq$  85th centile) and consuming at least 1 can of soft drink per day.
- **Recruitment and data collection:** See figure 1 for baseline. Follow-up data collection consisted of the same measures with the exception of the parental questionnaire.

Figure 1: Recruitment and baseline data collection pathway



## Methods - Intervention Design

An extensive development phase was undertaken to inform the intervention design. This included:

- **Consultation** with experts, dental teams, young people and parents
- **MI training and support**
- **Engagement** with dental teams

The MI was delivered as a **brief intervention** in the dental practice with a maintenance phase of text, email and phone support post-intervention. The goal was to reduce soft drink consumption.

The core principles of MI are:

- **Expressing empathy**
- **Developing discrepancy** between young person's goals and current behaviour
- **Rolling with resistance** / avoiding confrontation
- **Supporting self-efficacy** and optimism for change

Figure 2: Examples of MI questions asked during intervention

"On a scale of 1 to 10, how important is it to you to change your drinking habits at the moment?"  
 "Why give yourself a 7 and not a 1?" "What would have to happen for it to become more important?"  
 "If things continue as they are, what do you think will be the likely effects on your health?"  
 "What are some reasons for keeping things the way they are?"  
 "What are some reasons for making a change?"  
 "The choice will always be yours, but if you make the changes, what do you think could improve for you?"  
 "What are your ideas for making a change?" "What is your goal?"  
 "What is the first step for you?"

Figure 3: MI brief intervention tools and techniques

Tool	Aim
Agenda setting	Presents a series of topics that the practitioner feels would be useful to address, and gives the young person control over which of these topics they would like to discuss.
A typical day	Encourages the young person to provide more detail on how their issue fits into their day-to-day life, to improve the practitioner's understanding. This places the behaviour under focus in a realistic context. It is important to avoid an 'interrogation' approach when using this tool.
Importance and confidence	Explores the factors behind the behaviour that are encouraging and restraining change. It also helps to establish readiness.
Ask-Tell-Ask	Provides information and advice to the young person in a more acceptable manner, which is less prone to resistance. It provides a collaborative approach to exchanging and building knowledge.
Two possible futures	Helps the young person to appreciate the consequences of their current behaviour by encouraging them to articulate these themselves.
Route planning	Uses a collaborative approach to coming up with solutions.

## Evaluation

**Intervention fidelity:** Practitioner's consistency with the MI approach will be tested via the Motivational Interviewing Treatment Integrity (MITI) code [3].

**Process evaluation:** Qualitative and quantitative methods will be used, including a questionnaire survey with intervention participants and one-to-one interviews with participants and dental teams.

## Discussion

Through this study we have gained a number of insights into the design and delivery of a MI intervention for young people in primary dental care settings.

1. **Recruitment** is a challenge:

- > Young people are traditionally difficult to engage in research
- > Obesity is a sensitive topic so health professionals may be reluctant to raise the issue
- > Overweight young people may be less likely to visit their dentist compared to healthy weight

2. **Engagement** with stakeholders is essential. This phase included a Young People's Research Forum, promotional events for dental teams and personal visits to practices.

3. **Young people** require a flexible approach, utilising a variety of communication methods. In addition, protocols should be tailored to young people and take into account their emerging independence.

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**Corresponding author:**

Jessie Porter, Research Assistant

UCL Research Department of Epidemiology and Public Health, 1-19 Torrington Place, London, UK, WC1E 6BT. E: [jessie.porter@ucl.ac.uk](mailto:jessie.porter@ucl.ac.uk) T: +44 20 7679 1253

# Prevention in Practice: Dentists' attitudes, activities and perceived barriers to delivering prevention

YUSUFH <sup>1,\*</sup>, NTOUVA A <sup>1,</sup>, MURPHY M <sup>1,</sup>, NEWTON T <sup>2,</sup>, WATT R.G. <sup>1</sup>  
<sup>1</sup>Epidemiology & Public Health, UCL, London, UK <sup>2</sup>Kings College London, UK



## Introduction

It has been recognised that dental teams have a valuable role to play in prevention and reducing risk behaviours associated with chronic diseases. It is therefore important to obtain a comprehensive insight into current preventive practices, perceptions and the barriers faced by dental teams in implementing and adopting preventive care.

## Objectives

- to explore attitudes and beliefs of dentists on prevention, and current preventive activities in a sample of dentists in three PCTs in North Central London.
- to identify perceived barriers among a sample of dentists in delivering prevention
- to explore associations between preventive behaviour and barriers to providing preventive care with demographic factors, including gender and age groups.

## Methods

A cross-sectional survey of all NHS dentists in three Primary Care Trusts in North Central London was conducted. A self-complete questionnaire was developed and pilot tested. The questionnaire was developed using mainly validated questions from previous research in the dental literature <sup>1,2</sup>. It assessed attitudes, current preventive activities, and barriers to delivering preventive care. Ethical approval was sought from the local Ethics Committee followed by R & D approval.

