Dietary approaches for the treatment of obesity

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Dietitian in Obesity Management

Overview

• BDA Position Paper on obesity treatment
• Historical perspective
• Current evidence base
• What works best?
• Dietary intervention in GCWMS
• Nutritional resources

BDA Position Paper
Obesity treatment: future directions for the contribution of dietitians

First published in Journal of Human Nutrition and Dietetics (1997)

• Addressed strategies which dietitians could use to promote weight loss and weight maintenance in obese adults
• Recognised that both prevention & treatment of obesity are complex and difficult endeavours
• Dietitians are well positioned to provide evidence based, independent information on nutrition & eating behaviour in the management of obesity
Historical perspective

- Simplicity of approach
- Individuals severely restricting their energy intake
- Proved to be ineffective in the long term
- Hence ethically questionable
- Weight cycling – Binge eating disordered
- Developing and evaluating different types of treatment approaches

Obesity can only occur when energy intake remains higher than energy expenditure

Reasons...

- Availability of energy dense foods
- A move away from the traditional diet
- A decrease in cooking, menu planning and shopping skills
- An increase in the consumption of snacks and sugar based beverages
- Food portion sizes
- Significant growth in the UK market for fast food and takeaway outlets.
**Decrease in energy expenditure**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Kcal/week 1950’s</th>
<th>Kcal/week 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food shopping</td>
<td>2400 (on foot)</td>
<td>276 (driving)</td>
</tr>
<tr>
<td>Washing clothes</td>
<td>1500 (by hand)</td>
<td>270 (washing machine)</td>
</tr>
<tr>
<td>Heating</td>
<td>1300 (making a coal fire)</td>
<td>Almost zero (thermostat)</td>
</tr>
<tr>
<td>Making a bed</td>
<td>575 (with blankets)</td>
<td>300 (with duvet)</td>
</tr>
</tbody>
</table>

**Energy Balance**

- Accumulation of only 50 - 200 kcal daily leads over 4 - 10 year period to a slow and progressive weight increase 2-20kg
- Each extra 10kg of weight indicates an extra 70,000 stored kcal
- A woman of average height and a BMI of 30 kg/m² has about 105,000 excess kcal stored

<table>
<thead>
<tr>
<th>Drink</th>
<th>Calories</th>
<th>Why?</th>
<th>How much?</th>
</tr>
</thead>
<tbody>
<tr>
<td>330ml fizzy drink</td>
<td>134</td>
<td>Sugar</td>
<td>36g = 7 tsp</td>
</tr>
<tr>
<td>Large whole milk vanilla latte</td>
<td>364</td>
<td>Sugar</td>
<td>42g = 10.5 tsp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fat</td>
<td>14g = 3 tsp oil</td>
</tr>
<tr>
<td>152ml white wine</td>
<td>82</td>
<td>Sugar &amp; alcohol</td>
<td>82g = 4 tsp</td>
</tr>
<tr>
<td>235ml fruit smoothie</td>
<td>160</td>
<td>Sugar</td>
<td>30g = 8 tsp</td>
</tr>
</tbody>
</table>
SIGN Key Questions...

Which dietary interventions are most effective in producing and maintaining a 5kg/5% weight loss at 12 months?

Classification of diet types

<table>
<thead>
<tr>
<th>Diet Type</th>
<th>Description</th>
<th>Commercial Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy deficit or Low Energy Diet (LED)</td>
<td>600 kcal deficit diet</td>
<td>Weight Watchers</td>
</tr>
<tr>
<td>Low fat diet (LF)</td>
<td>&lt;30% total daily energy from fat</td>
<td>Commercial Slimming organisations</td>
</tr>
<tr>
<td>Very Low Fat (VLFD)</td>
<td>&lt;10% total daily energy from fat</td>
<td>Omish and LEARN</td>
</tr>
<tr>
<td>Low Calorie (LCD)</td>
<td>&gt;800 – 1600 kcal/day</td>
<td>Weight Watchers Slimming World</td>
</tr>
<tr>
<td>Very Low Calorie (VLCD)</td>
<td>&lt; 800 kcal/day</td>
<td>Cambridge &amp; Lighter Life (Liquids)</td>
</tr>
<tr>
<td>Low Carbohydrate, Protein Sparing Modified Fast (PSMF)</td>
<td>&lt;50g Carbohydrate/day</td>
<td>Atkins</td>
</tr>
</tbody>
</table>

What is an energy deficit diet?

Theory of energy deficit diet

Modify type, quantity, frequency of food and drink ⇒ hypo caloric intake. Weight loss 0.5 kg/week ⇒ body fat loss 0.5 kg/week ⇒ 3,500 kcals. Requires energy deficit of at least 600 kcal/day.

Can be achieved by

- 600 kcal deficit,
- low fat diets,
- moderate energy prescription,
- low or very low calorie diets,
- protein-sparing modified fast
- low carbohydrate low fat diets
600 kcal deficit diet

Example using the Mifflin equation

Female 32 years old
Weight 133kg Height: 1.68 m

\[(9.99 \times \text{weight in Kg}) + (6.25 \times \text{height in cm}) - (4.92 \times \text{age}) - 161 \times 1.27 \text{ PAL}\]

\[2616 \text{ kcals} - 600 \text{ kcals} = 2016 \text{ kcals/day}\]

How effective is an energy deficit diet

A comprehensive HTA comparing various dietary interventions with a minimum of 12 months follow up.

