Evaluation of children and young peoples’ weight loss and health life style programmes in the locality of NHS East Lancashire

Final Report

February 2010
Evaluation of children and young peoples’ weight loss and healthy lifestyle programmes in the locality of NHS East Lancashire: Final Report

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This project was commissioned by the Public Health Department of the East Lancashire PCT in April 2009. The project aims were to identify the basic features of children and young people's weight loss interventions and healthy lifestyle programmes offered in the Burnley area and to conduct an economic evaluation of the programmes. Included were the Obesity Support for Children And Relatives (OSCAR); Mind, Exercise, Nutrition, Do it (MEND); and the Burnley Food and Fitness Aimed at Lowering Obesity (BUFFALO) programmes. Also part of the project brief was to undertake an in-depth quantitative and qualitative evaluation of the 2009 OSCAR programme.

The objectives of three programmes range from obesity treatment for children with complex needs and their families (OSCAR), treatment programmes for obese and overweight children (MEND) to obesity prevention for children and their teachers (BUFFALO). Using framework given by the National Obesity Observatory (NOO 2009) the basic characteristics of each of the programmes are compared. Details are given of such things as recruitment profiles, core staff delivering the programmes, programme costs and the types of outcome measures deployed. It was found that outcome evaluative data was only available for the 2009 OSCAR and 2007-2009 MEND programmes.

Evaluation of the MEND programme nationally is subject of an on-going study. Evaluation data for the 2007 to 2009 Burnley programmes was kindly supplied by the MEND national team. The data was largely quantitative in nature and shows that children and young people who had attended the programme had achieved significant improvements measures of anthropometry, physical activity, sedentary behaviour, fitness, psychological indices and dietary habits.

Evaluation of the 2009 OSCAR programme was also conducted by the research team. The 2009 programme was in many ways unusual. For example, it was a five month instead of the more normal twelve month programme. Nevertheless the evaluation revealed that most of the referred children and family members of the five families who completed the 2009 programme achieved the medical outcomes set for them. There are also a number of positive aspects of the quantitative evaluation including that knowledge of healthy eating and appropriate levels of exercise were relatively high to start off with and improved even further following completion of the OSCAR programme. The qualitative evaluation generated a number of data themes including recruitment and marketing, family-centredness, programme content, staff and resource issues, evaluation approaches, exit strategies and sustainability. The evaluation also gives insights into how the programme could be improved in the future which are given in the study recommendations.

Concerning the economic evaluation undertaken; from the information provided it was possible to derive gross annualised cost estimates for implementing the OSCAR and BUFFALO programmes. In the case of the OSCAR programme annualised cost estimates have been extrapolated from expenditure data covering a period of five months; where practicable, adjustment has been made to the estimates based on whether costs are fixed or variable. The estimated annual costs for the OSCAR and BUFFALO programmes are, respectively, £42,346 and £100,109. Based on the target utilisation projection of 40 children per year, the cost per child participant on the OSCAR programme is £1,059. The cost per child participant for the BUFFALO programme, based on a target utilisation of 120 children per year, is £834. The cost per child participant for the MEND programme, based on a target utilisation of 60 children per year, is £536.

However, it is concluded that the OSCAR, MEND and BUFFALO programmes comprise of a tiered approach to providing services for children and young people spanning the ‘at risk’ to the obese. Thus a crucial finding of the study undertaken is not that one programme is more cost effective or produces better health outcomes than another but that the programmes have different emphases all of which are necessary in combating the significant risk childhood obesity has for the future health of the population in the Burnley area.
ACKNOWLEDGEMENTS

The research team are grateful for the help and input of the OSCAR team and families who participated in the 2009 programme. Their input has been invaluable. Also the willingness of the MEND team to share the findings of their programme evaluation has been much appreciated. The BUFFALO team have also been generous in their support of this project and supplying helpful details of the programme. Finally the research team wish to acknowledge the support that NHS East Lancashire has given that has made undertaking this study possible.
BACKGROUND
Authors such as Sacher et al. (2009) and Shield (2008) relate that the prevalence of childhood obesity continues to increase worldwide. Its presence is associated with significant adverse effects on health including an increased propensity of developing Type 2 Diabetes and cardiovascular, respiratory and liver disease (Matyka 2008). A number of authors also relate that for the vast majority of children obesity is life-style related, yet there is a dearth of evidence concerning how to best develop effective prevention and treatment strategies (Counterweight Project Team 2008). In response the UK Government has set new targets in order to be the first major country to reverse the rising tide of obesity and overweight in the population by ensuring that all individuals are able to maintain a healthy weight (DH 2007a) and (DH 2007b) and various cross-government strategies are planned (DH 2008). The National Institute for Health and Clinical Excellence also identifies how there is considerable action being taken at a local level that may impact on the prevention or management of obesity, but little evaluation of these initiatives is being undertaken (NICE 2006).

In April 2009 a research team lead by Professor Annette Jinks from the Evidence-based Practice Research Centre at Edge Hill University was commissioned to undertake a scoping exercise of the weight treatment and prevention programmes offered in the locality of the Burnley area. Included were the OSCAR, MEND, BUFFALO and the Junior Get In Gear (Junior GIG) programmes. The OSCAR, MEND and BUFFALO programmes are the primary focus of this report. Further details of the Junior GIG programme is given in appendix one.

The MEND programme is already the subject of on-going evaluation studies which are being conducted by the MEND national team. An evaluation summary of the 2007-2009 MEND programmes offered in the Burnley area has been kindly supplied by the MEND team and is given in appendix two. The University of Chester’s Centre for Research into Sport and Society are conducting an evaluation of the BUFFALO programme. However, the findings of this study are not yet available. Also included in the present research teams’ brief was to undertake an in-depth qualitative and quantitative evaluation of the 2009 OSCAR programme, full details of the OSCAR evaluation are given in appendix three. Further details of the project aims are given in the following section of this report.

RESEARCH AIMS
The aims of the project were to:

• Use the Standard Evaluation Framework (SEF) given by the National Obesity Observatory (NOO 2009) to compare and contrast the basic elements of the OSCAR, MEND and BUFFALO programmes

• Conduct an economic evaluation of OSCAR, MEND and BUFFALO programmes

• Conduct a detailed quantitative and qualitative evaluation of the 2009 OSCAR programme.

• Give recommendations that will assist East Lancashire PCT in the future commissioning of children and young people’s weight gain preventative and weight loss intervention programmes.

ETHICAL APPROVAL
As evaluation of the BUFFALO and MEND programmes did not involve any primary data collection only ethical approval for evaluation of the 2009 OSCAR programme was sought. Ethical approval for the
OSCAR evaluation was given by Edge Hill University in May 2009. NHS ethical approval was given in September 2009 by Cumbria NHS Ethics Committee and NHS East Lancashire research governance department.

**EVALUATION APPROACHES**

The structure of the evaluation was informed by the recommendations of NOO (2009) and use of the SEF developed by the observatory. The aim of SEF is to provide an evidence-based guide to establishing the effectiveness of weight loss and weight prevention interventions. The SEF is a list of data collection criteria and supporting guidance for collecting information that can be used in the evaluation of weight management interventions projects. The first part of the SEF addresses the basic details of an intervention. These criteria has been slightly modified and used to identify the basic characteristics of the OSCAR, MEND and BUFFALO, programmes.

In order to gain information for the comparative analysis, a series of meetings (n=7) were undertaken in April to June 2009 with key members of the OSCAR, MEND and BUFFALO programme teams. Summaries of the meetings were produced and their accuracy verified with team members. Additional information used in the comparative analysis has been taken from documents provided by the programme teams, the regional office of MEND, publications concerning MEND'S effectiveness and various web-based information sites. The findings of these initial phases of the project are given in the following sections of this report.

**BACKGROUND DETAILS OF THE OSCAR, MEND & BUFFALO PROGRAMMES**

**The OSCAR programme**
The OSCAR programme was initially part of the Sure Start initiative and has been run approximately once a year over the last three years and is managed and funded by NHS East Lancashire. OSCAR is a family-based support programme for children aged seven to fourteen years who are overweight or obese and is based on a person-centred planning approach called Planning With People. The programme is facilitated by a multi-disciplinary team. Each programme is normally run over a twelve month period* with twelve education and activity sessions. Family meetings are offered every 6-8 weeks over the year giving a minimum of six meetings per yearly programme. The education and activity sessions include topics such as healthy eating, nutrition and cookery and the psychological aspects of maintaining healthy life styles such as roles and responsibilities and emotional eating. A variety of activity sessions such as tasters to aerobics, salsa and orienteering are also included. Both parents/caregivers and children are expected to attend all the weekly sessions and the family meetings. Siblings are also encouraged to attend. Central to the programme are the formulation of family plans and health targets. Key to achievement of the targets is the provision of individual help and support that professionals who act as key workers give to the children, young people and their families. The OSCAR programme is held at community venues in the Burnley area.

*It should be noted that the 2009 programme that is the subject of an-depth evaluation described in appendix three is markedly different to previous programmes in that it was commissioned to run over a five month period (April to August).*

**The MEND programme**
The MEND programme has been developed at the Institute of Child Health at Great Ormond Street for Children NHS Trust and over the last few years the programme has been rolled out to run on a national basis. Locally it is organised by the Pendle Leisure Trust and is funded by a Big Lottery grant. Since 2009 the programme has included 20 sessions, prior to this time 18 sessions were offered. The programme includes sessions which consist of games, interactive discussions, practical
demonstrations, exercise sessions, tips about healthy food and visits to local shops. All these activities are designed to encourage healthy eating and active lifestyles for overweight and obese children aged seven to thirteen years old. The Programme is delivered face-to-face in a group setting and involves direct participation by all children and their parents or carers. Recognising the importance of family involvement for behaviour change, the programme requires a parent or carer to attend all sessions. Each session has two halves, starting with an hour of theory delivered in a workshop-style lesson format encouraging group discussion between all children and adults. This is followed by an hour of fun land- or water-based physical activity for children, during which time parents or carers engage in an hour of guided discussion. Facilitation rather than a didactic approach underpins all theory and guided discussion sessions. Recruitment to the programme is based on age, weight and health. There is an aim to recruit around 20 young people to each programme which is usually offered two or three times a year. The Burnley MEND programmes are held at the leisure and sports centres at Colne, Nelson and Barnoldswick although nationally the programme is offered in a variety of community venues that have the appropriate facilities.

BUFFALO programme
BUFFALO is a joint project organised by Burnley Borough Council and NHS East Lancashire which is now in its fifth year. Differently to the OSCAR and MEND programmes which are treatment interventions the philosophy underpinning the BUFFALO programme is one of prevention. Four different schools are targeted each year because their post codes indicate that their catchment area covers a disadvantaged community. It is a school-based preventative intervention which targets all year five children attending the participating schools. That is the programme is usually offered to 25-30 nine to ten year old children, their teachers and parents at each of the participating schools. The programme is additional to the school's normal curriculum. The children's weight and height are measured at the start of the programme in September and at the end in July. There are three strands to the programme which follows a ten week block approach. Activities such as preparing food, food awareness, exercise (non-sport) activities and how exercise can be incorporated into ordinary lifestyle activities such as playground games are included in term one. In term two and three after-school activities are organised and include cookery, gardening and exercise classes. The option of parents’ involvement is being offered for the first time in the 2009 programme and consists of a nutrition and activity programme.

