Obesity – Understanding and Dealing with a Tsunami

John Wass

Department of Endocrinology, Oxford University, UK

What's your BMI?

A. 20-25 kg/m²
B. 25-30 kg/m²
C. 30-35 kg/m²
D. >35 kg/m²
E. Don't Know
Obesity – Introduction
(Lancet Aug 27, 2011)

United Kingdom  trebled since 1980’s
United States   12 states over 30%
                no state under 20%

Likely underestimate because self reported

Fuelling the development of - diabetes,
                           heart disease
                           stroke and
                           cancer

Huge cost - £2 billion per year extra in UK

Government approach discoordinated and inadequate

The medical profession too needs to show leadership
Obesity – future challenges
(David King, Lancet. 2011, 27; 378:743-4)

Passive obesity - biology out of kilter with society since 1970s

By 2050 - 60% men & 50% women could be clinically obese in UK

Nowhere has the epidemic been reversed by public health means
- Unlike: tobacco
  cardiovascular disease

This because of: global food supply systems
  environmental – less energy expenditure

Potential savings – 1% reduction in BMI
  may prevent 2.4 million cases of diabetes

Locally – some good results e.g., Geelong and France
Obesity

Huge and complicated - 66,159 articles in last 10 years

Most health professionals get very little education on the topic

20k cal per day increases weight by 1kg a year
Obesity – genetic factors
(Farooqi et al, JCI 2011; 121 2080)

Explain < 5% heritability of increased BMI
Heritability equivalent to that of height
Leptin – melanocortin pathway
MC4R deficiency – population prevalence 1: 1000
1:100 in obesity
Fig 6.1 Clinical response to leptin therapy in congenital leptin deficiency.
Endocrine causes of obesity

Almost never a cause

Hypothyroidism – 2kg weight gain
Cushing’s syndrome
GH deficiency
Polycystic ovary syndrome
Fig 1.1 Prevalence of obesity (BMI > 30 kg/m²) in men and women by age (Health Survey for England, 2002; http://www.publications.doh.gov.uk/public/summary.htm).
Percent prevalence of obesity (adults over 16) in UK by ethnic groups (Maryon-Davies 2010)

<table>
<thead>
<tr>
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<th>Black/Caribbean</th>
<th>Indian</th>
<th>Chinese</th>
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<tbody>
<tr>
<td>Men</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>overweight (inc. obese)</td>
<td>67</td>
<td>53</td>
<td>37</td>
</tr>
<tr>
<td>Raised waist circumference</td>
<td>22</td>
<td>20</td>
<td>08</td>
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<tr>
<td>Women</td>
<td></td>
<td></td>
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<tr>
<td>overweight (inc. obese)</td>
<td>65</td>
<td>55</td>
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<tr>
<td>Raised waist circumference</td>
<td>47</td>
<td>38</td>
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Socio cultural patterns and Regional differences in U.K
(Maryon-Davies 2010, Marmot 2010)

<table>
<thead>
<tr>
<th>Gender</th>
<th>Occupational Status</th>
<th>Obese</th>
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<tbody>
<tr>
<td>Men</td>
<td>Management/Professional</td>
<td>18%</td>
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<td>Factory employee</td>
<td>28%</td>
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<td>Women</td>
<td>Management/Professional</td>
<td>10%</td>
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<tr>
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<td>Factory employee</td>
<td>25%</td>
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Fig 1.3 Prevalence of overweight Dutch children by the level of parental education.
Obesity – Associated Conditions

Type 2 diabetes  90% BMI > 23 kg/m2
Cardiovascular disease
Hypertensive - Obese have 5 x increased risk
- 60% cases overweight
Metabolic syndrome
Dyslipidemia
Cancer (oesophagus, colon, pancreas)
Gall bladder disease
Non alcohol fatty liver
Reproduction
  Primary infertility in women
  Impotency in men
Osteoarthritis
Sleep apnoea
Obesity and Cancer
(Wang et al, Lancet 2011, 378, 815)

Every additional 5kg/m² increases:

- oesophageal cancer risk by 52%
- colon cancer risk by 24%

Women

- endometrial cancer 59%
- post menopausal breast cancer 12%
Global drivers of obesity epidemic
(B. Swinturn et al, Lancet 378, 804; 2011)

Food more processed
affordable
better marketed

Environmental - e.g., different transport environments
Netherlands vs. USA

Individual - e.g., genetic make-up

Cultural - e.g., Tonga vs Japan
Obesity Epidemic - Approaches

Motivating behavioural changes
Health promotion
Society marketing
Education

Policy intervention
enforceable actions
laws
regulation

Nudging not effective
Obesity Epidemic - Approaches

- Banning unhealthy food marketing to children
- Healthy public sector food policies, e.g., sugar
- Food industry policies, e.g., healthier compositions
Calorie Labelling
(Jebb August 2011, 343, 267)

20-25% calories away from home

New York City - policy
- mandatory provision of calorie information on menus

No overall difference in calories purchased

15% customers used information and purchased about 106 kcal less

Voluntary system in UK 5,000 high street outlets (responsibility deal)

Much more to do
## Cost-effectiveness of obesity interventions in Australia


<table>
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<tr>
<th>Intervention</th>
<th>Target</th>
<th>Evidence</th>
<th>Net Cost (A $ million)</th>
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<tbody>
<tr>
<td>Gastric banding</td>
<td>Adolescents</td>
<td>1</td>
<td>4,400</td>
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<tr>
<td>Family based GP program</td>
<td>Obese Child 5-9</td>
<td>3</td>
<td>4,700</td>
</tr>
<tr>
<td>Gastric banding</td>
<td>Adults BMI &gt; 35kg/m²</td>
<td>1</td>
<td>5,800</td>
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</table>
NICE – Bariatric Surgery (2014)

Recommended for patients with BMI > 40 kg/m²
or > 35kg/m² co-morbidity

Between 11,000 and 140,000 patients qualify in UK

No of bariatric procedures in the UK – 7,500 in 2013

No of procedures per PCT 1-194

Only 40% Primary care trusts in UK implement NICE guidelines
Obesity & Diabetes

The impact of Bariatric Surgery on Type 2 Diabetes

Bariatric Surgery sustained weight loss
remission of type 2 diabetes 50-85%
(less likely in older subjects)
reduces mortality in Type 2 diabetes
1. Patient Charter

2. Provision of local services for overweight & obese

3. Provision of multidisciplinary services in regions for severely obese

4. Follow NICE guidelines

5. Appropriate equipment for diagnosis and cure
7. Provision of adequate education for all medical and related professional

8. Setting up of an ongoing group to monitor the above/to provide scientifically sound information to Government
   WAIST (Weight Activity Ingestion Stategic Taskforce)
Obesity – a global problem

International organisations
Governments
Private sector
Communities
Individual
Monitoring - essential

• Individual BMI – every patient should know BMI
• Development of services for obese patients
  Diabetes physicians and community
• Food labelling
• Education
• Policy changes
Decreasing/preventing obesity

Advertising – less – not to children

Food industry – voluntary codes of best practice – probably not enough
Government departments involved in a coordinated obesity strategy

Health
Culture, media, sport, physical activity
Transport – physical activity
Agriculture
Environment
Education – e.g. prevention and breast feeding
Treasury

Needs government leadership
One minister/group to coordinate
CONCLUSIONS

Everyone should know their BMI and what it means

Government leaderships essential

Medical involvement and leadership nationally/locally

Targets to be set for attainment in the future

No country has a long-term comprehensive strategy