**Analysis:** Frequency distributions of responses were tabulated for different sections of the questionnaire: current preventive activity (smoking, diet advice, oral hygiene and alcohol advice), attitudes and beliefs (dental team's role in prevention), barriers to implementation (lack of time, remuneration, patient motivation, practitioner motivation, knowledge and skills, and training needs). Analysis were conducted to assess if there were any differences in associations in the provision of prevention, and barriers by age and by gender using chi-squared tests.

## Results

- Survey response rate of 55% was achieved (164/300 questionnaires).

### Dentists' attitudes towards prevention

- Majority of respondents strongly agreed/agreed that GDS had a role to play in smoking cessation counselling (81.0%), diet advice (93.3%), and to a lesser extent alcohol advice

### Preventive Activities in General Dental Practice

- Majority of respondents provided oral hygiene, diet and smoking cessation advice always/frequently. Alcohol advice was not given routinely
- A larger proportion of dentists in younger age group were more likely to give oral hygiene advice and tobacco advice (Table 1). Female dentists were more likely to provide sealants than male dentists ( $p=0.041$ ) and were also more likely to give smoking cessation advice ( $p=0.03$ ).

Table 1: Proportion of dentists undertaking preventive activities, by age groups and gender (n=164)

	Age Groups			Gender		
	< 39 years	40+ years	p	M	F	p
<b>Fissure sealants</b>						
Always/frequently	48.75%	46.25%	0.75	46.3%	57.1%	0.041
<b>Topical fluoride</b>						
Always/frequently	52.50%	51.25%	0.87	45.8%	60.3%	0.074
<b>Oral hygiene instructions</b>						
Always/ Frequently	72.84%	52.50%	0.008	57.9%	70.3%	0.096
<b>Diet advice</b>						
Always/Frequently	46.9%	32.5%	0.06	37.5%	43.8%	0.43
<b>Tobacco advice</b>						
Always/Frequently	85.0%	67.5%	0.009	70.8%	85.7%	0.03

Pearson Chi-square,  $p<0.05$

## Barriers to providing preventive care in primary dental care

- Majority of dentists reported that lack of time, inadequate remuneration and lack of patient compliance were important barriers to providing preventive care (Table 2).
- Majority of dentists did not consider lack of training/knowledge/confidence as barriers to the provision of preventive care.
- A higher proportion of younger dentists perceived patient compliance as a significant barrier compared to the older group ( $p=0.01$ ).

Table 2: Associations between barriers to the provision of prevention, with age groups and gender (n=164)

	Age Groups			Gender		
	< 39 years	40+ years	p	M	F	p
<b>Lack of time</b>						
Strongly agree/agree	87.5%	82.3%	0.36	83.3%	87.10%	0.52
<b>Lack of remuneration</b>						
Strongly agree/agree	89.7%	83.5%	0.24	84.3%	90.2%	0.30
<b>Lack of motivation</b>						
Strongly agree/agree	8.75%	17.7%	0.09	16.6%	8.06%	0.12
<b>Poor patient compliance</b>						
Strongly agree/agree	75.0%	57.0%	0.01	63.5%	69.3%	0.45
<b>Likely to alienate patients</b>						
Strongly agree/agree	20.5%	21.52%	0.84	21.8%	19.7%	0.74
<b>Lack of knowledge</b>						
Strongly agree/agree	1.27%	6.41%	0.09	4.2%	3.3%	0.78
<b>Lack of confidence</b>						
Strongly agree/agree	1.25%	5.06%	0.17	3.1%	3.2%	0.97
<b>Lack of training</b>						
Strongly agree/agree	10.0%	14.2%	0.17	14.9%	8.0%	0.20

Chi-square for trend,  $p<0.05$

## Discussion

- This study has highlighted that this sample of NHS dentists had a positive attitude towards lifestyle behaviour counselling. This was confirmed by their reported actions in terms of dietary counselling, smoking cessation and alcohol advice.
- A range of barriers to the provision of prevention in primary dental care settings were identified including lack of time, inadequate remuneration, and lack of patient compliance which were similar findings to other studies <sup>3,4</sup>.
- General dental services in primary care can make a valuable contribution to the prevention of chronic diseases, however it is important to address the barriers in order to facilitate implementation of evidence-based prevention.

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Dear \_\_\_\_\_,

The SWITCH project which ran between March 2011 and March 2013 has now been completed and so we are sending the results out to all those involved.

SWITCH was developed by the Dental Public Health group at UCL, with input from external experts and funding from the NHS National Institute for Health Research. The aim was to develop and test the feasibility of an obesity prevention intervention targeting 11-16 year olds attending general dental practices in North Central London.

We spent the first year of the study conducting the development phase. This included conducting focus groups with dental teams, a survey of dentists across Islington, Camden and Haringey PCTs, and the establishment of a local Young People's Research Forum in a local Islington school. We used the information gathered to develop SWITCH, a four-week programme of interactive one-to-one sessions between the young person and researcher at the dental practice, based on motivational interviewing (MI). MI is an evidence-based, client-centred type of counselling which aims to facilitate behaviour change. The goal of SWITCH was to support young people in reducing their intake of sugar-sweetened beverages.