The basic characteristics of the BUFFALO, MEND and OSCAR programmes including identification of the demographic details of the programme participants, outcome measures deployed and collection of follow-up data is given in table one.
### Table one: Characteristics on the OSCAR, MEND and BUFFALO programmes

<table>
<thead>
<tr>
<th>Focus</th>
<th>OSCAR</th>
<th>MEND</th>
<th>BUFFALO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Programme aims</strong></td>
<td>To enable referred obese children and their families to make the changes needed to eat a more healthy diet and to be more active</td>
<td>To help children and families learn how to improve their health, fitness and the way they feel about their bodies.</td>
<td>To investigate ways of halting the year on year rise in childhood obesity in children aged under 11 years</td>
</tr>
<tr>
<td><strong>Rationale of the programme</strong></td>
<td>Obesity treatment for children and families with complex needs</td>
<td>Over weight/obesity treatment</td>
<td>Obesity prevention</td>
</tr>
<tr>
<td><strong>Length of the programme</strong></td>
<td>Normally one year although the 2009 programme was only commissioned over a five month period</td>
<td>Normally ten weeks</td>
<td>Normally one year</td>
</tr>
<tr>
<td><strong>Location and setting</strong></td>
<td>Community venues that have sports, teaching and cooking facilities</td>
<td>Leisure and sports centres at Colne, Nelson and Barnoldswick</td>
<td>Schools in Burnley locality whose post code indicate they serve a disadvantaged community</td>
</tr>
<tr>
<td><strong>Programme commissioners/ contributors</strong></td>
<td>NHS East Lancashire</td>
<td>Pendle Leisure Trust</td>
<td>Burnley Borough Council and NHS East Lancashire</td>
</tr>
<tr>
<td><strong>Recruitment profiles (children)</strong></td>
<td>Children aged 7 to 14 who are obese and have complex health and/or social needs.</td>
<td>Children 7 to 13 year old who are at least over-weight. (There are also other MEND programmes that are offered for 2-4 year olds, 5-7 year olds and adults)</td>
<td>All year five children (9 to 10 year old) at the participating schools</td>
</tr>
<tr>
<td><strong>Gender and Ethnicity</strong></td>
<td>In the 2009 programme there were all white families with the, only Asian heritage family dropping out. Referred children 4 boys, 3 girls.</td>
<td>69% male, 50% Asian, 43% white, 7% mixed.</td>
<td>Not known</td>
</tr>
<tr>
<td><strong>Family involvement</strong></td>
<td>It is a family-centred programme. Both parents and all children are expected to attend 12 weekly education and activity sessions and family meetings.</td>
<td>The MEND 7-13 programme is family-centred &amp; requires a parent or carer to attend all sessions.</td>
<td>From 2009 parents are being offered an after-school nutrition and activity programme.</td>
</tr>
<tr>
<td><strong>Target number</strong></td>
<td>Eight to ten families for the 2009 programme but the normal programme could accommodate up to 40 families over the year</td>
<td>The Burnley programme aims to recruit twenty children to two or three programmes per year (Maximum number of 60 children per year)</td>
<td>Four primary schools are targeted each year. (Maximum number of 120 children per year)</td>
</tr>
<tr>
<td><strong>Attendance</strong></td>
<td>Attendance for 2009 was 71%</td>
<td>Attendance for the years 2007-2009 was 82.6%</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Attrition</strong></td>
<td>Two families for the 2009 programme (28.5%)</td>
<td>Attrition for the years 2007-2009 was 5.3%.</td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Referral patterns</strong></td>
<td>Mainly from other healthcare professionals such as GPs, Consultants, school nurses and Community Paediatricians. In 2009 there was one family who self referred.</td>
<td>Self-referral and healthcare professionals</td>
<td>Particular primary schools are targeted because their post codes indicate their catchment area encompasses a disadvantaged community</td>
</tr>
<tr>
<td><strong>Length of the programme</strong></td>
<td>Normally 12 month support is offered. However, the 2009 programme was 5 months long, April to August.</td>
<td>Ten weeks (20 sessions – 2 hours twice a week followed by a two-year web-based support service)</td>
<td>One school year. (In the first term there is one weekly classroom session. In second and third terms sessions are offered as an after-school activity)</td>
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</table>
Table one: Characteristics on the OSCAR, MEND and BUFFALO programmes (continued)

<table>
<thead>
<tr>
<th>Programme outline</th>
<th>Characteristics</th>
<th>Outcome measures</th>
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</thead>
<tbody>
<tr>
<td>2009 program was 12x2 hour weekly educational programmes devoted to topics such as healthy life styles, healthy eating and exercise &amp; three 2 hour family meetings with key worker support. Family support would normally be 6 weekly up to one year.</td>
<td>Games, interactive discussions, practical demonstrations, exercise sessions, tips about healthy food and visits to local shops. All these activities are designed to encourage healthy eating and active lifestyles.</td>
<td>In school time activities such as preparing food, food awareness, exercise (non-sport) activities &amp; how exercise can be incorporated into ordinary life style activities (term one). After-school activities including cookery, gardening and exercise classes (terms 2 &amp;3).</td>
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Core staff

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<tr>
<th>Programme outline</th>
<th>Characteristics</th>
<th>Outcome measures</th>
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<tbody>
<tr>
<td>Two dieticians (one was also Team Leader), Child &amp; Family Psychologist, Patient- centred approach worker, Exercise Specialist, Nutritionist &amp; admin. &amp; support worker.</td>
<td>Three qualified Fitness Instructors (Nationally the programme can be run by a variety of health and fitness professionals).</td>
<td>A Nutritionist &amp; Exercise Specialist</td>
</tr>
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Additional staff training

<table>
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<tr>
<th>Programme outline</th>
<th>Characteristics</th>
<th>Outcome measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of family-centred approaches (planning with people tools)</td>
<td>One to two day programmes for practical and theory delivery</td>
<td>No specific training provided</td>
</tr>
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Contributions*

<table>
<thead>
<tr>
<th>Programme outline</th>
<th>Characteristics</th>
<th>Outcome measures</th>
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<tr>
<td>100% NHS East Lancashire funded</td>
<td>Programme run by Pendle Leisure who gain financial benefit from a Big Lottery Fund grant secured by MEND</td>
<td>Big lottery funding 49%, Burnley Borough Council 32%, NHS East Lancashire 18%</td>
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Outcome measures

<table>
<thead>
<tr>
<th>Programme outline</th>
<th>Characteristics</th>
<th>Outcome measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre and post programme BMI, waist circumference, Beck Depression Inventory, Birleson Depression Scale, Culture Free Self Esteem Inventory, Parents Esteem Questionnaire, Generic Quality of Life and Knowledge of Healthy Eating and Exercise</td>
<td>Pre and post programme BMI, waist circumference, fitness testing (recovery heart rate), parent and self reports of physical and sedentary activities, Strengths and Difficulties questionnaire, and Dietary Habits questionnaire. Pre and post child self-esteem and body image questionnaires.</td>
<td>Pre and post BMI &amp; waist circumference Pre and post fitness testing – cardiovascular, strength, endurance, agility &amp; flexibility Pre and post teacher behaviour questionnaire Pre and post child self-esteem questionnaire Post physical activity &amp; healthy eating questionnaire</td>
</tr>
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*Further information of these aspects of the programmes is given in the health economic evaluation given in later sections of this report.

EVALUATION SUMMARIES OF THE OSCAR, MEND AND BUFFALO PROGRAMMES

OSCAR

As related earlier the 2009 OSCAR programme has been subject of an in-depth qualitative and quantitative evaluation. Full details of the findings of this evaluation are given in appendix three. Generally, however, it can be concluded that recruitment to the 2009 programme was less than the team had hoped for and had the capacity to cater for. This is due to issues related to the programme not having been commissioned as an established year-on-year programme and the tight schedule the team had to work to run the project. This has resulted in an inability of the team to be able to develop long term planning and marketing strategies.

Nevertheless there were a number of positive aspects of the findings of the evaluation conducted. For example, most of the referred children and family members of the five families who completed the programme achieved the medical outcomes set for them, such as BMI, weight and waist circumference centiles. Additionally the quantitative evaluation showed that a number of self report aspects of healthy eating and levels of activity show areas of improvement. Knowledge of healthy eating and appropriate levels of exercise were relatively high to start off with and improved even further following completion of
the OSCAR programme. Measures used to estimate children’s quality of life, self esteem and levels of depression with one or two exceptions were within normal limits and usually improved post completion of the OSCAR programme. Generally the adult family members had high levels of self esteem and low measures of depression which often improved following completion of the OSCAR programme.

A further positive aspect of the OSCAR programme is that it has a wider remit than just obesity treatment. As the team is multidisciplinary, if any of the children have problems that need dealing with outside the OSCAR remit, the children are referred for specialist help. This happened on two occasions in the 2009 programme with a sibling of one family that dropped out of the programme and one child who completed the programme. Both children exhibited problems which were highlighted in the screening tools used in the programme and needed to be dealt with urgently by a psychologist. Both children were directed into specialist child psychology for help and are continuing to receive help.

Analysis of the family plans demonstrate the family-centred nature of the programme and give insight into the type of health goals the families set themselves. Finally, the qualitative evaluation conducted generated a number of data themes which included recruitment and marketing, family-centredness, the programme content, staff and resource issues, evaluation approaches, exit strategies and sustainability. All aspects of the evaluation of the 2009 programme gives many insights into how the programme could be improved in the future. Suggestions on how to improve the programme are given in the recommendations given at the end of the OSCAR programme evaluation given in appendix three.

**MEND**

Local MEND teams routinely collect information concerning the participant children and young peoples’ weight, BMI, waist circumference and fitness. Pre and post intervention questionnaires are used and address such things as knowledge of healthy eating, physical activity levels, body image and self esteem. A post course evaluation questionnaire is also administered. All the local data collected is fed into a national MEND data base which has been used in an extensive evaluative research programme. For example, the programme has been the subject of a Randomised Controlled Trial (RCT) which found significant improvements in waist circumference, BMI, cardiovascular fitness and self-esteem in the MEND sample group that were studied.

The national evaluation of the MEND programme has been conducted in partnership with University College London Institute of Child Health and Great Ormond Street Hospital for Children NHS Trust. This on-going programme of research has included an uncontrolled pilot study in 2002-03 designed to test the feasibility of an intensive community-based programme for the weight management of obese children (BMI ≥98th centile). Eleven children, aged 7-11 years, and their parents attended nutrition education, behaviour modification, and physical activity sessions twice weekly for 3 months, with a 3 month follow-up. The pilot study demonstrated that improvements in the health of obese children, good attendance and low attrition were achieved by the multidisciplinary MEND Programme. (Sacher et al. 2005)

An RCT was also conducted in the UK between 2005-07 to assess the effectiveness of a 6-month intervention consisting of the 9-week MEND Programme (measurements were conducted as part of the research and therefore the programme was only 9 weeks in duration) followed by a 12-week free family swim pass. Obese children (BMI ≥98th centile) were randomized to the intervention (n=60) or 6-month wait-listed control (n=56) group. Outcome measures were collected at baseline, 6 and 12 months. The UK RCT demonstrated the efficacy and high acceptance of the MEND programme by families.
In addition, the effectiveness of the programme is currently being independently evaluated in a blinded, multi-centre, RCT of 300 overweight and obese children aged 7-13 years by the MRC Childhood Nutrition Research Centre, UCL Institute of Child Health and Great Ormond Street Hospital for Children NHS Trust.

Today, over 365 locations across the UK are running a MEND 7-13 Programme every school term. The roll-out data provides evidence of the effectiveness of the MEND Programme when delivered on a large scale in the real world. (For information on the UK National Roll-Out results see Kolotourou et al 2009.)

The MEND team have very helpfully supplied a summary evaluation of the five MEND programmes offered in the Burnley area 2007-2009 for use in the present report. The MEND summary is given in appendix two. Generally the evaluation shows that MEND programme participants have achieved significant improvement measures of anthropometry, physical activity, sedentary behaviour, fitness, psychological indices and dietary habits.

BUFFALO
Currently an evaluation of the BUFFALO programme is being undertaken by the University of Chester’s Centre for Research into Sport and Society. Similar evaluative data to the other two projects has been obtained including pre and post intervention physiological measures such as weight, BMI, waist circumference and fitness testing. Pre and post intervention questionnaires asking about behaviour and self-esteem and post programme evaluations by children, teachers and parents have also being completed. Details of the findings of this evaluation have not been available at the time of preparing this report.

ECONOMIC ANALYSIS

Introduction and background to economic analysis
The costs of obesity are projected to grow significantly in the next few decades. Foresight (2007) estimated the annual costs to the NHS of diseases related to obesity alone (BMI 30kg/m\(^2\) or more) for 2007 at £2.3 billion rising in 2015 to £3.9 billion. The Foresight estimate of the annual local cost of diseases related to obesity in 2010 for East Lancashire PCT is £61.9 million.

The OSCAR, MEND and BUFFALO programmes are aimed at different subgroups of the target population i.e. they are not, strictly, credible alternatives to each other. Specifically, the three programmes comprise a tiered approach to providing services for young people across tiers 2, 3 and 4; spanning the ‘at risk’ to the obese. At tier 2, BUFFALO is the most upstream of the programmes; in the middle of this continuum at tier 3 is the MEND programme; followed by the more specialised OSCAR programme at tier 4. Importantly, the subgroups are likely to differ by the level of effectiveness and cost. This will be reflected in variability in the intensity of resource use across the programmes. Intuitively, tier 4 programmes will have higher costs than programmes at tiers 2 and 3.

Ideally, for the OSCAR, MEND and BUFFALO programmes a cost-effectiveness analysis (CEA)\(^1\) would be conducted to provide the information necessary to fully inform decision-making. A problem with cost-effectiveness analysis (CEA), however, is that it is not able to deal with multiple objectives. Hence a requirement of CEA is that there is either one unambiguous objective of the intervention or many objectives but alternative interventions achieve these to the same extent. For example, if it turned out

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\(^1\) Cost-effectiveness analysis is a type of economic evaluation that measures the difference in costs and benefits of at least two interventions with measures of effectiveness that use single natural units (e.g. BMI) to value health gain.
that the alternatives have equivalent effectiveness on the chosen dimension then a cost-minimisation analysis would be appropriate.\(^2\) In most cases, however, there will be more than one dimension of benefits from health programmes (sometimes called attributes). The solution here is to use a utility-based measure of outcome like the quality-adjusted life-years (QALY).

Intervention outcomes can be categorized as either process, intermediate, or final. For decision-making a final outcome, which shows the ultimate effect of the intervention on the health of the participant, is preferable to a process or intermediate indicator. However, programmes like OSCAR, MEND and BUFFALO have multi-dimensional impact so if an economic evaluation were undertaken it would be necessary to define intervention attributes in simple natural units, with the aim of getting as close as possible to the intervention objectives e.g. BMI and/or waist measurement.\(^3\)

An alternative approach to a cost-effectiveness analysis would be a cost-consequences analysis. This approach, while not constituting a full economic evaluation, does permit a comparison of costs with several different outcomes. In a cost-consequences analysis cost implications are presented against a range of different output measures leaving the decision-maker to determine their relative importance. In practical terms this means that the costs and consequences of the OSCAR, MEND and BUFFALO programmes would be represented in a disaggregated form. In this way all of the outcomes can be considered within a framework of evaluation.