Median weight change across 12 comparisons was

-4.6 kg (range −0.60 kg to −7.20 kg) for a 600 kcal deficit diet or low-fat diet

+0.60 kg (range +2.40 kg to −1.30kg) for usual care.

NICE Evidence table 15:14 (2006) 1++
SIGN 115 (2010) 1++

Which diet type is most effective in achieving a 5kg weight loss target

- Low Calorie Diets (LCD)
- Very Low Calorie Diets (VLCD)

Do they work?

Low calorie diets (1,000-1,600 Kcal/day) and very low calorie diets (1000 Kcal/day) are associated with modest weight loss (5-6%) at 12 months follow up. 1++ Backer, J.P., Macle, C., Thabane, L. and Williamson, D.F. (2005)

Which works best?

Although VLCD are associated with greater weight loss in the short term (three to four months) this difference is not sustained at 12 months. 1+ O'Brien, C. et al (2006)
Low Fat Diets                       Low Carbohydrate diets
Do they work ?
Both low carbohydrate (< 30 g/day) and low fat (< 30% of total daily energy intake from fat) diets are associated with modest weight loss (5kg) at 12 months. At six months there is significant difference in favour of low carbohydrate diets but this is not maintained at 12 months. Nordmann, A.J.(2006)

Which works best ?
There was no significant difference between low fat diets and a range of other dietary interventions at 18 months’ Cochrane Review (2007)

Which diet type is most effective in achieving a 5kg weight loss target ?

Recommendations
- Recommendation
Dietary interventions for weight loss should be calculated to produce a 600 Kcal/day energy deficit.
Programmes should be tailored to the dietary preferences of the individual patient.

- Good Practice Point
Discussion around dietary change should emphasise achievable and sustainable healthy eating.

- Recommendation
Where very low calorie diets are indicated for rapid weight loss, these should be conducted under medical supervision.

Dietary Advice in GCWMS
- Personal Dietary Prescription
- Calculate Energy required – 600kcal 0.5kg loss / week
- Give portion list of 5 basic food groups
- Balanced number of portions of each food group spread throughout the day
- Record daily intake and aim to match to Recommended prescription
Personalised Dietary Prescription of 2000 calories per day

<table>
<thead>
<tr>
<th>Food Group</th>
<th>Portions recommended per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starches</td>
<td>8</td>
</tr>
<tr>
<td>Fruit and Vegetables</td>
<td>8</td>
</tr>
<tr>
<td>Dairy</td>
<td>3</td>
</tr>
<tr>
<td>Meat, Fish &amp; Alternatives</td>
<td>3</td>
</tr>
<tr>
<td>Fats (butter, low fat spreads, mayonnaise, ghee, salad creams)</td>
<td>3</td>
</tr>
<tr>
<td>Extras</td>
<td>200 calories</td>
</tr>
</tbody>
</table>

2000 kcal

200 kcal

Fruit & Veg 8 Portions
Starch 8 Portions
2000 Calorie Day
Breakfast

- Starches 1 + 2
- Dairy 1
- Fat 1
- Fruit 1
- Meat 1/2

Lunch

- Starches 2
- Dairy 1
- Fat 1 + 1
- Fruit & Veg 1 + 1
- Meat/Fish 1

Whole Day 2000 Calories

- Total Portions:
  - 8 Starch
  - 8 Fruit & Veg
  - 3 Dairy
  - 3 Meat/Fish
  - 3 Fat
  - Extras 200 kcal
Count the Portions or Calories

**Ingredients**
- 1 medium sized baked potato
- 4 heaped dessertspoons baked beans
- Match box size piece of cheese (30g)
- Salad optional

Importance of Food Diaries

- Self monitoring is an important behavioural strategy (O’Neill, 2001)
- Evidence to support those that have lost weight and successfully maintained weight loss for >2 yrs have regular self monitoring as a feature (Colvin et al, 1983)
Phase 2

- Fail to lose 5kg through 600 kcal deficit diet and portion control
- Option: To try a structured Low Calorie Diet

Structured Low Calorie Diet

1200 calories per day

- 300 calorie breakfast choices
- 400 calorie lunch choices
- 500 calorie evening meal, chosen from selection of protein, carbohydrate, vegetable and dessert options

1500 calories per day

As above but also includes 100 calorie snacks, up to 3 per day.

LCD & Meal replacements

Low Calorie Diet may also include the use of Meal Replacement supplements e.g.

Slimfast
Build-Up
Complan
Supermarket own brands

These can be used instead of breakfast and/or lunch, if it fits in with your lifestyle.
Dietary approaches – key points

- Understand the position at the beginning of treatment through a comprehensive assessment
- Stabilise eating pattern
- Improve the nutritional quality of the diet
- **Achieve negative energy balance**
- Promote self-monitoring
Thank you

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References

- NDP 2012 (Nutrition and Diet resources) Weight loss you can see on a plate
- PHEL – Public Health Electronic Library available online at: www.phel.gov.uk
- The Cochrane Collaboration – Available online at: www.cochrane.org/reviews
- SIGN 115 (2010)