The second phase was to conduct an exploratory randomised controlled trial (RCT) of the intervention. SWITCH was tested in ten NHS dental practices across North Central London, with practices carrying out the recruitment of eligible participants. We took measures of young people's body mass index (BMI), waist circumference and dietary habits at baseline and six months later. Participants attending the intervention practices received the SWITCH intervention and those in the control practices did not. We compared the findings of the two groups using statistical methods. We also carried out a comprehensive process evaluation consisting of questionnaires and one-to-one interviews with dental teams and participants.

### *Results*

We recruited 149 subjects into trial, however only 26% were eligible to take part based on their BMI measurements.



There was more of a reduction in the volume of sugary drinks consumed by the intervention group versus the control group. However, this reduction was very small and the difference was not statistically significant (-120.94 mls vs 67.04 mls,  $p=0.553$ ). At the 6 month follow up in the intervention group there was a reduction in the BMI z scores (-0.048) (primary outcome) but the mean difference between the groups was not significant. A significant reduction in unhealthy snacking occasions was found between intervention and control (-0.19 and +0.21 respectively,  $p=0.0321$ ) with a reduction in portions of unhealthy snacks, showing a trend towards significance. ( $p=0.065$ )

The process evaluation also revealed some encouraging findings. Dental teams reported that they felt positive about the potential to deliver dietary advice to young people in their practice. They also felt the study had a good impact on the practice and dental team, and were keen to be involved in further research. Young people reported that they had enjoyed the experience, felt that the SWITCH programme was useful and felt comfortable that the programme was delivered in a dental practice. They also felt that they had made changes to their dietary habits as a result of attending SWITCH.

The results suggest that it is feasible to deliver a dietary programme to young people in a dental care setting, and that a programme based on MI has a positive but non-significant effect on young people's intake of sugary drinks. One big challenge identified was that it is difficult to recruit young people to take part in a study.

#### *Future work*

This pilot study will be used to develop further programmes to support healthy dietary habits in young people and deliver prevention in dental care settings. More detailed results and a full evaluation report of the study will be available in the coming months, and a number of publications are planned. If you have any further questions about the study, please contact the research leader, Professor Richard Watt at University College London on [r.watt@ucl.ac.uk](mailto:r.watt@ucl.ac.uk) or 0207 679 1699.

With best wishes,  
The SWITCH team





Dear participant,

You are receiving this letter because of your involvement in the SWITCH project between March 2012 and March 2013, when we invited you to a measurement session at your dental practice and asked you questions about your eating and drinking habits, both in person and over the phone. Thank you very much for your involvement and help in the project. The study has now been completed and so we are sending the results out to everyone who took part.

SWITCH was developed by researchers at University College London, with funding from the NHS National Institute for Health Research. The aim of the study was to develop and test a programme that supported young people to reduce the amount of sugary drinks they had.

We spent the first year of the study reviewing the evidence, collecting resources and talking with young people, parents and dental professionals about how to support young people with healthy eating. We used the information gathered to develop SWITCH, a four week programme of interactive one-to-one sessions between the young person and researcher at the dental practice.

SWITCH was tested in ten NHS dental practices across north London. We assessed young people's height, weight, waist circumference and dietary habits at the beginning and six months later. Young people at the "intervention" practices attended the SWITCH programme and those at the "control" practices did not. This allowed us to compare the two groups to assess if the SWITCH programme helped young people reduce their sugary drink intake or not. We also carried out questionnaires and interviews with some young people and dental teams to find out their views on the study.

### *Results*

We were able to recruit 149 subjects into trial but only 26% were suitable to take part based on their height and weight measurements.



Although there was a positive change in the amount of sugary drinks that the “intervention” group had, this was very small and similar to the “control” group. One unusual finding was that there was a positive change in the height, weight and waist circumference of the “control” group. Again, this was very small and similar to the “intervention” group.

When we asked for young people’s views on the study, they said that they had enjoyed the experience, felt that the SWITCH programme was useful and felt comfortable that the programme was in a dental practice. They also felt that they had made changes to their dietary habits as a result of attending SWITCH. Dental professionals also felt positive about the potential to deliver dietary advice to young people in their practice.

The results suggest that it is possible to deliver a dietary programme to young people in a dental practice, and that a programme like SWITCH has positive but very small effect on young people’s intake of sugary drinks. One big challenge identified was that it is difficult to recruit young people to take part in a study.

#### *Future work*

This pilot study will be used to develop further programmes to help young people to eat well. More detailed results and an evaluation of the study will also be available in the coming months. If you have any further questions about the study, please contact the research leader, Professor Richard Watt at University College London on [r.watt@ucl.ac.uk](mailto:r.watt@ucl.ac.uk) or 0207 679 1699.