**Published evidence on the cost-effectiveness of weight loss and healthy lifestyle programmes**

There is significant evidence to support the cost-effectiveness of strategies aimed at preventing and managing overweight and obesity that are similar to the OSCAR, MEND and BUFFALO programmes. Economic evaluations by Wang et al. (2003) on the Planet Health Programme, with middle-school aged children, and Brown et al (2007) on the CATCH programme for children aged 8-11 years, showed that school-based obesity prevention on the basis of QALYs saved, as the measures of effectiveness, can be cost-effective with cost per unit of outcome below the cost-effectiveness threshold.\(^4\) Wang et al. in an economic evaluation of the MCG FitKid Project (2008), a 3-year, after-school programme designed to prevent obesity among elementary school students, argued that school-based obesity prevention programmes of this type are likely to be a cost-effective use of public funds. Interestingly, however, a study by Wake et al. (2009) into the cost-effectiveness of screening followed by brief counselling of overweight or mildly obese children aged 5-10 years old in a primary care setting did not improve BMI and would be very costly if implemented universally. Even so, an alternative intervention, also based in a primary care setting, focusing on lifestyle, diet and exercise (LEAP – live, eat and play) targeted at overweight or moderately obese children aged 5-9 years was found by Moodie et al. (2008) to be cost-effective at $4670 Australian Dollars (AUD) per disability adjusted life year\(^5\) saved.

The Assessing Cost-Effectiveness in Obesity (ACE-Obesity) study (Carter et al. 2009) reviewed 13 interventions, aimed at the prevention of ‘unhealthy weight gain in children and adolescents’, and found a wide range of cost per child: from $28 (AUD) for a school-based programme to reduce consumption of carbonated (fizzy) drinks to $31,553 (AUD) for laparoscopic adjustable gastric banding for morbidly obese adolescents. However, as the authors note, ‘interventions with low ‘cost per child’ results, may still be ineffective in achieving BMI reductions, while some with high ‘cost per child’ results could be very effective in achieving health gains’ (Carter et al. 2009). Moreover, when comparing individual

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\(^2\) Cost-minimization analysis is a type of economic evaluation that measures the difference in costs of at least two interventions and assumes that there is no difference in effectiveness.

\(^3\) A utility measure like the QALY is able to capture the broad range of consequences from multi-attribute programmes.

\(^4\) The threshold in the USA is around $30,000 per QALY.

\(^5\) Conceptually similar to the QALY, the disability adjusted life-year (DALY) is a measure to adjust life years lived for disease related disability, age and time preference.
participant costs across programmes, consideration needs to be given to cost structure, the target population (or subgroup) of the intervention and the extent or otherwise of under-utilisation.

**Cost analysis of the OSCAR, MEND and BUFFALO programmes**

Common to all economic evaluations or cost analyses is the need for a viewpoint. There is a range of possible viewpoints including patients, third-party payers, health care providers, and society. If the public health care provider is taken as the viewpoint then only the costs (and benefits) accruing to that provider will be considered in the evaluation. If all costs (and benefits) from interventions are to be considered then a societal viewpoint should be adopted. The viewpoint can be crucial in determining which option is chosen over another or even whether to proceed at all with an intervention. If a narrow viewpoint is adopted important costs and outcomes may be omitted from the analysis. In general, studies addressing the broad allocation of resources should use a societal perspective (the widest viewpoint). However, the estimated costs presented here are from the perspective of the health service (so ‘indirect’ and ‘intangible’ costs are not included).

Resources used in health interventions can be divided into costs which remain the same irrespective of the level of activity, fixed costs, and costs which vary directly with the level of activity, variable costs. For example, following the implementation of the young peoples’ weight loss and healthy lifestyle programmes staff costs are likely to vary with the level of activity while overhead costs like supervision or management are much less likely to be affected by the level of activity.

From the information provided, it is possible to derive gross\(^6\) annualised cost estimates for implementing the OSCAR and BUFFALO programmes; the data are presented in table two. In the case of the OSCAR programme annualised cost estimates have been extrapolated from expenditure data covering a period of five months; where practicable, adjustment has been made to the estimates based on whether costs are fixed or variable. The estimated annual costs for the OSCAR and BUFFALO programmes are, respectively, £42,346 and £100,109. Based on the target utilisation projection of 40 children per year, the cost per child participant on the OSCAR programme is £1,059. The cost per child participant for the BUFFALO programme, based on a target utilisation of 120 children per year, is £834. Further detail on costs for each of the programmes is provided in appendix four.

**Table two: The costs and indicative activities* of the OSCAR, MEND and BUFFALO programmes**

<table>
<thead>
<tr>
<th>Estimated annual cost</th>
<th>OSCAR**</th>
<th>MEND</th>
<th>BUFFALO***</th>
</tr>
</thead>
<tbody>
<tr>
<td>£42,346</td>
<td>£32,137</td>
<td>£100,109.</td>
<td></td>
</tr>
</tbody>
</table>

**Indicative activities of the intervention**

- OSCAR:
  - 12 sessions of 2 hours
  - 3 family meetings of 2 hours
  - Family support (6 weekly)

- MEND:
  - 3 programmes comprising 18 sessions of 2 hours each

- BUFFALO:
  - 160 sessions of intense support (80 of 1 hour and 80 of 2 hours)
  - 48 sessions of regular support (of 1 hour)
  - 48 parental sessions (of 2 hours)

<table>
<thead>
<tr>
<th>Total children:</th>
<th>40</th>
<th>60</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average cost per child</td>
<td>1,059</td>
<td>536</td>
<td>834</td>
</tr>
<tr>
<td>Total parents/carers</td>
<td>40</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Total participants</td>
<td>80</td>
<td>120</td>
<td>240</td>
</tr>
</tbody>
</table>

*The number of participants for each programme is a target utilisation
**Costs for OSCAR extrapolated from 5 months data
***The number of children refers to those receiving intense support (a further 720 children would receive regular support)

\(^6\) Sometimes called ‘top down’ costing, because it relies on aggregate data this approach to costing will be insensitive to site-specific details.
From information provided on staff costs and commissioning scenarios, gross annualised costs can be estimated for implementing the MEND programme; the data are presented in table two. The total cost of the MEND programme is made up of fixed costs (the largest component of which is the cost payable to MEND) and staff costs incurred by Pendle Leisure. The costs in the estimate used in table two are the ‘indicative future commissioning costs’ for a one-year commissioning scenario (the commissioning cost declines if extended to a period of two or three years). The cost per child participant for the MEND programme, based on a target utilisation of 60 children per year, is £536. Further detail on costs for each of the programmes is provided in appendix four (NB the table in the appendix showing the three commissioning scenarios excludes facility and staff costs).

Many sources of funding are used to pay for the programmes; the data are presented in table three. The OSCAR programme is funded by the PCT. The MEND programme run by Pendle Leisure gains financial benefit from a Big Lottery Fund grant secured by MEND; currently they support each course with a grant of £1,357 (i.e. £4,071 for three courses). Aside from in-kind funding from the PCT, BUFFALO has funding via a Big Lottery grant of £122,936 and financial support of £81,317 from Burnley Borough Council.

Table three: Sources of funding for the OSCAR, MEND and BUFFALO programmes

<table>
<thead>
<tr>
<th>Programme</th>
<th>Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSCAR</td>
<td></td>
</tr>
<tr>
<td><em>PCT</em></td>
<td>17434</td>
</tr>
<tr>
<td>Total</td>
<td>17434</td>
</tr>
<tr>
<td>MEND</td>
<td></td>
</tr>
<tr>
<td>Funding from MEND**</td>
<td>4071</td>
</tr>
<tr>
<td>Total</td>
<td>4071</td>
</tr>
<tr>
<td>BUFFALO</td>
<td></td>
</tr>
<tr>
<td>Big Lottery</td>
<td>122936</td>
</tr>
<tr>
<td>Burnley Borough Council</td>
<td>81317</td>
</tr>
<tr>
<td><em>PCT</em>**</td>
<td>45000</td>
</tr>
<tr>
<td>Total</td>
<td>249253</td>
</tr>
</tbody>
</table>

Notes:
*Refers to funding received; other moneys are pending
**This funding is assumed to be part of the Big Lottery grant secured by MEND (£1357 per course)
***In kind’ funding; assumed to be PCT staff working on the programme

Economic recommendations
Based on the estimates, the BUFFALO programme has the highest total cost (£100,109) but because of the number of participants the unit costs fall between those for OSCAR and MEND; see table two for the total annual cost per programme and the unit/average cost per participant. By comparison, the MEND programme has the lowest total cost (£32,137) and the lowest unit costs (£536). The OSCAR programme, as a specialised service, has the highest unit costs (£1,059). Indeed, as indicated earlier, the intensity of resource use will largely reflect the gradient of service tiers 2, 3 and 4; with higher tiers

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7 Unit cost here is defined as the cost per participant.
incuring higher unit costs. In other words, unit costs will largely be determined by the needs of target participants and although useful for assessing cost impact they should not be taken as a guide to the efficiency of programmes.

Although, as previously discussed, studies elsewhere indicate that programmes similar to OSCAR, MEND and BUFFALO are cost-effective; at the same time, however, little is known as to their cost-effectiveness in the UK setting. Nonetheless, it is worth noting that from BUFFALO to MEND and OSCAR respectively, the three programmes increasingly facilitate family-based approaches – a programme design that is in accordance with NICE guidelines; whereby, emphasis is placed on the importance ‘of involving parents, carers and wider family members’ (Department of Health, 2008, p.10). Furthermore, as highlighted earlier in this report, while results for the BUFFALO programme are still pending\(^8\), the efficacy of the MEND programme has already been established (See Sacher et al 2009, Kolotourou et al 2009, Swain & Sacher 2009 and Sacher 2008 for further details.) and the real-world effectiveness of the OSCAR and MEND programmes has been demonstrated in the local context.

**CONCLUSIONS**

Many of aspects of this study give rise to recommendations for further investigations. For example, whilst the MEND programme is the subject of an on-going national study, follow-up investigations are still required to establish the long-term impact of the programme for the participating children and their families. Similarly although the OSCAR and BUFFALO programmes have been the subject of one-off external evaluations, long-term longitudinal studies are needed to investigate whether the health gains achieved by participants are sustained through time.

It is concluded on the basis of the available evidence that it is highly likely that the OSCAR, MEND and BUFFALO programmes will be cost-effective in respect of the weight management needs of their intended participants. Nevertheless it is recommended that a more comprehensive evaluation is needed to further determine the cost-effectiveness of the OSCAR, MEND and BUFFALO programmes.

It was found due the variety of organisations and professional groups involved in the delivery of the programmes, teasing out details of the OSCAR, MEND and BUFFALO programmes were difficult and time-consuming activities. A great deal of tact and sensitivity was therefore required in dealing with agencies that were external to the PCT commissioning the study as none of these organisations were compelled to take participate in the study or supply any information to the research team. The complexity and variety of the agencies and professional groups involved in the delivery of the programmes, whilst adding to the richness and comprehensiveness of the programme may, however, impact on long-term obesity strategy development. For example, there appears to be few opportunities for the OSCAR, MEND and BUFFALO teams to interact together so as to co-ordinate and rationalise programme provision. There is some crossover of staff working on the OSCAR and BUFFALO programmes, however there appeared to be none with the MEND programme team. What appears to be a lack of awareness was borne out in the investigations conducted into the GIG programme. Although the programme was only offered on a very short term basis nevertheless it was surprising that there was a general lack of awareness that this programme had been developed and offered by the PCT albeit a year or two ago.

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\(^8\) The BUFFALO programme is currently being evaluated by the University of Chester’s Centre for Research into Sport and Society.
It is concluded that the OSCAR, MEND and BUFFALO programmes comprise a tiered approach to providing services for children and young people spanning the ‘at risk’ to the obese. Therefore the programmes cover all recommended levels of public health provision. Thus a crucial finding of the study undertaken is not that one programme is more cost effective or produces better health outcomes than another but that the programmes have different emphases, all of which are necessary in combating the significant risk childhood obesity has for the future health of the population in the Burnley area. Finally it is discomforting to note that the prevalence of childhood obesity continues to increase worldwide and markedly so in the UK. There is, therefore, an urgent need to develop more programmes such as those evaluated in this study. Further development of obesity, weight loss and health lifestyles programmes for children and young people in the Burnley area should remain a priority for the NHS East Lancashire Trust.

REFERENCES


Appendix one: Details of the Junior GiG programme

The Junior GiG programme was a pilot family-based healthy lifestyle intervention offered in the early part of 2008. It was a 12 week programme based at the Moorhead Sports College which incorporated a six month follow-up. Criteria for entry to the programme were that the child had to be aged 7 to 11 years old, have a BMI >91st centile, at least one parent needed to attend with the child and there had to be no underlying medical cause for the child’s obesity. Two hourly weekly sessions were offered which included family-orientated activities such as improving cooking skills, basic health messages, cycling, meal planning, food growing, parenting and use of stepometers. Each family was allocated a mentor.

