

Assessing the acceptability and feasibility of the MEND Programme in a small group of obese 7–11-year-old children

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Keywords

behavioural modification, children,
exercise, nutrition, obesity, treatment.

Abstract

Background and aims An uncontrolled, pilot study to evaluate feasibility and acceptability of a new community based childhood obesity treatment programme.

Methods The mind, exercise, nutrition and diet (MEND) programme was held at a sports centre, twice-weekly, for 3 months. The programme consists of behaviour modification, physical activity and nutrition education. The primary outcome measure was waist circumference. Secondary outcomes were body mass index (BMI), cardiovascular fitness (heart rate, blood pressure and number of steps in 2 min), self-esteem and body composition. BMI of parents was also measured. See <http://www.mendprogramme.org>.

Results Eleven obese children (7–11 years) and their families were recruited. Mean attendance was 78% (range 63–88%) with one drop out. Waist circumference, cardiovascular fitness and self-esteem were all significantly improved at 3 months and continued to improve at 6 months. BMI was significantly improved at 3 months but lost significance by 6 months. Deuterium studies showed a beneficial trend but were not significant. Of the 17 parents measured, seven were obese (BMI \geq 30) and eight overweight (BMI \geq 25).

Conclusions Although limited by the small number of participants and no control group, the MEND programme was acceptable to families and produced significant improvements in a range of risk factors associated with obesity that persisted over 3 months.

Introduction

Whilst tackling childhood obesity is a public health priority there is a lack of good quality evidence on the effectiveness of interventions on

which to base national strategies or inform clinical practice (Summerbell *et al.*, 2003). The mind, exercise, nutrition and diet (MEND) programme has been developed to improve health outcomes in obese children and the aim of this pilot was to

assess its acceptability, feasibility and compliance in a small group of obese children and their families.

Materials and methods

Obese children aged 7–11 years were recruited via school nurses, paediatricians and a local newspaper advertisement. GP's were informed of their patient's participation in the study. The programme required twice-weekly attendance over 3 months and was held in the evenings at a sports centre. All sessions were group-based and consisted of eight nutrition focussed education sessions, eight behavioural modification sessions, and 18 fun-based physical activity sessions. The primary outcome measure was waist circumference, a good predictor of insulin resistance and cardiovascular risk. Secondary outcomes were body mass index (BMI), cardiovascular fitness (number of steps in 2 min, heart rate and diastolic blood pressure after step test), self-esteem and body composition. If possible parents had their weight and height measured.

Assessments were carried out at the beginning and end of the 3-month programme with a 3-month follow-up. See <http://www.mendprogramme.org> for further information.

Results

Eleven subjects mean age 9.6 years were recruited. Demographics and body composition measurements are presented in Table 1. One

Table 1 Demographics and body composition measurements

| Age (yrs) | Sex | BMI z-score | Waist circumference z-score | BMI mother | BMI father |
|-----------|-----|-------------|-----------------------------|------------|------------|
| 9.2 | f | 3.3 | 3.0 | 20 | 29.4 |
| 11.3 | m | 3.2 | 2.8 | 24.5 | 28.6 |
| 11.6 | m | 2.7 | 2.4 | 33.1 | – |
| 10.2 | m | 3.2 | 2.6 | – | 32.3 |
| 9.4 | f | 2.6 | 2.1 | 35.8 | 25.0 |
| 9.1 | m | 3.1 | 1.8 | 26.0 | 25.0 |
| 7.0 | f | 2.1 | 0.4 | 48.2 | 27.7 |
| 10.4 | m | 2.6 | 0.8 | 48.2 | 27.7 |
| 7.8 | f | 2.2 | 1.8 | 28.2 | – |
| 10.1 | f | 3.0 | 3.5 | 46.8 | 33.0 |

BMI, body mass index; f, female; m, male; –, no data available.

family dropped out because of serious family health problems. Of the 17 parents measured, seven were obese (BMI ≥ 30) and 8 overweight (BMI ≥ 25). Mean attendance was 78% (range 63–88%). One child was referred by hospital paediatrician, five by school nurses and the rest self-referred. Seven subjects were followed up at 6 months.

Waist circumference, BMI, cardiovascular fitness and self-esteem all improved significantly during the 3-month intervention (see Table 2). Benefits gained were sustained in the succeeding 3-month follow-up period. A significant improvement remained between baseline and 6 months for all parameters measured except BMI. Deuterium studies showed a trend towards decreased body fat and increased lean body mass but changes were not significant in this small sample.

Table 2 Summary of data at baseline (0 months), end of intervention (3 months) and follow-up (6 months) and mean changes from baseline at 3 and 6 months. Results are mean (SD)

| Measure | 0 months (n = 10) | 3 months (n = 10) | 6 months (n = 7) | 0–3 months change | 0–6 months change |
|---|-------------------|-------------------|------------------|-------------------|-------------------|
| Diastolic BP after step test (mmHg) | 89.8 (6.4) | 81.4 (5.9) | 73.1 (7.0) | –8.4 (5.3)** | –18.6 (7.8)* |
| Heart rate after step test (bpm) | 119.8 (15.0) | 101.2 (13.7) | 93.1 (14.8) | –18.6 (9.8)** | –31.7 (14.3)* |
| Number of steps in 2 min | 163 (10.2) | 203 (5.8) | 240 (16.2) | 40 (15.0)** | 77 (23.3)* |
| Self-esteem score (range of possible scores: min = 36 to max = 144) | 96.9 (8.6) | 112.0 (11.7) | 114.7 (6.9) | 14.7 (8.1)** | 13.2 (7.6)* |
| Waist circumference (cm) | 82.9 (12.1) | 80.7 (11.2) | 82.1 (11.4) | –2.2 (2.6)* | –3.4 (2.0)* |
| BMI (kg m ⁻²) | 26.4 (3.4) | 25.6 (3.5) | 25.4 (3.7) | –0.9 (0.8)* | –0.8 (1.2) |

BMI, body mass index.

*Paired *t*-test ≤ 0.05 ; **paired *t*-test ≤ 0.005 .

Discussion

This was a small, uncontrolled, pilot study to assess feasibility of implementing the MEND community-based programme. Results indicate that the programme produced sustainable improvements in key indices of obesity-related health risk. Decreased waist circumference indicates reduced intra-abdominal fat which is associated with improvements in metabolic complications of obesity and cardiovascular risk (Pi-Sunyer, 1991). The sustained improvements in cardiovascular fitness at 6 months suggested that the children continued to be more active following the end of the programme. This is a positive outcome given that increased physical activity is a predictor of successful weight maintenance in treated obese children (Epstein *et al.*, 1984). As low self-esteem is a risk factor for the development of depression in obese children, improvements in this factor suggest that the programme may also act to improve psychological health (Wallace *et al.*, 1993).

The study indicates that overall improvements in health in obese children can be achieved by an intensive child-orientated multidisciplinary programme. Good attendance and a low drop out rate suggest that an intensive community based pro-

gramme is acceptable to families and may be one of a range of strategies that could help to combat the rise in child obesity. These preliminary results warrant further investigation and a randomized controlled trial is planned for 2005.

Acknowledgements

We thank Lisa Hogan for helping in the conception of this study and also in data collection. This work was funded by Sainsbury's Supermarkets Ltd. We would also like to thank the management of the Oasis Sports Centre and Holmes Place Leisure Management Ltd.

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