With best wishes,

The SWITCH team



**NIHR Research for Patient Benefit (RfPB) Programme**

**Final Report Form**

**IMPORTANT**

Final reports are required from all projects funded through the NIHR Research for Patient Benefit Programme. The RfPB Programme requires a final report in order to:

- ensure accountability
- aid in appropriate dissemination of project results
- encourage quality assurance of project outputs
- assess the impact of the research supported by the Programme
- demonstrate the achievements of the Programme

Please keep these aims in mind while completing your final report.

The report needs to offer:

- a) a clear summary of the project for practitioners and users of research
- b) a record of challenges faced and modifications made to the study
- c) a description of experience with patient and public involvement that might help identify lessons for future research
- d) an impact assessment both locally and for the NHS more broadly
- e) a summary of any outputs, such as publications, from the research (which should be updated as outputs occur). Completion of this report should not pre-empt any publications that have been prepared or are in preparation detailing project results.

The views expressed in this report should reflect those of the entire research team.

Following submission and assessment of this form, the final version of the scientific and lay summaries will be displayed on the NIHR CCF website and will be accessible to a wide range of interested parties.

You will be required to submit a final statement of expenditure at the same time as your final report. Please note that the completed final report along with a final statement of expenditure is required prior to release of the final project payment.

For further guidance or information on completion of your final report, please contact the regional Programme Manager at NIHR CCF, using the details below:

Dr Jennie Hejdenberg  
Programme Manager for the London region  
jennie.hejdenberg@nihr-ccf.org.uk  
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## National Institute for Health Research

### NIHR Research for Patient Benefit (RfPB) Programme

#### Final Report Form

##### IMPORTANT

Note the maximum field sizes shown include both printing and non-printing characters such as spaces and carriage returns.

Reference Number PB-PG-1207-14085

Region London

Date submitted

For office use

#### 1. Project Details

Project Title\*: Preventing obesity in young people attending primary dental care settings: an exploratory randomised controlled trial

NHS Contracting Organisation\*: Islington PCT

Project Duration\*: 24 months  
(months)

Grant Value: £221,652

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Agreed Extension: 5 months

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#### 2. Grant Holder's Details

Title\*: Prof

Surname\*: Watt

Forename\*: Richard

Department\*: Epidemiology and Public Health

Role in Project\*: Principal Investigator

Institution\*: UCL

Street\*: 1-19 Torrington Place

Town/City\*: London

County\*: London

Post Code\*: WC1E 6BT

Telephone\*: 020 7679 1699

Extension: NA

Email Address\*: r.watt@ucl.ac.uk

\* Field is mandatory

### 3. Details of the Research Team

#### Co-applicant 1

Title: Dr Surname: Tsakos Forename: Giorgios  
 Post held: Senior Lecturer  
 Department: Department of Epidemiology and Public Health  
 Organisation: UCL  
 Telephone: 0207 679 5614 Extension: na  
 e-mail address: g.tsakos@ucl.ac.uk  
 Role in project: Advisor on general aspects of study design & data analysis

#### Co-applicant 2

Title: Prof Surname: Newton Forename: Timothy  
 Post held: Professor  
 Department: Health and Social Care  
 Organisation: Kings College London  
 Telephone: 020 7346 3481 Extension: n/a  
 e-mail address: tim.newton@kcl.ac.uk  
 Role in project: Advisor on MI intervention

#### Co-applicant 3

Title: Prof Surname: McCarthy Forename: David  
 Post held: Professor  
 Department: Institute for health research and policy  
 Organisation: London Metropolitan University  
 Telephone: 44(0)2071332547 Extension: n/a  
 e-mail address: d.mccarthy@londonmet.ac.uk  
 Role in project: Advisor on anthropometric methods & analysis

#### Co-applicant 4

Title: Dr Surname: Pikhart Forename: Hynek  
 Post held: Senior Lecturer  
 Department: Department of Epidemiology and Public Health  
 Organisation: UCL  
 Telephone: 0207 679 1906 Extension: na  
 e-mail address: h.pikhart@ucl.ac.uk  
 Role in project: Advisor on statistical analysis

**Co-applicant 5**

Title: Dr Surname: Stamatakis Forename: Emmanouil  
 Post held: Senior Lecturer  
 Department: Physical Activity Research Group  
 Organisation: UCL  
 Telephone: 0207 679 7121 Extension: na  
 e-mail address: e.stamatakis@ucl.ac.uk  
 Role in project: Advisor on physical activity measures

**Co-applicant 6**

Title: Dr Surname: Crawley Forename: Helen  
 Post held: Senior Lecturer  
 Department: Centre for Food Policy  
 Organisation: City University  
 Telephone: 0207 040 5060 Extension: n/a  
 e-mail address: helen.crawley.1@city.ac.uk  
 Role in project: Advisor on nutrition measurement and analysis

**Co-applicant 7**

Title: Miss Surname: Kolliakou Forename: Anna  
 Post held: Research Associate  
 Department: Department of Psychiatry  
 Organisation: Kings College London  
 Telephone: 0207 848 5482 Extension: n/a  
 e-mail address: anna.kolliakou@iop.kcl.ac.uk  
 Role in project: Advisor on development of MI intervention

**4. Changes to the Research Team**

Please outline any changes that have been made to the research team, including an explanation of why these changes were required.