Investigation by the project team found that since the main instigator of the programme has left the PCT that the programme has not been reoffered. Therefore the programme has been viewed as a one-off provision and has not been included in the evaluation. However, when the researchers met with current members of the PCT’s Health Development team they expressed a desire to possibly reinstating the programme.
Appendix two: MEND 7-13 PORTOLIO REPORT

1. Portfolio Sites

- Programmes’ time period: 05/2007-06/2009
- Total number of participants\(^1\): 59
- Total number of participants with pre and post programme BMI data: 35 (59 % of total)

2. Portfolio’s Overview

Figures on the graphs are (n; %)

\(^1\) Excluding drop-outs: attended \(\leq 4/18 \) or \(\leq 5/20\) sessions
Figures on the graphs are (n; %)

Mean attendance: 82.6 (± 17.0)
Mean age for the group: 10.2 (± 2.0)
3. Quantitative Results

3.1 Anthropometry

Body Mass Index (BMI) decreased from 27.1 kg/m$^2$ pre-MEND 7-13 to 26.0 kg/m$^2$ post-MEND 7-13, leading to a 1.1 BMI unit reduction for the Portfolio.

Body Mass Index (BMI) is calculated by dividing weight (in kg) by height (in meters) squared. It is used to categorise individuals as underweight, normal weight, overweight or obese. In clinical practice, the 98th BMI centile for age and gender is used as the cut-off point to define obesity in children. BMI is a valuable tool for initial screening and follow-up as it is easily calculated; however, it does not take into consideration body composition, so it should be ideally complemented by other measures -e.g. waist circumference (see below)- to assess changes in degree of overweight.
Waist circumference, an indicator of abdominal fat, was reduced by 2.8 cm post-programme for the Portfolio.

Waist circumference is a measure of abdominal fat, which has been associated with several obesity-related co-morbidities e.g. heart disease and diabetes. Changes in waist circumference are always due to changes in body fat, specifically abdominal fat which is associated with health risk. Waist circumference is a very important measurement as, unlike BMI, it is specifically related to changes in abdominal fat which is reliably related to the health risks of increased weight. Obesity management programmes aim to change the composition of the child's body over the course of development so that muscle mass increases along with a reduction in the level of adipose (fat) tissue. Such changes in the proportions of muscle and adipose over the course of an intervention may mean that BMI is unchanged in children attending MEND 7-13 Programmes. This is why waist circumference is a useful additional measure to examine outcome since it is generally considered more sensitive to changes in body composition. Reductions in waist circumference in the absence of a reduction in BMI will indicate that abdominal fat has been reduced and that health outcomes have been improved.
3.2 Physical activity, sedentary behaviour and fitness

*Days spent taking part in 60 minutes of moderate to vigorous physical activity*

Post-MEND 7-13, participants were doing 60 minutes of moderate to vigorous intensity physical activity for 2.1 additional days per week (1.2 days/week pre-programme versus 3.3 days/week post-programme). The official recommendation for children’s physical activity levels is at least one hour of
moderate to vigorous physical activity per day. Any increase towards meeting the recommendation is extremely positive.

Additionally, because for obese children this target may be unrealistic, it is important to consider time spent in all levels of physical activity. An average increase of 3.2 hours physical activity per week occurred amongst the total number of MEND 7-13 Participants for this Portfolio (13.1 hours/week pre-MEND 7-13 versus 16.3 hours/week post-MEND 7-13).

*Time spent in sedentary behaviour*

A 8.2-hour decrease in sedentary activities per week (i.e. approximately 1 hour reduction per day) was also observed post-MEND 7-13, as television viewing and computer usage were reduced from 16.8 to 8.6 hours per week.

Television viewing has been associated with childhood obesity both directly by promoting sedentary behaviour and indirectly by encouraging the passive over consumption of high-calorie foods and drinks during these activities. The MEND 7-13 Programme focuses on increasing physical activity as well as reducing sedentary behaviour as these independently influence a child’s weight status. Both physical activity and sedentary behaviour need to be targeted in any multi-component obesity intervention.
MEND 7-13 Participants were fitter by the end of the programme, as indicated by the 16.7 beats per minute decrease in recovery heart rate following the 3-minute step test.

The 3-minute YMCA step test is a validated test used to assess fitness levels in children. This is achieved by measuring the recovery heart rate (beats during the minute after the step test). The quicker the heart rate returns to normal levels (resting heart rate) the fitter the child is. Fitness is considered a very important component of children’s health. Low fitness is associated with increased risk factors for health problems and it is much easier for a fit overweight child to grow into their weight than an overweight child who is unfit.
3.3 Psychological indices

*General psychological well-being (SDQ)*

Based on the Strengths and Difficulties questionnaire (SDQ), parents assessed their children as having fewer difficulties (such as hyperactivity, emotional symptoms and peer problems) in their everyday life (score reduction of 3.3 units).

The SDQ is a parent-rated measure of common psychological symptoms in childhood. Scores on the SDQ are categorised according to whether the child has low, borderline or high psychological needs. The ranges for these categories are:

- 0 – 13 Low needs
- 14 – 16 Borderline high/low needs
- 17 – 40 High needs

The mean score on the SDQ was within the borderline high/low needs range and it is encouraging to note that post-programme the average SDQ score was within the low needs range. This suggests that participating in the MEND 7-13 Programme is associated with improved psychological functioning.
By the end of the Programme, children had a higher nutrition score compared to their pre-MEND 7-13 eating behaviour (16.2 vs. 21.6 out of 28), indicating more MEND-Friendly eating habits.

Throughout the MEND 7-13 Programme, children are taught several MEND-Friendly dietary habits such as eating breakfast daily, drinking 6-8 cups of water per day, choose MEND-Friendly as opposed to MEND-Unfriendly foods (they are given the criteria for food categorisation during the sessions), etc. Increases in MEND-Friendly habits are indicative of substantial improvements in eating habits and nutritional intake.
### 4. Appendix: Tables with MEND 7-13 results

#### 4.1 Table of MEND Burnley results

<table>
<thead>
<tr>
<th>MEND Burnley results</th>
<th>Before MEND</th>
<th>After MEND</th>
<th>Difference (Before vs. After MEND)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>35</td>
<td>27.1</td>
<td>5.1</td>
</tr>
<tr>
<td>Waist (cm)</td>
<td>34</td>
<td>86.5</td>
<td>11.2</td>
</tr>
<tr>
<td>Recovery heart rate (beats per minute)</td>
<td>30</td>
<td>110.0</td>
<td>22.9</td>
</tr>
<tr>
<td>Physical activity (hours/week)</td>
<td>29</td>
<td>13.1</td>
<td>9.4</td>
</tr>
<tr>
<td>Days doing physical activity (per week)</td>
<td>26</td>
<td>1.2</td>
<td>1.7</td>
</tr>
<tr>
<td>Sedentary activities (days/week)</td>
<td>29</td>
<td>16.8</td>
<td>11.2</td>
</tr>
<tr>
<td>Total difficulties score (0-40)</td>
<td>28</td>
<td>13.5</td>
<td>7.5</td>
</tr>
<tr>
<td>Nutrition score (0-28)</td>
<td>29</td>
<td>16.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Attendance (%)¹</td>
<td>54</td>
<td>82.6</td>
<td></td>
</tr>
<tr>
<td>Drop outs (%)¹</td>
<td>57</td>
<td>5.3</td>
<td></td>
</tr>
</tbody>
</table>

BMI: Body Mass Index  
CI: Confidence Interval  
SD: Standard Deviation  
p < 0.05 means that the difference is statistically significant  
N: number of children

¹ Excluding non-starters or children with missing attendance
### 4.2 Tables of MEND’s Published National Roll-out results

<table>
<thead>
<tr>
<th>Metric</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>SD</th>
<th>Mean</th>
<th>Lower CI</th>
<th>Upper CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td>2203</td>
<td>27.4</td>
<td>4.7</td>
<td>26.7</td>
<td>4.7</td>
<td>-0.7</td>
<td>-0.7</td>
<td>-0.7</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>2097</td>
<td>86.4</td>
<td>12.0</td>
<td>83.9</td>
<td>11.9</td>
<td>-2.6</td>
<td>-2.4</td>
<td>-2.7</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Recovery heart rate (beats per minute)</td>
<td>1850</td>
<td>113.9</td>
<td>23.7</td>
<td>105.3</td>
<td>22.1</td>
<td>-8.6</td>
<td>-7.7</td>
<td>-9.5</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Physical activity (hours/week)</td>
<td>1803</td>
<td>10.8</td>
<td>7.4</td>
<td>14.4</td>
<td>8.3</td>
<td>3.6</td>
<td>4.0</td>
<td>3.2</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Days doing physical activity (per week)</td>
<td>1905</td>
<td>1.6</td>
<td>1.6</td>
<td>2.7</td>
<td>1.6</td>
<td>1.1</td>
<td>1.2</td>
<td>1.0</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Sedentary activities (days/week)</td>
<td>1867</td>
<td>18.3</td>
<td>11.2</td>
<td>12.2</td>
<td>7.6</td>
<td>-6.1</td>
<td>-5.6</td>
<td>-6.5</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Total difficulties score (0-40)</td>
<td>1879</td>
<td>13.5</td>
<td>7.0</td>
<td>10.4</td>
<td>6.5</td>
<td>-3.1</td>
<td>-2.9</td>
<td>-3.4</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Nutrition score (0-28)</td>
<td>1871</td>
<td>16.9</td>
<td>4.5</td>
<td>23.3</td>
<td>3.7</td>
<td>6.4</td>
<td>6.6</td>
<td>6.2</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>Attendance (%)</strong></td>
<td>2506</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Drop outs (%)</strong></td>
<td>254</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

- BMI: Body Mass Index
- CI: Confidence Interval
- SD: Standard Deviation
- p < 0.05 means that the difference is statistically significant
- N: number of children

1 Excluding non-starters or children with missing attendance

### 4.3 Table of MEND’s Published Research results

<table>
<thead>
<tr>
<th>MEND 7-13 Research results</th>
<th>Before MEND</th>
<th>After MEND</th>
<th>Difference (Before vs. After MEND)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N Mean SD</td>
<td>Mean SD</td>
<td>Mean Lower CI Upper CI p-value</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>47 27.1 3.3</td>
<td>26.1 3.4</td>
<td>-0.9 0.7 1.1 &lt;0.0001</td>
</tr>
<tr>
<td>Waist circumference (cm)</td>
<td>47 81.4 7.8</td>
<td>78.5 8.1</td>
<td>-2.9 2.3 3.6 &lt;0.0001</td>
</tr>
<tr>
<td>Recovery heart rate (beats per minute)</td>
<td>44 114.0 28.3</td>
<td>98.1 19.4</td>
<td>-15.8 6.0 25.6 0.002</td>
</tr>
<tr>
<td>Physical activity (hours/week)</td>
<td>47 7.1 4.0</td>
<td>12.7 5.0</td>
<td>5.6 -7.2 -4.0 &lt;0.0001</td>
</tr>
<tr>
<td>Days doing physical activity (per week)</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Sedentary activities (days/week)</td>
<td>47 20.6 9.2</td>
<td>17.9 7.0</td>
<td>-2.6 0.3 5.0 0.0</td>
</tr>
<tr>
<td>Total difficulties score (0-40)</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Nutrition score (0-28)</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attendance (%)</td>
<td>47 86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop outs (%)</td>
<td>1 2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BMI: Body Mass Index  
CI: Confidence Interval  
SD: Standard Deviation  
p < 0.05 means that the difference is statistically significant  
N: number of children  

5. Executive summary

The current portfolio included 14 programmes over a period of 2 years (05/2007-06/2009). The total number of participants in these programmes was 59 (69.5% boys) and the average age was 10.2 years.

Similarly to national roll-out data, average programme attendance and drop out rate were 82.6% and 5.3% respectively. On the whole, most of the results are similar to the MEND 7-13 national roll-out results.

In the current Burnley portfolio, MEND 7-13 has demonstrated significant clinical results with Body Mass Index (BMI) decreasing from 27.1 kg/m$^2$ pre-MEND 7-13 to 26.0 kg/m$^2$ post-MEND 7-13, leading to a mean 1.1 BMI unit reduction. In addition, waist circumference, an indicator of abdominal fat, was reduced by 2.9 cm post-programme for the Portfolio.

The Burnley MEND 7-13 Portfolio not only demonstrated "clinical attributes" that participants became healthier, MEND 7-13 Participants were also "fitter" by the end of the programme, as indicated by the 16.7 beats per minute decrease in recovery heart rate following the 3-minute step test.

Post-programme levels of physical activity rose and children were doing moderate to vigorous activity for 2.1 additional days per week, whilst a 8.2-hour decrease in sedentary activities per week was also observed post-MEND 7-13, as television viewing and computer usage were reduced from 16.8 to 8.6 hours per week.

Finally, the MEND 7-13 Programme had a positive impact on the mental wellbeing of the participants. The SDQ is a parent-rated measure of common psychological symptoms in childhood. The mean score on the SDQ was within the borderline high/low needs range and it is encouraging to note that post-programme the average SDQ score was within the low needs range. This suggests that participating in the MEND 7-13 Programme is associated with improved psychological functioning.

Taken together, the results of this report indicate that the MEND 7-13 Programme is having positive healthy outcomes for the families participating in those programmes within the Burnley Portfolio.