1. Professor David McCarthy (Metropolitan University) was invited to join the team to provide expertise in the anthropometric measurements of the sample. David helped the team develop a measurement protocol, assisted in the training and calibration of the researchers involved in collecting anthropometric data and advised on the analysis of the data.
2. Marie Murphy was appointed through NIHR funding as a full time research assistant and was involved in all aspects of the study.
3. Through CLRN funding Jess Porter and Antiopi Ntouva were also appointed as research assistants and were involved with data collection, data entry, delivery of intervention and report/paper writing.
4. Huda Yusuf is a PhD student on the named project and has been involved in all aspects of the study.

## 5. Lay/Plain English Summary\*

Please provide a summary of the project, including background, findings and conclusions. It is essential that you make the content of your summary and the implications of your research evident to the lay public. It should avoid technical terms and should be written in an accessible style and emphasise in particular the potential for patient benefit arising from the study.

**(Maximum 2,500 characters)**

Overweight & obesity in young people is a major problem in the UK. Treatment options are limited & mostly fail to achieve long term success. There is an urgent need for more research on the prevention of obesity amongst young people. Excessive weight is caused when there is a sustained imbalance between the energy consumed & energy used up. Research has highlighted the important role that sugars consumption, especially sugary drinks plays on excessive weight gain. Sugary drinks are highly energy dense & are very popular amongst young people. School based studies have shown that if young people reduce the amount of sugary drinks they consume, this has a beneficial effect on reducing their weights. More research is needed however in primary care settings to evaluate obesity prevention interventions. Dental practices are a potentially useful but under developed place to target prevention as a significant proportion of young people attend dentists on a regular basis unlike any other part of the NHS.

The aim of this study was to develop & test an obesity prevention intervention targeting young people aged 11-16 years who attend dental practices. The study was conducted across north central London in two key stages: an initial developmental stage involved interviewing & surveying dentists & their staff to assess their experience & attitudes towards prevention. Interviews were also conducted with young people & their parents to assess their views of obesity prevention being delivered in dental practices. An obesity prevention intervention was then developed for use in dental practices. The second stage of the study involved testing the new intervention in 10 dental practices across north central London in an exploratory trial. Five practices were randomly allocated as intervention & 5 practices as controls. Overweight & obese young people attending the practices were recruited into the trial. Baseline heights/weights & diet measures were collected from eligible subjects & follow up measures assessed 6 months later.

The results indicated that dentists had a positive & engaging view of prevention & young people were happy with the idea of receiving diet advice at dentists. We were able to recruit 149 subjects into trial but only 26% were eligible. Encouraging findings on heights/weights & drinks intake were found but the differences were not significant between intervention & controls. More research is needed to test the intervention in a larger sample.

## 6. Keywords\*

Please provide up to 8 keywords that relate to the research undertaken in this study.

young people  
primary dental care  
randomised controlled trial  
motivational interviewing  
soft drinks  
obesity prevention

## 7. Summary of Research and Findings\*

Please provide a structured summary of the research including background, aims and objectives, methods, key findings, expected impact on the relevant field and conclusions.  
**(Maximum 10,000 characters)**

## Background

Obesity is a significant public health problem in the UK. Amongst young people obesity rates have risen dramatically in recent years. The health, social & economic consequences of this epidemic are significant. Overweight & obesity is caused by a complex interplay of metabolic, behavioural, social & environmental factors but ultimately results when a sustained energy imbalance occurs. Recent NICE guidance has highlighted the need for effective preventive interventions. Motivational interviewing (MI) is a behaviour change approach shown to be effective in a range of health outcomes. Epidemiological & intervention studies have highlighted the important role that sugars consumption, particularly from soft drinks has on the development of obesity. A high proportion of young people attend dentists routinely. This provides a unique opportunity to develop & test an obesity prevention intervention.

## Aims & objectives

**Aim:** To develop & test the feasibility of an obesity prevention intervention targeting 11-16 year olds attending general dental services in Islington; Camden; & Haringey PCTs.

**Specific objectives:**

1. To assess dental teams' experience, motivation & training needs in providing preventive care for both oral & general health improvement
2. To assess the acceptability to young people & their parents of the proposed intervention
3. To develop a motivational interviewing intervention specifically designed for dental practices working with young people to prevent obesity through a reduction in sugary drinks
4. To conduct an exploratory randomised controlled trial of the obesity intervention
5. To make recommendations on conducting a definitive trial of the obesity intervention

## Methods

Based upon the MRC framework for complex interventions this study used qualitative & quantitative methods in the following stages:

### Stage 1: Development of obesity prevention intervention

Four focus groups with dental teams were initially conducted to understand participants' attitudes & beliefs towards preventive activities

A questionnaire survey of all dentists across 3 London PCTs was then undertaken to assess their experience, motivation and training needs in prevention

Two focus groups with young people &, separately their parents were then conducted to determine the acceptability & salience of the proposed intervention

A motivational interviewing intervention (MI) was then developed to promote a reduction in sugary drinks consumption for young people attending dentists.

### Stage 2: Exploratory RCT of MI intervention

An exploratory trial was then undertaken in 10 dental practices to assess the feasibility of the intervention & trial methods.

Dental practices (n=10) who indicated in the earlier questionnaire survey their willingness to participate in the trial were recruited & randomised to intervention or control groups.

Target sample size: 140 subjects

### Inclusion criteria:

aged 11-16 years

classified as overweight/obese (BMI at or above 85<sup>th</sup> centile)

consumes at least 1 sugary drink/day

### Exclusion criteria:

has serious medical condition or eating disorder on special diet

unable to communicate effectively in English

classified as normal weight weight (BMI below 85<sup>th</sup> centile)

Primary outcome:

BMI z score

Secondary outcomes:

Mean daily consumption of sugary drinks

Readiness to change in drinking & eating habits

Outcome measurement

A standardised measurement protocol for anthropometric & dietary outcomes was developed. Height (without shoes) was measured to the nearest 0.1cm using portable Leister height measures & weight (in light clothing) was measured to the nearest 0.1kg on portable electronic scales (Seca 770). Waist circumference was measured at 2cm above the naval. Mean daily sugary drink consumption was assessed through a 4 day triple pass dietary recall method. Readiness to change was assessed through a standard motivation to change measure.

An embedded process evaluation was also undertaken to assess the acceptability of the intervention to both the young people & dental professional involved in the trial.

Key findings

Stage 1

The focus groups with dental teams provided valuable insights into their views & beliefs about prevention. Overall prevention was viewed to be fundamentally important & indeed an ethical & professional obligation. A number of barriers were however cited in providing prevention including organisational factors (lack of adequate remuneration, NHS bureaucracy, isolation) patient factors (lack of motivation, poor compliance) & clinician factors (poor motivation, lack of training & limited resources).

With the questionnaire survey of dentists across north London (n=164) a response rate of 55% was achieved. Overall the results indicated a generally positive view & relatively high levels of engagement in prevention. The sample reported a high level of involvement with various clinical preventive measures such as fissure sealants & fluoride varnishes, & giving oral hygiene & diet advice. The vast majority agreed or strongly agreed that dentists had a role to play in smoking cessation (81%), diet advice (93%) & alcohol support (66%). Dentists who were younger & female were significantly more likely to engage in preventive activities & hold more positive attitudes. The majority reported that lack of time (84%), inadequate remuneration (86%) & lack of patient compliance (77%) were important barriers to providing more prevention. In terms of training needs, the vast majority identified that they would find training in a range of preventive topics useful. In particular training covering knowledge on key concepts of prevention, evidence based recommendations & effective communication skills were highlighted as useful.

In the focus groups with young people & parents, mixed opinions were expressed about the idea of a dentist giving advice on weight control. This was seen as a very sensitive topic. However dentists discussing healthy food/drinks was considered more acceptable as this directly related to oral health. Practical & applied dietary support was seen as most helpful & various useful suggestions were made on how advice should be delivered to maximise the interest & motivation of the young people targeted.

Development of MI intervention

The intervention was designed to be delivered as a MI brief intervention in the dental practice, with appointments lasting 15-20 minutes with 3 or 4 sessions per participant. The staff delivering the intervention attended a 2 day specially developed MI training course delivered by a very experienced MI trainer. In addition on-going coaching was provided by the trainer to develop the appropriate MI skills & competencies. An intervention protocol was developed to ensure consistency of approach & this followed a MI pathway which involved: 1) establishing rapport, 2) setting the agenda, 3) exchanging information, 4) assessing

importance & confidence / developing discrepancy, 5) planning for change (setting goals), 6) summary & closing statements. Supporting nutritional resources were produced for the MI consultations to ensure a practical & applied focus.

### Stage 2

Ten dental practices from across Islington, Camden & Haringey agreed to participate in the exploratory trial & were randomised to test & control groups. All dental staff in each practice were then trained in appropriate methods for recruiting subjects into the trial. 149 dental patients aged 11-16 years agreed to take part in the study but only 39 were deemed eligible following anthropometric measurements as the majority were not overweight or obese & therefore not eligible (see consort flow diagram). The eligible subjects were then randomised, 22 to the intervention & 17 to the control practices. The mean age of sample was 13.6 years. At baseline few differences were found between groups. At the 6 months follow up for the intervention group there was a reduction in both the BMI z scores (0.05) (primary outcome) & mean daily consumption of sugary drinks (299 ml) (secondary outcome) but the mean difference between groups was not significant. The trial results will enable a sample size calculation & intra cluster correlation coefficients to be calculated to inform the conduct of a future definitive trial.