In line with the recommendations of the National Obesity Observatory, MEND 7-13 strongly recommends that sites in this portfolio continue to monitor the anthropometric outcomes of the children who took part in these programmes for a further 12 months.
Appendix three: Findings of the evaluation of the 2009 OSCAR programme

OSCAR participant characteristics and attrition

In total seven families (n=26 individuals) were recruited to the 2009 programme. The families were characterised as all level 4 families.

*Care Pathway Level Definition*

Level 1: Prevention Programmes, BMI < 91st Centile (normal weight)
Level 2: BMI > 98th Centile and > 91st Centile overweight and obese
Level 3: Specialist Support BMI > 98th Centile and > 91st Centile.
Level 4: BMI > 99.6th Centile very obese

Two families (n=8 individuals) left the programme. Reasons given were that one family’s change of work prevented attendance and the other was discouraged from continuing by the OSCAR team as the parents consistently failed to attend with the children.

The five remaining families consisted of two, two-parent families; two families with two parents were complex families with step-parents and step-siblings and one family was a single parent family. The referred children who completed the programme ages were aged 9, 8, 10, 13 and 14 years old. There were two girls and three boys.

*Anthropometry*

The height, weight, waist and BMI measurements were recorded of the consenting participants at the start, mid way and at the end of the programme and the corresponding centiles calculated. Of the 18 individuals who participated in the programme full sets of measurements were obtained for twelve individuals. An abridged version of these measurements is given in table one.

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>BMI (Kg/m²)</th>
<th>Centile Before OSCAR</th>
<th>BMI (Kg/m²)</th>
<th>Centile After OSCAR</th>
<th>Difference</th>
<th>Waist (cm)</th>
<th>Centile Before OSCAR</th>
<th>Waist (cm)</th>
<th>Centile After OSCAR</th>
<th>Difference</th>
<th>Outcome achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>y/n/p</td>
</tr>
<tr>
<td>A1 R10*</td>
<td>30.2</td>
<td>30.2</td>
<td>-1.0</td>
<td>100.5</td>
<td>***</td>
<td>100.5</td>
<td>100.5</td>
<td>****</td>
<td>**</td>
<td>**</td>
<td>?</td>
</tr>
<tr>
<td>A2</td>
<td>38.7</td>
<td>39.5</td>
<td>+0.8</td>
<td>120.5</td>
<td>****</td>
<td>120.5</td>
<td>120.5</td>
<td>****</td>
<td>?</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>38.9</td>
<td>39.3</td>
<td>+0.4</td>
<td>125</td>
<td>****</td>
<td>125</td>
<td>125</td>
<td>****</td>
<td>?</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Family B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>30</td>
<td>30.1</td>
<td>+0.1</td>
<td>94</td>
<td>94</td>
<td>Maintained</td>
<td>n</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>14.7</td>
<td>14.8</td>
<td>+0.1</td>
<td>53</td>
<td>52.5</td>
<td>-0.5</td>
<td>y</td>
<td></td>
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</tr>
</tbody>
</table>
Body Mass Index (BMI) is used to categorise individuals as underweight, normal weight, overweight or obese. In clinical practice, the 98\textsuperscript{th} BMI centile for age and gender is used as the cut-off point to define obesity in children. (The centile charts used in this evaluation are given at the end of this appendix).

The findings shown in table one all but one child (B3) had reduced BMI centiles on completion of the programme. However, most of the other OSCAR family members had increased BMI centiles on completion of the programme with the exception of F2. Generally it was found that the families that made the best progress were amongst the better attendees.

Waist circumference is specifically related to changes in abdominal fat which is reliably related to the health risks of increased weight. Obesity management programmes aim to change the composition of the child’s body over the course of development so that muscle mass increases along with a reduction in the level of adipose (fat) tissue. Reductions in waist circumference in the absence of a reduction in BMI will indicate that abdominal fat has been reduced and that health outcomes have been improved. There is no consensus about how to define paediatric obesity using waist measurement. For clinical use the 99.6\textsuperscript{th} or 98\textsuperscript{th} centiles are suggested cut-offs for obesity and the 91\textsuperscript{st} centile for overweight, like the BMI charts. Table one shows the waist measurements of two of the referred children to the OSCAR programme were found to be reduced on completion of the programme. Reductions in the waist size of three other family members (B2, D3 and E5) were also achieved with another person (B1) maintaining their waist size.
Conclusions and limitations
There are limitations of taking measures of weight alone as the sole indicator of the success of any weight management programme. Clearly the relatively short length of time the 2009 OSCAR was offered for is prohibitive of seeing any dramatic changes in the participants’ weight. Also the outcome measures set were different for each child. Additionally dramatic weight loss in a short space of time is also not medically desirable. Nevertheless, the modest changes achieved by most of the referred children and some of their family members are encouraging. It should also be noted that in some cases the children are young enough and have enough growth outstanding that they only need to maintain their weight, waist and BMI but increase height so they grow up and lose fat over time. This is the case for B3 who was highlighted previously as the only child not having reduced BMI centiles on completion of the programme. Also brought into play an obvious limitation of the study is, the lack of any follow-up of the participants. Longitudinal profiles are needed to support any weight management programmes’ claims of achieving sustained weight loss and healthier living in its participants.

Quantitative evaluation
The quantitative evaluation of the OSCAR programme undertaken was based on a pre post intervention quasi experimental design. This type of design meets most but not all the hall marks of classic experimental research designs such as randomised control trials. For example, in this study there is lack of randomisation in those who, and who did not, participate in the OSCAR programme. That is all participants (n=26) of the 2009 OSCAR programme were included in the study.

Questionnaires were used to establish changes in the OSCAR families’ self report knowledge, behaviour and attitudes at the start and conclusion of the OSCAR programme. For example, all the participating OSCAR families were invited to complete two questionnaires concerning self-report behaviour and knowledge of healthy life styles (A Healthy Lifestyle Behaviour questionnaire and a Knowledge of Healthy Eating and Exercise questionnaire) at the start and conclusion of the programme. Similarly the children and young people who participated were asked to complete questionnaires designed to measure children’s quality of life (Collier et al Quality of Life questionnaire), self esteem (Children’s Culture-free Self Esteem Inventory) and levels of depression (Birleson Depression Scale). Finally the participating adults were asked to complete Rosenberg’s Self Esteem questionnaire and Beck’s Depression Inventory again at the start and conclusion of the OSCAR programme.

The number of participants who completed the pre and post intervention questionnaires varied with each instrument. An average response rate tended to be less than 50% with substantially more family members completing the pre intervention questionnaires. Generally the response rates for the children were better than for the adult family members. Further details of the exact number of returns are given in following sections of this report as is analysis of the pre post intervention measures.

Behaviour questionnaire
The Behaviour questionnaire used in the study was a 15 item, rating scale questionnaire designed to examine the self-report behaviour of the OSCAR participants concerning activity levels, eating habits and motivation to achieve healthier lifestyles. Both children and adult members of the families completed the questionnaire pre and post attending the OSCAR programme. Thirty six completed questionnaires were returned, of these, twelve individuals, (five children and seven adults), completed both pre and post intervention questionnaires. (Response rate 46%). The following is based on analysis of these twelve complete sets of pre and post intervention data.
Q1 How many times a week do you take part in physical activity that makes you feel warm and slightly out of breath? Pre intervention all of the adults said they undertook no exercise at all. Post intervention the majority of the adults (n=6) reported that they now exercise 4-5 or 5-6 times a week. There were no clear changes with the children’s behaviour with three children stating pre intervention that they exercise 4-7 times a week and similarly post intervention three children reported they exercise 4-6 times a week.

Q2 How often do you miss PE at school? The children only answered this question with the majority stating pre and post intervention that they never miss any PE lessons at school.

Q3 How much screen time do you have each day on average? It was found generally the children (mean pre intervention: 2.2 hours; mean post intervention: 2.6 hours) reported having less screen time a day than the adults (mean pre intervention: 3.5 hours; mean post intervention: 3.6 hours). There were slight increases in the screen time for all the OSCAR participants following participating in the OSCAR programme. However, from experience it has been found by the OSCAR team members that children especially tend to over-estimate the amount of screen time they have.

Q4 How many times a week do you have a meal together as a family? Generally there was little change to how many times the families ate together with the median pre and post intervention score being 3-6 times a week.

Q5 How many times a week do you eat meals that are prepared from scratch? The median for this item pre intervention was 1-3 times a week and post intervention 3-6 times a week. Thus the indications are that the participants were preparing more meals from scratch after participating in the OSCAR programme.

Q6 How many portions of fruit and vegetables do you eat per day? There were noticeable differences between the responses of the adults and children with the mean pre intervention score for the adults being 3.1 portions a day and the children 4.8 portions a day. Post intervention the differences were less marked with the mean for the children and adults being 5 portions a day. Clearly after attending the OSCAR programme improvements had been achieved for all the participants.

Q7 How often do you miss meals in a week. The majority of the participants reported both pre and post intervention that they did not miss any meals or only one meal a week.

Q8 How long does it take to eat your tea on average? The mean score pre intervention was 14 minutes and post intervention 16.6 minutes.

Q9 How often do you have fatty and sugary foods in the day? The mean pre intervention score was 3.2 times a day and the post intervention mean was 2.5 times a day.

Q10 If you had sandwiches how many slices of bread would you have? The mean pre and post intervention scores were similar with 2 slices being the norm.

Q11 How often do you comfort eat in a week? Many of the participants pre (n=4) and post (n=3) intervention reported that they did not comfort eat at all. For those that said they do comfort eat there were marked differences with the pre and post intervention scores with the pre intervention score being 4.2 times a week and post intervention 1.7 times a week.
Q12 How much do you want to work towards a healthy lifestyle in the next 4 months? The majority had high scores pre intervention (mean 9.4) but this dropped post intervention with the mean score being 8 indicating a drop in motivation after attending the OSCAR programme. An explanation for this may be that motivation had dropped as the participants felt that they are now achieving a healthier lifestyle.

Q13 How motivated do you feel to achieve a healthier lifestyle in the next 4 months by eating a healthier diet? There were slight improvements with the motivation score pre intervention mean score being 7.9 and post intervention 8.1.

Q14 How motivated do you feel to achieve a healthier lifestyle in the next 4 months by being more active? Again there were improvements with the motivation score pre intervention mean score being 6.0 and post intervention mean 8.5.

Q15 How confident are you that you can achieve a healthier lifestyle in the next 4 months? There were slight improvements with the mean confidence score pre intervention being 6.8 and post intervention 7.2.

Generally it may be concluded that there are a number of the self report changes in behaviour including that most adults believed they are exercising more and generally most believed that they are eating more meals made from scratch, their fruit and vegetable consumption has increased, they are eating less sugary and fatty foods, and participated in markedly less comfort eating. Motivation levels concerning eating a healthier diet and being more active had increased as had confidence levels in their ability to achieve a healthier lifestyle.

Knowledge of Healthy Eating and Exercise
The Knowledge of Healthy Eating and Exercise questionnaire was adapted for use from an original given by Illingworth et al (2003). It is a 15 item questionnaire which asks questions concerning what are and what is not healthy eating behaviour and healthy levels of exercise. Scores of 15 and above indicate good knowledge levels. Twenty six completed questionnaires were returned but only seven respondents had completed the questionnaire pre and post intervention. It was found mainly the children (n=5) had completed the questionnaire both pre and post intervention although two adults also completed it giving an overall response rate of 27%. Table two gives the pre and post intervention scores which demonstrate generally high scores with all maintaining their knowledge levels and three individuals improving their scores after completing the OSCAR programme.
**Children’s Generic Quality of Life (QoL) scale**

The scale used to measure the children’s QoL was adapted from an original instrument given by Collier et al (2000). It is a twenty item scale with a score of 16 and over indicating a good quality lifestyle. The response rate for this measure is less than for the others reported with 17 completed questionnaires being returned. Only five children completed both the pre and post test Generic QoL questionnaire. Table three shows that two children (A1 & E1) had relatively low QoL scores which did improve post the OSCAR programme. All but two children (B2 & F3) had improved QoL scores following completion of the OSCAR programme.
Children’s Culture-free Self Esteem Inventory
This instrument is a thirty item inventory designed to measure children’s self esteem. For the age group of the OSCAR participants scores of 23 – 24 are very high 19-23 are high and 12-19 intermediate. Very low scores are 10 or less. All five of the referred children completed the questionnaire pre and post intervention with two of their siblings also completing it. Table four shows that all the participating children apart from A1 had very high or high self esteem scores which generally improved post attendance at the OSCAR programme. A1 had a low initial score that fell even further following completion of the OSCAR programme.

![Table 4: Children's Culture-free Self-Esteem Inventory](image)

Children’s Birleson Depression Scale
The final scale the children who participated in the OSCAR programme completed was the Birleson Depression Scale. This scale is a three point rating scale which has 18 items. Children with clinical depression score over 17. All five of the referred children completed the questionnaire pre and post intervention with two of their siblings also completing it. Table five shows that one child (A1) did have abnormally high scores pre intervention and positively post intervention their score had fallen to near normal levels. The majority of the other children had lower scores post OSCAR attendance with only E2 significantly increasing their score.
Rosenberg's Self Esteem Questionnaire
The first of the two instruments the adult OSCAR family members completed was the Rosenberg’s Self Esteem questionnaire. This is a four point ten item scale with scores ranging up to 30. The higher the score the higher the measure of self-esteem. Seventeen completed questionnaires were returned with seven individuals completing the questionnaires pre and post intervention. Table six shows that although some participants had relatively low self esteem scores before undertaking the OSCAR programme (A1, A2, F2 & F4), all improved their scores following undertaking the OSCAR programme.
Beck’s Depression Inventory
The final measure used with the adult family members was the Beck’s Depression Inventory. This is a 21 item, four point scale. Scores under 14 are those associated with minimal depression/within normal range. Only five of the adult family members completed this inventory pre and post attending the OSCAR programme. Table seven shows that all but A2 had reduced their scores following participation in the OSCAR programme.

![Table 7: Becks Depression Inventory](image)

Conclusions and limitations of the quantitative evaluation
There are a number of positive aspects of the findings of the quantitative evaluation conducted. For example, a number of self report aspects of healthy eating and levels of activity show areas of improvement. Knowledge of healthy eating and appropriate levels of exercise were also relatively high to start off with and improved even further following completion of the OSCAR programme. The measure used to estimate children’s quality of life, self esteem and levels of depression with one or two exceptions were within normal limits and usually improved post completion of the OSCAR programme. Generally the adult family members had high levels of self esteem and low measures of depression which often improved following completion of the OSCAR programme.

It should however be noted that the OSCAR programme has a wider remit than just obesity treatment. As the team is multidisciplinary if any of the children have problems that need dealing with outside the OSCAR remit the children are referred for specialist help. This happened on two occasions in the 2009 programme with a sibling of one family that dropped out of the programme and one child who completed the programme. Both children exhibited problems which were highlighted in the screening tools used in the programme and needed to be dealt with urgently by a psychologist. Both children were directed into specialist child psychology for help and are continuing to receive help.

Whilst positive benefits have accrued from use of the pre post test tools nevertheless the findings need to be considered alongside the limitations of the study design and methods. For example, whilst ethical concerns make use of such approaches, difficult lack of randomisation and use of randomised control methods clearly weakens the strength of evidence presented. That is as part of the MEND evaluation a randomised control trial has been conducted and has shown significant positive changes after completion of the programme (Kolotourou et al 2009). Lack of research resources and the small sample
sizes involved meant that use of such approaches were not possible in this study. Also the very small sample sizes meant only very simple descriptive statistical analysis was possible. Additionally the poor response rates particularly on behalf of the adult family members who completed the post intervention questionnaires are a clear limitation of the findings of the study. Finally there are the inherent problems associated with the measurement of attitudes and self-report behaviour. Although most of the instruments and scales used in the study have been verified as being reliable and valid by other authors there is still no way of being sure if the reported changes in attitude and behaviour are valid. That is the honesty of self-report changes in behaviour are often suspect.

Thematic analysis of 2009 OSCAR Family Plans

The OSCAR programme with its distinctive family-centred approach has as an integral feature a key worker who is allocated to each family. The aim is for each family to set individual and family goals concerning achievement of a healthier life style. Targets are set and achievements evaluated which are all recorded in a family plan. The meetings are facilitated by the family’s key worker and Planning With People worker. As stated earlier the 2009 programme was different in that it was run over a five month period and only three family meetings were held. Normally when the programme is run over one year, meetings are held at 6-8 weekly interval and a least six meetings are held during this time.

The aims of the family plan meetings are to identify the positive things family members believe about each other, establish if the family needs to do more things together and verify if individual family members need to improve their confidence and self-esteem levels. There follows a family plan whereby individual family members describe what is working for the family and what is not working concerning achieving a healthier life style. Following on from the family plan is an action plan with the responsibilities for each of the actions identified. The second family plan meeting followed a similar format to the first. The third and final family plan meeting focuses on the changes the family needs to make to maintain a healthy life style after completion of the OSCAR programme.

Complete sets of family plans were received pertaining to four families (n=12) and incomplete sets from two other families (n=3). A total of fifteen family plans were available for analysis. The main themes identified in the thematic analysis of the family plans are given in table eight. All the major themes are discussed in following sections of this report apart from the issues the families raised concerning their experiences of attending the OSCAR programme. The issues raised in this theme are incorporated in the qualitative analysis given in later sections of this report.

Table 8: Main themes identified from content analysis of the family plans

<table>
<thead>
<tr>
<th>Theme; Family plan one</th>
<th>Theme; Family plan two</th>
<th>Theme; Family plan three: Future goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of food</td>
<td>Type of food</td>
<td>Reduce amount of fried foods, high sugar drinks and high fat snacks Try new foods</td>
</tr>
<tr>
<td>Having regular meals/missing meals</td>
<td>Having regular meals/missing meals</td>
<td>Not eating between meals</td>
</tr>
<tr>
<td>Food portions</td>
<td>Food portions</td>
<td>Reduce portion size</td>
</tr>
<tr>
<td>Wasting food</td>
<td>Wasting food</td>
<td></td>
</tr>
<tr>
<td>Preparing food</td>
<td>Preparing food</td>
<td>Make more meals from scratch</td>
</tr>
<tr>
<td>Doing things together</td>
<td>Doing things together</td>
<td>Eating more meals together as a family</td>
</tr>
<tr>
<td>Exercise</td>
<td>Exercise</td>
<td>More exercise activities and joining clubs</td>
</tr>
<tr>
<td>Barriers</td>
<td>Barriers</td>
<td>Maintaining motivation to change</td>
</tr>
<tr>
<td>Screen time</td>
<td>Screen time</td>
<td>Reduce screen time</td>
</tr>
<tr>
<td>Weight issues</td>
<td>Weight issues</td>
<td>Continue to maintain weight loss, join Slimmers’ World</td>
</tr>
<tr>
<td>Strengths and weakness of the OSCAR programme</td>
<td>Strengths and weakness of the OSCAR programme</td>
<td></td>
</tr>
</tbody>
</table>
The largest area covered by the themes identified in analysis of the family plans is perhaps predictably that of issues relating to food. Included were such things as the types of food the family consumes, the size of food portions, preparing food, wasting food and eating more meals together as a family. Future goals the families set themselves included reducing the amounts of unhealthy food they consume, not eating between meals, reducing portion size, making more meals from scratch and eating more meals together.

The second area covered in the thematic analysis of the family plans concerned issues related to exercise, family activities and screen time. Future goals many of the families set themselves included such things as making more time for exercise, specific plans to join a club or start a new activity, doing more things together at the weekend and reducing the amount of screen time the family currently has.

Weight issues as a distinct theme could only be identified in one of the second family plans. Although not typical of other families, this particular family were continuing to put on weight despite attending the OSCAR programme as they were found not to be following the advice given to them. In other plans barriers to changing the family’s life style were varied and included such things as shift patterns at work making it difficult to achieve the necessary changes, finding time to have more exercise and general issues related to individual and family motivation. Future plans concerned targets for further weight loss with one family saying they were going to join Slimmers’ World and another they were joining Weight Watchers.

Conclusions and limitations
Many of the themes identified in the analysis of the family plans were to be expected in that they mainly feature healthy life style changes concerning food and exercise, and barriers to achieving the goals set. Stripping out the individual detail from the plans and condensing the information into anonymous themes is the basic aim of the thematic analysis undertaken. In taking such an approach the analysis does confirm that similar issues were being addressed across the participating families and similar solutions were being suggested by the OSCAR team’s key family workers. However, taking such an approach perhaps does not do justice to the distinctive and key feature of the OSCAR programme, namely its family-centred, individually orientated approach. That is by stripping out the individual detail in the analysis does mean some of intricacies and challenges each of the individual family faced is lost. The danger too is also of under-estimating the importance of the facilitating role that the key workers drawn from the OSCAR team played in helping the individual families achieve the goals they set themselves.

Qualitative evaluation of the 2009 OSCAR programme
In the following sections of this report the qualitative findings of the evaluation of the 2009 OSCAR programme are given. It was originally planned to organise focus group discussions with both the OSCAR team members and participating families. This was not possible for a variety of reasons. For example, delays in gaining ethical approval meant the focus groups could not be organised as an integral part of the OSCAR programme. Staff commitments also made it difficult to arrange a mutually convenient time to hold a focus group when all the staff could be present. Additionally the families did not readily respond to the idea of a group discussion with those who agreed to take part, preferring to talk in private to the researchers. Therefore data for the qualitative evaluation was collected in a variety of ways including small group discussions, one-to-one interviews, as well as email contact and telephone conversations with the OSCAR team members. The response rate for the OSCAR team who gave some form of evaluative data was 100% (n=6). Evaluative data from the family plans (n=15) was also incorporated into the analysis and researcher discussions with two families (n=5).
The group discussions and one-to-one interviews were digitally recorded and transcribed verbatim. All the information gathered, both verbal and written, was then subject to a thematic analysis. Data themes and categories identified in this analysis are given in table nine.

**Table 9 Qualitative data themes and categories**

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**THEME ONE: RECRUITMENT AND MARKETING**

**Marketing**

The first theme identified in the thematic analysis undertaken was that of recruitment and marketing of the OSCAR programme. A category in this theme was marketing and whilst some limited marketing did occur nevertheless one member of the team reflected that:

‘Due to the tight time scales imposed on the team because of the procurement process the OSCAR team were unable to market the programme as effectively as they would have liked’ (OT1)

Generally the family members interviewed agreed with these findings with one family member saying:

‘We were told nothing (about the programme before we started it); nothing at all. We didn’t know what we were letting ourselves in for. We found out about it as we went along.’ (FM11)

**Referrals**

A number of comments were made about the source of referrals to the OSCAR programme. Most said referrals came from other healthcare professionals although there was some discussion about whether self-referral was appropriate. For example, an OSCAR team member said whilst we need details of people’s medical history:

‘Referrals should come from anyone who can weigh and measure correctly. Then screening should be done before they are accepted on the programme. So if somebody wanted to self-refer all we would need is their weight and height.’ (OT1)

One family member interviewed also described how they had self-referred to the programme saying:

“I heard about the project from a work colleague so I e-mailed and asked if we could take part” (FM21)
Another team member also gave a suggestion for the future and said:

‘(We need) to widen the pathways to include other professionals who work with children and young people, for example, family support workers and school based staff’ (OT6)

Concern was also expressed about the small number of families that were recruited to the 2009 OSCAR programme with one person reporting:

‘We did not receive enough referrals. We need to accept more referrals to account for the number of families that drop out or who are found to be not suitable at the screening day’ (OT3)

Finally comments were made to referral pathways with one OSCAR team member saying:

‘Referral pathways should link to one another. The BUFFALO team could identify children who may be more suitable for a more intensive programme such as OSCAR. Pathways need to be seamless. Clear and understandable for all’ (OT6)

**Motivation**

Many members of the OSCAR team recounted how important motivation was to achieving the recommended life style changes with one OSCAR team member saying ‘motivation is key’ (OT2). Additionally another said:

‘Motivation was assessed to a degree (at the screening day) but once we got into the programme it was easier (to assess)’ (OT4)

Generally it was found that the families enjoyed the programme and were motivated to succeed with one family member saying

‘Kathleen* learnt loads and loved it (she was well motivated) ’ (F21) *a pseudonym

However, another parent whilst saying they were motivated to succeed disagreed slightly and said:

‘He went which says something. Carl* never complained (although he didn’t enjoy the programme). He only missed one session. He really wanted to succeed’ (FM11)

* A pseudonym.

Finally it was recorded in the E Family’s family plan that the

‘Family commitment to OSCAR and (their) regular attendance at the sessions was reflected in their improved medical out-come’.

**Screening day**

The importance of the screening day in recruiting suitable, well motivated families was stressed by a number of the OSCAR team members. For example, one person reflecting on the need for a screening day from past experiences said:

‘Agencies did not consider motivation and other family issues such as child protection. Therefore sometimes unsuitable families were referred (in the past)’ (OT3)

and another commented that

‘It was much improved this time. If families are screened for their suitability and motivation at the start this shouldn’t cause major problems (when the programme is underway)’ (OT4)
Comments were also made about the screening day being very interactive and that the families seemed to enjoy the day. Giving out ‘goody bags’ and having an action plan for the families resulted in everyone benefiting from the programme and the high staff levels also meant that no families were left waiting (OT2, OT3, OT5).

The families were in broad agreement with the staff comments as the following quotation demonstrates:

‘It didn’t bother us. We just went with the flow really. We didn’t mind the forms. They were OK’ (FM12)

Comments were, however, made about the apparent need for medical screening of the adults participating in the OSCAR programme with one team member saying:

‘Finding out about the adults’ medical conditions needed to be somewhere in the beginning (at the referral stage). We needed to find out right at the start. We ended up having to refer quite a lot to their GP (because of) unstable BP. We had to do a lot of chasing around. I know it’s complicated but we needed to do something at the referral stage’ (OT6)

THEME TWO: FAMILY-CENTREDNESS
The second theme identified in the analysis was matters relating to the programme philosophy and the family-centred approaches taken in the programme.

Family-centred approaches
Many of the OSCAR team commented on the uniqueness of the programme and its family-centred approaches. For example, one team member said:

‘It’s the bits with the family that make it really unique. I know people have talked about that but I never realised until I got involved in it. I never realised how important the family plans were. People concentrate on that it is a weight loss programme with education elements but that’s not the most important part of it. It’s the family-centred approach that key. It’s working though with families on a one-to-one basis that is what OSCAR is about.’ (OT1)

Other remarks made were:

‘It’s the adults that have got to change. It’s the whole family’s life-style you’ve got to change. A programme that just focuses on the child gives the child a lot of pressure. It will lower their self-esteem even more. At the end of the day it’s down to the parents’ (OT1)

and

‘This type of approach is essential because of the ages of the children the problem lies with the family .... A seven year old hasn’t got any influence. They have to eat what the parents give them.’ (OT5)

Generally it may be concluded that all the OSCAR team members were found to be highly committed to the philosophy of the programme and believed the family-centred approaches to be a very effective way of initiating changes to the lifestyles of families with complex needs.