### Process evaluation

Useful insights from both the young people & dental teams involved in the study were obtained. Overall participants' viewed the intervention as acceptable & helpful. The trial recruitment & measurement methods were also seen as acceptable. The fidelity of the MI intervention was independently assessed using a standard (Motivational Interviewing Treatment Integrity - MITI) approach & deemed to be satisfactory.

### Expected impact

This developmental & exploratory trial has produced some very encouraging & promising findings. Research in primary dental care is still in the early stages of development. We have however managed to successfully engage with dental professionals across north London & have stimulated their interest in research. Our trial data indicate that it is feasible to recruit normal weight young people through dental practices but not overweight or obese adolescents. We developed a tailored MI intervention designed to reduce sugary drinks consumption & this produced some encouraging results in both anthropometric & dietary outcomes. Further research is however needed to test the effectiveness of an MI obesity prevention in dental practices - see section 10.

### Conclusions

This exploratory study has demonstrated the feasibility of conducting an obesity prevention intervention within a general dental practice setting. The results have demonstrated that dental professionals are interested in prevention; the dental practice is a suitable setting for implementing MI interventions; & the MI support had a positive but non significant effect on key outcomes. A major challenge however was the difficulty in recruiting overweight & obese young people attending dentists.

## 8. Changes in the project since initial approval\*

Please summarise any changes made to the project as outlined in the original proposal and outline the reasons for these changes. If there were no changes to the original plans, write 'not applicable'.  
(Maximum 2,500 characters)

\* Field is mandatory

**Aims and objectives:**

Not applicable

**Research Plan and Methodology:**

During the course of undertaking this study one major change and a selection of minor changes were made to the methodology.

**Major Change**

In the initial stages of the trial phase of the study we encountered a major problem with the recruitment of the sample. Our original eligibility criteria specified that young people needed to be aged 12-14 years and to be overweight (BMI at or above 91<sup>st</sup> centile). This criteria proved to be too restrictive as very few subjects measured were deemed eligible. With the agreement of the RfPB London Chair we altered our criteria to be subjects aged 11-16 years and who were overweight or obese (BMI above 85<sup>th</sup> centile). This change in the eligibility criteria enabled us to recruit a larger number of subjects.

**Minor changes included:**

1. Addition of four focus groups with dentists and dental team members in the initial developmental phase of the study. The reason for this was to explore in greater depth the dental professionals' experience and perspectives on prevention using qualitative methods.
2. In the original proposal we planned to include Hammersmith PCT. Due to contractual changes and NHS reorganisation, Haringey PCT was instead selected as the third area for the study, in addition to Islington and Camden.
3. Originally we planned for the intervention to be delivered by trained dental staff working in the participating dental practices. This plan proved unrealistic once we developed a more detailed understanding of motivational interviewing and the skills required to implement this approach. We therefore instead trained three members of the research team in motivational interviewing and these staff members delivered the intervention in the test practices. This proved very successful as we were able to standardise the intervention and to assess its fidelity.
4. Based upon advice given by Prof David McCarthy, we changed a minor detail on how the waist circumference measurements were undertaken.
5. The final minor change was the addition of using a very short postal questionnaire with the trial sample who had dropped out of the study to assess their reasons for doing this.

All these changes were approved by the relevant Research Ethics and R&D Committees.

**9. Patient and Public Involvement\***

The RfPB Programme is particularly keen to learn from the experiences of research teams regarding patient and public involvement (PPI) and contribution from PPI members involved in the research is encouraged when completing this form. Please provide comment on your experiences with PPI, any changes made and lessons drawn. Please include detail of PPI with dissemination and with trajectory into practice both in the project and beyond. **(Maximum 5,000 characters)**

Patient and public involvement (PPI) is particularly important in the development of any new intervention which aims to change behaviours and focuses on a potentially sensitive topic such as overweight and obesity amongst young people. In the original proposal we planned two PPI elements in this study: 1. creation of a young people's research forum and 2. parent representation on the project steering group.

Overall our experience of PPI in this study has been very positive and it has provided some very valuable insights and perspectives that have contributed significantly to the successful completion of the study. In collaboration with the Islington Healthy Schools team, we formed a very good link with an Islington secondary school where we established our planned research forum. This comprised of a Year 9 class which we visited on a termly basis to seek their views and opinions on the proposed research. The forum proved particularly useful in gaining young peoples views on the design of the study questionnaires in terms of the appropriate language, lay-out and content. They also helped us in determining the most effective ways of communicating with the study sample, suggestions on suitable incentives to encourage young people to participate in the study and ideas on the design of the intervention programme. We were also able to pilot the screening and measurement questionnaires with the class. Their input therefore proved immensely helpful in designing and testing key elements of the study methodology.

However we did also encounter some real difficulties with our planned PPI activities. Attempts at engaging with the parents of young people attending local dental practices proved very challenging indeed. We were therefore unable to get parent representation on the project steering group and even struggled to get parents involved in the planned focus groups.

The experience gained from undertaking this study has undoubtedly highlighted the importance and difficulties in achieving real and meaningful PPI. Future research in this field would need to establish research forums in more than one school to share the load and reduce the burden on busy schools. It would also be important to have more than one contact in each school to ensure continuity of access should any staff member leave the school involved. In terms of parental involvement, the UCL Dental Public Health team are now planning a broader PPI approach through establishing a dental patients forum across research active dental practices in north central London. This patient forum would encourage dental patient representation on research issues. We have an experienced PPI representative helping with this planned activity and have the support of the local R&D offices.

## 10. Next Steps to Patient Benefit\*

Please provide comment on the likely implications for practice which may result from the outcomes of this project and the next steps to be taken to ensure patient benefit both locally and more broadly. Steps already taken and planned for the future should be included. While in funding research, RfPB emphasises a 3-5 year trajectory into practice, it is important not to 'overclaim' and care should be taken to cover the limitations of the study and any risks associated with implementation. Where the project is a pilot, include details of plans for a definitive study, including the likely funder and timetable for its submission. Please give reasons if there is no plan to go forward to a trial at this stage. **(Maximum 5,000 characters)**

As an exploratory trial the central aim of this study was to determine the feasibility of conducting an obesity prevention intervention targetting young people attending general dental practices. Overall the findings from this study provide encouraging data to inform a future definitive randomised controlled trial.

Our initial questionnaire survey and focus groups with dental teams indicated a high level of interest and enthusiasm for preventive interventions delivered in general dental practices. The focus groups with young people and their parents also indicated the acceptability of dental teams providing dietary advice to their young patients. However it was apparent that advice on weight control would be considered inappropriate from a dental professional. Based upon current evidence and expert advice we were then able to develop a tailored motivational interviewing intervention for this study. Our process evaluation showed that the intervention and its evaluation proved to be acceptable to both young people and the dental teams where the support was delivered. A major success of the study was the successful engagement with dental practitioners and their staff. Across north London we successfully recruited 10 dental practices who were actively engaged in all aspects of the study. The one major challenge we encountered was recruiting eligible patients into the study. Although we managed to recruit 149 patients, only 39 of these were found to be eligible, being overweight or obese. The results of the exploratory trial demonstrated that the MI intervention had a small and positive effect on the selected anthropometric, dietary and psychological outcomes.

What are the implications of these results for future research? A full scale definitive trial is now needed to determine the effectiveness of an obesity prevention intervention delivered in dental practices. We have certainly demonstrated the feasibility of engaging successfully with dental practices and the acceptability of a MI dietary intervention. A future trial would need to assess if dental staff can be trained to successfully deliver the intervention. In terms of the recruitment of young people, a future study would also need to include normal weight, as well as overweight and obese subjects. The vast majority of obesity prevention trials with young people do not exclude normal weight individuals. Based upon the effect sizes and intra-cluster correlation coefficients determined in this study, we will be able to calculate the sample size needed for a future large scale trial.

It is planned that a funding application will be submitted to NIHR Applied Research of HTA Programme within the next 12 months for a definitive trial.

## 11. Key Presentations and Publications\*

Please list here any presentations and publications which have resulted from the work. This should include journal articles, conference proceedings, press releases and all publications in the lay and scientific press, including website links to published articles if appropriate. Items that are forthcoming should also be included. **Please note you are contractually obliged to provide 28 days notification prior to any publication.**

Author (s)	Title	Reference/Further Details
Yusuf H, Ntouva A, Murphy M, Newton T, Watt R.G.	Prevention in Practice: Dentists' attitudes, practices and perceived barriers to delivering prevention	Poster presentation Joint meeting of the British Association for the Study of Community Dentistry and the European Association of Dental Public Health Nov 2012, London
Murphy M, Porter J, Yusuf H, Ntouva A, Kolliakou A, Newton T, Watt RG.	Study design for a motivational interviewing intervention for the prevention of obesity in adolescents attending dental practices: An exploratory cluster RCT	Poster presentation 2013 Annual Meeting of the International Society for Behavioural Nutrition and Physical Activity 22 <sup>nd</sup> May 2013, Ghent
Yusuf H, Ntouva A, Murphy M, Newton T, Tsakos G, Watt RG.	Dentists' attitudes, practices and perceived barriers to delivering prevention in General Dental Practice	Submitted to British Dental Journal, Nov 2012
Yusuf H, Murphy M, Ntouva A, Newton T, Murdoch M, Watt RG.	An ethical dilemma: our current understanding of prevention in primary dental care. A qualitative study	Submitted to Social Science and Dentistry, Feb 2013
Protocol paper to be entered once finalised	Protocol paper to be entered once finalised	Submitted to Contemporary Clinical Trials, Mar 2013
	Outcomes paper to be prepared	
	Process evaluation paper to be prepared	