Key workers and family plans
As part of the family-centred planning approaches used in the programme, families were allocated a key worker. The key workers were either a nutritionist, exercise specialist or child and family psychologist. This key worker met with the families to develop action plans and identify health goals that the family wanted to achieve. A member of the team described the key features of the family meetings and said:

‘We got them to talk about themselves. What their key issues are. The meetings were complicated and time-consuming but the families liked it because they had that one-to-one. We talked about family roles. How the family could work through issues.’ (OT6)
and another that:

‘The appreciative nature of the model encourages professionals and families to look at the positive aspects of the family’s life style as well as the things they needed to change.’ (OT3)

Some of the family members also felt that despite having a key worker they lacked support during the programme. For example, one family member said:

‘You were told ‘do this’, ‘get on with it’. We didn’t like that. We needed more follow-up. More help. Even a phone call would have been helpful. There was nothing.’ (FM11)

And also that the family meetings were:

‘Alright but we got a bit fed up of them. The one-to-ones were not very helpful. There was all this paper work. It was just too much’ (FM11)

In contrast, however, one of the OSCAR team members said that:

‘The families reported they had enjoyed these sessions and benefited greatly from them’ (OT3)

and another family member

‘They were good, the girls made lots of friends as well” (F21)

THEME THREE: THE PROGRAMME

What proved to be the largest theme of the analysis concerned issues about the exercise and nutritional educational sessions that were offered as part of the OSCAR programme. There were various dimensions of the theme which not only covered the session content but such things as where, when and how long the OSCAR sessions were.

Venue

The staff highlighted difficulties surrounding identifying a suitable venue for the educational and exercise sessions with one person saying:

‘The venue we used had a technology kitchen which was fine. The exercise sessions too, (because we were exercising children and adults separately we need two areas). We were lucky this time we had a meeting room, a hall, and a kitchen but it’s tricky finding suitable accommodation.’ (OT4)

Even so there were comments from the participating families such as:

‘The venue was a bit out of the way. It was the other side of town. For some people it was difficult. We were lucky we have a car. Others had to pay for a taxi. It was a lovely modern building but for some people it was too far out’ (FM11)

Length and timing of the sessions

Staff and family members were in agreement that the length and timing of the programme was problematic. For example, it was said by a team member that:

‘Twelve weeks wasn’t long enough for the programme. It wasn’t long enough to deliver even the education elements of the programme. It needed to be at least a 20 week programme. We didn’t time to do so many things.’ (OT1)

The families interviewed were in agreement with one family member saying there was

‘Too much was crammed into two hours. It should have been spread over a week. Two sessions a week maybe’ (FM12)
There also was a lot of discussion in the OSCAR team interviews concerning the timing of the sessions as the following quotations show:

‘There were problems trying to find a suitable time that would suit all families. One suggestion may be to offer a Saturday morning session – it may be easier for families as the children are not at school’ (OT6)

but that whilst

‘Weekends would perhaps have been best for the families but we couldn’t get time to do them then. We did do one weekend but it was difficult (as there was no one to back fill my role so I could take time back in the week)’ (OT4)

One family interviewed concurred with the OSCAR team comments about the difficulties surrounding the timing of the programme and said

‘4-6pm on a Tuesday, it was an absolute nightmare but we did it, Saturdays would have been better’ (F21)

In the F family plan it was also recorded that

‘The timing of the sessions was too early for parents who worked and for children too who didn’t finish school until after 3.30pm’

**Preparation and standardisation**
A number of team members said that due to the lack of preparation time at the beginning of the programme that the sessions were not planned in advance and that:

‘Standardisation of the programme was vital but we didn’t have time to do that.’ (OT1)

And also that

‘All the sessions needed to be consistent and linked to one another. Simple stuff really. We need to know at week one what was going to happen in week eight’ (OT3)

**Attendance and attrition**
As shown earlier in the reporting of the quantitative findings of the evaluation the overall percentage rate of attendance for the 2009 programme was 71%. Comments made by the team members gave further detail of the teams’ perceptions of attendance and included it was thought ‘attendance was good’ (OT5). However, others believed that:

‘The levels of attendance were sporadic. This was due to the nature of the problems encountered by the families such as problems with transport, lack of motivation and lack of understanding what was expected (of the families)’ (OT6)

It was also recorded in a the A family plan that

‘A major barrier towards attending the programme is the travel cost. It costs £8 a session’

It could however, be argued that the venue was on a bus route and the family could have maybe walked part of the way. In addition the project also offered to pay for any expenses such as taxi fares.

Concerning attrition from the programme one member of the team related that:

‘Even the family that left the programme weren’t lost to the system. We found out (another sibling) was even more overweight. That would never have happened in any other programme. It is because we look at the whole family that we found out (the other sibling) needed more help.’ (OT2)
**Programme sessions**

There was a wealth of qualitative information concerning perceptions of the programme sessions which included how setting the ground rules of behaviour was important and making sure parents knew,

‘They were responsible for the child’s behaviour safety during the sessions’ (OT3)

The children and young people interviewed also said that they enjoyed being with other children and

‘They liked making new friends that were like them’ and ‘the family has made friends with the other families on the programme’ (FM13 & B & F family plans)

and it was recorded in the E family’s plan that

‘The whole family enjoyed the programme and felt that they had learnt a lot. The children felt that the information made sense to them’

Generally, the staff felt that the

‘Sessions worked well. The families seemed to enjoy them’. (OT5)

However, in contrast some of the young people interviewed said that:

‘They were boring. It was too much like being at school’ (FM13)

and it was also recorded in the B; E and F family plans that:

‘The separate sessions (for the adults and children) need to be better explained. Joint sessions (are needed so as to) enable parents to reinforce the information given to the children when at home’

and

‘the family really enjoyed the joint parent and child sessions and recommend more of these in the future’

There were two distinct parts of the educational programme. These were nutrition and exercise components of the programme. Also two sessions were about psychological issues. Comments made by the families concerning the nutrition component were that:

‘The food labelling session (was good but) should have been followed up with a visit to the supermarket’ (FM11)

and despite families being given recipe books another family related that:

‘We did a bit of cookery but not enough. Tasting sessions would have been good. It would have been nice to have a recipe book. . . .. But in all honesty I’ve done catering so I knew most of it already’ (FM11)

And finally that

‘Mum found the session on lunch boxes very useful and has now reduced the amount and types of food she includes in the children’s lunch boxes’ (B family plan)

Concerning the exercise component of the programme it was generally felt that it was important that both children, young people and their parents all participated but the programme needed to feature more activities and games. For example, it was said by one parent that:

‘More sports for the kids were needed. Half an hour in a (swimming) pool. Everyone together. Playing squash or badminton.’ (FM12) but ‘I did like the aerobics but we needed more of this.’ (FM11)
and also that

‘All of the family really liked the exercise sessions and especially the gym’ (A Family Plan)

Generally it was found that the parents on the programme varied in their health and physical activity levels with some not undertaking any exercise for years and some had angina, high BP and mobility problems. Therefore delivery of the exercise sessions was particularly challenging trying to accommodate the very differing levels of fitness. The following quotes from the families illustrate the dilemmas facing the team. For example one family said:

‘Exercising, the girls loved it but it was rubbish for me “cos’ I go to a gym so I were well ahead of them’ (F21)

Yet another family said:

‘I don’t know what they think we were. I had to sit down at one point. I said “I think you are having a laugh with us.” I couldn’t do it’ (FM11)

and

‘I did my back in with the Salsa. I had a bad back for about five weeks’ (FM12)

Therefore the sessions were generally pitched at a very low, cautious level. For example an OSCAR team member said:

‘Parents who had not exercised for many years were introduced to simple, gentle, easy exercise. For some this was a massive step forward. Parents were also encouraged to be more physically active as part of their daily routine.’ (OT6)

THEME FOUR: STAFF ISSUES

The composition of the OSCAR team

The participating staff made a number of comments about the composition of the OSCAR team including that a dedicated team to run the programme was needed and staff need to be qualified to lead on all aspects of the programme (OT3, OT4, and OT6). For example, one team member related:

‘On the staffing I think the families got a lot of mixed messages from the team. Maybe you need staff with mixed skills. Interchangeable skills. As long as they had the initial training. That would cut the costs down. As long as they had got someone to refer on to. A suitably qualified person. A lot of the sessions ran over. If one person was delivering them then they could judge the timing better. They have got a full two hour session rather than panicking that there is only 45 minutes to do what they have got to.’ (OT6)

Other members of the team also thought having administration support to arrange appointments and follow-ups would be useful (OT4) and that the programme could be delivered by lower bands of staff than it is currently, thereby saving on resources (OT3).

Training

Problems concerning the lack of staff training were identified by a number of the OSCAR team members with one person reporting:

‘There are loads of holes in the training (such as) motivational interviewing, psychology. You don’t need to necessarily have in-depth knowledge but you need to know the basics. Because we were key workers we needed to know about mental health issues. Just the basics so we would know how to tackle any issues.’ (OT6)

Many of the staff identified the advantages of ‘having a multi-professional team’ (OT2) another also said that:

‘The staff weren’t trained in each other’s areas. (As only the family worker was present at the family meetings we were at a disadvantage as) we didn’t know enough about the food, the exercise, the psychology. If something came up in a family meeting I didn’t know what to do about it. We needed very basic training. What the children were saying. Knowing what would ring alarm bells.’ (OT4)
Team meetings
A small category of data related to the apparent lack of team meetings with one team member saying:

‘We needed regular team meetings but there wasn’t the time’ (OT4)

Resources
Some of the team members also referred to the costs of the programme. For example one team member said that:

“Well the PCT didn’t actually give £30K (as originally requested). They only gave us £17K. We haven’t costed the (2009 OSCAR) programme. I don’t know how much the programme has actually costed. I think we have only spent about £5K, which is peanuts compared to £30K. Because we have resourced it internally some of the costs haven’t come up. It hasn’t been an expensive programme. But I suppose if was funded permanently it would be.’ (OT1)

Another team members said:

‘As key workers it was quite difficult finding the time (to fulfil the demands of the role because they were doing six days work in the five days they are actually employed for)’ (OT4)

THEME FIVE: EVALUATION
Commissioned evaluation
A number of the team expressed disappointment that the commissioned evaluation had begun later than originally planned with one member of the OSCAR team saying:

‘We wanted it to happen just when the programme had finished and not months later’ (OT2)

and another that:

‘The evaluation was left too long. It needed to happen straight away to get a true evaluation’ (OT5)

Others also said that 3, 6 and 12 month follow-ups are needed so as to see if any changes achieved are maintained through time. (OT4)

Pre and post test measures
A number of the team members also expressed concerns about the number and design of the pre and post test measures used in the evaluation. For example, it was said by one team member that the measures ‘were not child friendly enough’ (OT6). Other team members also said ‘there was too many of them (OT6) and ‘we expected the researchers to tell us what to use’ (OT2). For some there was ‘a lack of measures relating to exercise habits’ (OT6). A comment was also made that whilst:

‘There was a lot of good detailed information gathered from the families by the use of a variety of tools. The team needed to be familiar with using the measures beforehand’ and ‘Some of the questions encouraged individuals to discuss safe guarding, self harming issues. We needed to ensure the staff had the skills to deal with these issues.’(OT3)

Comments were also made about the need to weigh the adults attending the programme more frequently. For example it was said on:

‘On “Healthy Lifestyle” programmes the adults are measured every week. Their waist measures too. They are quite objective measures. So they are tracked every week. I know weight is not the be all and end all. I know it’s a different issue with children but I think (weekly weigh-ins) should be incorporated in the programme even though I know practically it would be difficult. (OT6)
Session evaluations
As related earlier the families who were interviewed as part of the evaluation did not seem to think completing the pre and post measures was a problem however, they did relate that the number of session evaluations was excessive. For example, one family member said:

‘There were far too many (session evaluation forms). Most of it was a load of nonsense. It was a waste of paper. They could have cut down on that’ (FM11)

However, a number of the OSCAR team members said they thought they were useful to inform future programme planning with one person saying:

‘It was important that the sessions were evaluated. It was very necessary’ (OT5)

Healthy life styles and maintaining changes achieved
Many of the team members identified positive changes to the participants’ life styles with one person saying:

‘Most said they had learnt a number of new things. There were two families that showed quite a difference in their waist circumference. Some showed slight improvements too in their BMI.’ (OT1)

and another that

‘Concerning attitudes to activity. There were changes. They were some who were a little bit more willing to try things than others were.’ (OT6)

A family member also said that

“It was really good (the OSCAR programme) and Kathleen* learned a lot, we once were out and somebody had a Mars Bar and she said you’ll have to exercise for an hour to get rid of that’ (F21) *a pseudonym

However some expressed doubts about if the changes achieved by the families would be maintained through time with one team member saying:

‘Most families had changes to diet and activity. What we do need to know if they are maintained over a longer period in time.’ (OT1)

THEME SIX: EXIT STRATEGY
Development of an exit strategy
In the final theme it was identified that there is a need for an exit strategy to be in place at the start of the programme. For example one team member said that:

‘If the family haven’t achieved their (target) BMI should we chuck them off after 12 months? I don’t think it’s ethical to discharge them after 12 months. If they are making slow but steady progress I don’t think it’s ethical to let them go.’ (OT4)

Others referred to the importance of sign posting the families to other services and said that:

‘There are many community exercise programme they (the families) could attend’ (OT6).

Nevertheless, another team member felt that:

‘There are not many activities or services to refer people to in the area particularly food’ (OT3).

However, on a positive note one of the family members interviewed related that:
‘Carl’ has joined “Slimmer’s World” with me. He’s been “Slimmer of the Week”. It’s free for under 16’s. He’s lost half a stone at Slimmer’s World. He is really made up about it.’ (FF11) ‘A pseudonym.

and it was recorded in the D family plan that they

‘Felt that they may start Weight Watchers in the future to keep them motivated’

Limitations
Inclusion of a qualitative evaluation has many advantages, not least that reported changes in quantitative pre and post test measures, whilst important, only gives a one-sided picture of the changes the families that participated in the 2009 OSCAR programme have achieved. The human dimension and peoples’ feelings, beliefs and their experiences of a phenomenon are not usually addressed in quantitative analysis. Thus it is hoped that previous sections of this report has given the reader insights into these aspects of the OSCAR programme. However, undertaking such analysis has limitations. There are the well-reported problems of management and analysis of the large amounts of qualitative data obtained and the need for experience and skill in what to report on and what not to. Particularly related to this study are also concerns about the relatively small sample sizes and the disappointing low response rates of the families willing to take part in the evaluation. This clearly may have resulted in uncertainty if all the different needs and opinions of the participating families are reflected. Also the length of time that elapsed after the programme had finished and data collection commenced may have resulted in some of the detail of the programme has been forgotten and probably contributed to some families not wanting to take part in the evaluation. However, that the evaluation took place some weeks after the programme had finished may also be viewed as a strength of the evaluation. That is the views expressed give a longitudinal dimension to the study. Also, whilst the immediate responses to the programme have not been obtained the reflections of both the OSCAR team and family members perhaps have a more considered quality because of the length of time that has elapsed since the programme finished.

Recommendations
The evaluation that has been conducted gives rise to a number of recommendations.

1. Consideration is given to establishing the OSCAR programme on a permanent basis which will enable the team to market and recruit to the programme more effectively. Widening the patterns of referral will also mean hard-to-reach families in need of help are made aware of the existence of the programme.

2. Establishing the programme on a permanent basis will also lead to better planning and standardisation of the programme content and enable the appointment of an established OSCAR team. Having an established OSCAR team will lead to savings in that less qualified staff may be deployed to run the programme on a day-to-day basis. The proviso being that established accountability structures are in place with the permanent OSCAR team having regular access to senior and more experienced members of staff from the different disciplines represented by the 2009 OSCAR team. Having adequate administration support will also reduce the time the team spend making appointments and following up families.

3. It was been found that many OSCAR team members run the programme on top of their existing duties. Adequate levels of staffing are needed for future programmes which may circumvent some of the problems identified later in this list of recommendations such as lack of communication, meetings and training.
4. More information is required at the time of entry to the programme of any medical conditions the adult family members have. This could be obtained through contact with GPs after a family is accepted on to the programme.

5. The length, timing and venue of the education programme need further deliberations. That is the length should possibly be extended to 20 weeks or delivered on two days rather than current one day a week. The timing of the sessions needs to be flexible, family-friendly and the venue central and easily accessible.

6. Communication between OSCAR team members would be improved if regular staff meetings are held.

7. Inadequacies in staff training need to be addressed particularly in relationship to the family-centred approaches used in the programme and the safeguarding and mental health issues encountered by some members of the team with regards to some families. Additionally some of the pre and post intervention questionnaires are more normally used in psychological clinical assessment. Although a psychologist was present when the questionnaires were being completed and did check for elevated scores, nevertheless if used in the future the team need to be given some basic insight into their use and when the need for referral may arise.

8. Concerning progress and evaluation the following were identified as needing reconsideration in future programmes:
   
   • Weekly weighing of the OSCAR participants
   • Use of fewer and more child friendly pre and post intervention questionnaires
   • More emphasis on evaluation of the exercise and activity aspects of the programme
   • Individual session evaluations should involve less form filling and more creative approaches to this type of evaluation
   • Longitudinal evaluation of the family’s health gains is needed

9. The final recommendation concerned the development of an exit strategy. Such a strategy needs to take account that some families may require long-term support whereas others may need referral to other less intensive weight management support programmes.
CENTILE CHARTS USED IN THE STUDY

BOYS BMI CHART MANAGEMENT

2003/1 Birth - 20 yrs UK cross-sectional reference featuring <3.5 & 4.5 SDs and the healthy BMI range.

Name:
D.O.B. (Month/Day/Years):
Mother:
Weight (kg) Height (m) BMI:
Father:
Weight (kg) Height (m) BMI:

Key:
Do not plot in the grey area. To identify a boy who is failing to thrive or is putting on too much weight in his first six months, plot his weight curve on the relevant 0-54 month chart and use the 5th or 95th centile line to make overlays.

HEALTHY BMI
The blue shaded area indicates a healthy BMI range.

--- 3rd [-5 SDs]
Both the BMI centile and Standard Deviation Score are given.
The two black thick lines are international Obesity Task Force definitions for obesity/overweight respectively. Both the BMI of healthy athletes children may fall above these lines.

Reference:

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BOYS WAIST CIRCUMFERENCE

Because a high BMI by itself may not be a guarantee of obesity/overweight, a high waist centile added to a high BMI centile will confirm obesity more conclusively. The shaded area represents a healthy waist range.

Measuring the Waist

The waist is defined as the mid-way point between the lowest rib cage and the iliac crest and should be measured, preferably, with a special tension tape (see illustrations below).

When measuring the waist, the boy should ideally be wearing only underclothes. Ask him to stand with his feet together and weight evenly distributed, his arms relaxed. Ask him to breathe normally and take the waist measurement at the end of a normal expiration.

The waist can also be identified by asking him to bend to one side. Measurement is taken at the point of flexure.

If he is wearing a shirt or vest, deduct 1 cm before recording and plotting the waist measurement.

There is no consensus about how to define paediatric obesity using waist measurement. For clinical use the 85th or 90th centiles are suggested cut-offs for obesity and the 95th centile for overweight, like the BMI (see chart overlaid).

Reference:
The BMI (Body Mass Index) is the WHO agreed measure of fitness because it is a direct measure of body fat. On its own it should be used with caution.

To confirm fitness more conclusively, take a waist circumference measurement (in cm):

Key
Do not plot in the grey area. To identify a girl who is too light, too thick or obese, plot her weight curve on the relevant GID/141 chart and use the 5th or 95th percentile line to ascertain normalcy.

Key indicating:

HEALTHY BMI
The red shaded area indicates a healthy BMI range.

66th (±2 SD)
Both the BMI centile and standard deviation error bars are given.

The very thick black line is the international obesity task force definition for moderate obesity/overweight. Of course, the BMIs of healthy adults and children fall above these lines.
Because a high BMI by itself may not be the best indicator of obesity, a high waist circumference added to a high BMI results will help determine more accurately. The shaded area represents a healthy waist range.

**Measuring the Waist**

The waist is defined as the mid-way point between the lower ribs and the iliac crest and should be measured securely, parallel with a special waist tape (see illustration below).

When measuring the waist, the girl should steadily breathe in uniformly. Ask her to stand with her feet together and weight evenly distributed with her arms relaxed. Ask her to breathe normally and take the waist measurement at the end of a normal expiration. The waist noted will be the measurement taken at the point of greatest curve. If the girl is wearing a skirt or coat, deduct the thickness before recording and plotting the waist measurement.

There is no consensus about how to define obesity solely using waist measurement. For clinical use the 90th or 95th centiles are suggested cut-offs for obesity. Men's guidelines for overweight, like the BMI, are chart-oriented.

---

**GIrls Waist Circumference**

D.O.B. [DOMMTX]  

Reference:
## Appendix four: Cost estimates for OSCAR, MEND and BUFFALO

### OSCAR Programme 2009/2010

<table>
<thead>
<tr>
<th>Fixed costs</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Family Goals Training</td>
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<td></td>
<td></td>
<td>1721</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Staff Costs</th>
<th>Salary</th>
<th>Number</th>
<th>WTE</th>
<th>Annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Manager</td>
<td>42020</td>
<td>1</td>
<td>0.2</td>
<td>8404</td>
</tr>
<tr>
<td>Clinical Psychologist</td>
<td>42020</td>
<td>1</td>
<td>0.1</td>
<td>4202</td>
</tr>
<tr>
<td>Dietitian</td>
<td>35276</td>
<td>1</td>
<td>0.1</td>
<td>3528</td>
</tr>
<tr>
<td>Nutritionist</td>
<td>28710</td>
<td>1</td>
<td>0.2</td>
<td>5742</td>
</tr>
<tr>
<td>Physical Activity Specialist</td>
<td>28710</td>
<td>1</td>
<td>0.2</td>
<td>5742</td>
</tr>
<tr>
<td>Exercise Coach</td>
<td>20015</td>
<td>1</td>
<td>0.1</td>
<td>2002</td>
</tr>
<tr>
<td>Food Worker</td>
<td>20015</td>
<td>1</td>
<td>0.2</td>
<td>4003</td>
</tr>
<tr>
<td>Administrative Assistant</td>
<td>20015</td>
<td>1</td>
<td>0.2</td>
<td>4003</td>
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</table>

<table>
<thead>
<tr>
<th>Miscellaneous costs</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Venues, admin, supplies, food and equipment</td>
<td>3000</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Total cost of OSCAR programme**  42346

**Number of child participants**  40

**Average cost per child participant**  1059

**Notes:**

Salary on-costs are not included in the estimates.
Estimates assume that resource use can be extrapolated to 12 months.
<table>
<thead>
<tr>
<th>Fixed costs</th>
<th>Annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online Monitoring and Management System licence fee</td>
<td>250</td>
</tr>
<tr>
<td>Evaluation reports</td>
<td>2250</td>
</tr>
<tr>
<td>Programme support charge (PSC)</td>
<td>18900</td>
</tr>
<tr>
<td>Facilities (currently free; estimated value)</td>
<td>3000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pendle Leisure Staff</th>
<th>Salary</th>
<th>Number</th>
<th>WTE</th>
<th>Annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session Leaders (including administration)</td>
<td>24178.75</td>
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<td>0.16</td>
<td>7737</td>
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</tbody>
</table>

**Total cost of MEND programme**: 32137

**Number of children participants**: 60

**Average cost per child participant**: 536

Notes/assumptions:

- Fixed costs payable to MEND incorporate the one-year commissioning scenario discount
- Salary on-costs are included in the estimates.
- Working week is 36.25 hours
- Costs based on three courses of ten weeks per year
- The cost of children's packs, questionnaires and one-day obesity awareness training funded through the Big Lottery Fund is not included in the estimates
## BUFFALO Programme 2009/2010

### Fixed costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Annual cost</th>
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</thead>
<tbody>
<tr>
<td>Staff training</td>
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</tr>
<tr>
<td>Marketing etc.</td>
<td>1000</td>
</tr>
<tr>
<td>Hire of lock up to store equipment etc.</td>
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</table>

### Burnley Borough Council Staff

<table>
<thead>
<tr>
<th>Role</th>
<th>Salary</th>
<th>Number</th>
<th>WTE</th>
<th>Annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children Healthy Lifestyles Coordinator</td>
<td>26276</td>
<td>1</td>
<td>1.00</td>
<td>26276</td>
</tr>
<tr>
<td>Parental Healthy Lifestyles Coordinator</td>
<td>20858.5</td>
<td>1</td>
<td>0.55</td>
<td>11508</td>
</tr>
<tr>
<td>Children's Healthy Lifestyles Tutor</td>
<td>18464</td>
<td>2</td>
<td>0.55</td>
<td>20374</td>
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<tr>
<td>Casual Healthy Lifestyles Tutors</td>
<td>18153</td>
<td>2</td>
<td>0.17</td>
<td>6009</td>
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### NHS Staff

<table>
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<tr>
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<th>Salary</th>
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<th>WTE</th>
<th>Annual cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good Food Project Coordinator</td>
<td>24013</td>
<td>1</td>
<td>1.00</td>
<td>24013</td>
</tr>
<tr>
<td>Food Worker</td>
<td>17732</td>
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<td>0.27</td>
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</table>

### Miscellaneous costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost per school</th>
<th>Number</th>
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<tbody>
<tr>
<td>Equipment and food costs</td>
<td>700</td>
<td>4</td>
<td>2800</td>
</tr>
<tr>
<td>Taster sessions</td>
<td>240</td>
<td>4</td>
<td>960</td>
</tr>
</tbody>
</table>

### Total cost of BUFFALO programme

100109

### Number of children participants

120

### Average cost per child participant

834

### Notes:

Salary on-costs are not included in the estimates

Estimates assume that resources can be extrapolated to 12 months