Obesity: Nutrition, economics and policy

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Outline

- Obesity burden
- Explaining the global obesity epidemic
- Economic underpinnings
- Market failure for children
  - Unhealthy food and beverage marketing
- Approach to obesity prevention
  - Cost-effective programs
  - Cost-effective policies
- Directions of the food system
Obesity burden

• Cost of obesity studies
  – AIHW (for 1989-90): $736m
  – Colagiuri et al (for 2005): $10.7b
  – Access Economics (for 2008): $58b

• Many different assumptions and different included costs account for the different results

• For children, carrying a 2-5% reduction of quality of life throughout life is substantial and uncounted
Changing risk factor burden

Hoad et al ANZJPH 2010

WHO Collaborating Centre for Obesity Prevention
What are the determinants of obesity?

Obesity system causal map
www.foresight.gov.uk/obesity
The key questions

Weight gain

Time (decades)
Figure 1—Calories From the U.S. Per Capita Food Supply, Adjusted for Losses, Increased 20 Percent Between 1982 and 2000

Calories per person per day
4,000
3,500
3,000
2,500
2,000

Total food supply available for consumption

1 Rounded to the nearest hundred.
2 Not calculated for years before 1970.
Source: USDA’s Center for Nutrition Policy and Promotion; USDA’s Economic Research Service.

Economic Research Service, USDA

FoodReview, Winter 2002 3

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Rise in food energy supply is more than enough to explain the rise in body weight in the US. Swinburn et al AJCN 2009
U.S. Food Waste

Per Capita Food Waste (kcal/d)

Solid Food Waste (EPA)

Food Waste (model)

Per Capita Solid Food Waste (kg/yr)

Year


Layers of determinants (1)

1. Individuals
   - Behaviours are the final common pathway for energy balance
   - ‘Normal people in an obesogenic environment’

2a. Food environment
   - Increasingly obesogenic
     • ↓Price, ↑Placement, ↑Promotion, ↑Products (very palatable)
   - Other food factors eg culture
Layers of determinants

2b. Physical activity environments
   - Slowly changing, mixed directions
   - Explains some differences between populations

3. Deeper social, economic, policy determinants
   - Social changes eg women working
   - ‘Normal businesses in an environment promoting consumption-based growth of the single bottom line’
   - Efficient/effective commerce promotes overconsumption (obesity and climate change)
Joining obesity and climate change
Food and beverage marketing to children

• ‘Obesity is a sign of commercial success but market failure’ (Moodie et al, Int J Ped Obesity 2006)
  – Debate about whether there is classic market failure (Crowle & Turner 2010)
  – Other (non-economic) reasons for regulatory restrictions on junk food marketing to children
    • Unethical and a failure to protect the rights of the child eg Sydney Principles (Swinburn et al Public Health Nutr 2007)
    • Public demand (>90% support regulations)
    • Precautionary Principle (face of ↑ childhood obesity)
Market failure reasons

1. Vulnerable population who warrant protection from ‘demerit’ goods
2. Power and information imbalance
   - Children versus persuasive, pervasive marketing (eg IMC)
3. Major time-preference inconsistencies
   - Short-term gratification vs long term goals
4. Externalities – to household and taxpayer
   - Debated on strict economic terms
Obesity prevention policy framework

Process: Strategic policy and leadership

Outputs:
- Policy instruments
  - Laws & regulations
  - Govt spending & taxing
  - Service delivery
  - Advocacy

Impacts:
- Supportive envs
  - Behav change
    - ↓ intake
    - ↑ PA

Outcomes:
- Health
- Economic
- Social
- Environmental

Monitoring, evaluation and research

Advocacy

Sacks et al Obesity Reviews 2008 (Adapted from: WHO Global Strategy on Diet, Physical Activity and Health: A framework to monitor and evaluate implementation)
Integrating different public health approaches to obesity prevention policies

- **Socio-ecological (upstream) approach**: Policies that shape the economic, social and physical (built and natural) environments. Includes policies that influence underlying determinants of health in society.
- **Lifestyle (midstream) approach**: Policies that directly influence behaviour (reducing energy intake and increasing physical activity). Includes policies that influence food environments and physical activity environments.
- **Medical (downstream) approach**: Policies that support health services and clinical interventions.

The diagram illustrates the process, output, impact, and outcome of these approaches, focusing on supportive environments, behaviour change, and the various dimensions of health (health, economic, social, environmental).
Obesity prevention: some observations

- 30 years of many reports but little progress
  - Contested causes and solutions, uncertain evidence, ‘policy cacophony’
- Very poor monitoring (hidden)
- Food system determinants: local to global
- Govt more likely to fund expensive programs than implement low-cost policies
- Major $$ commitment through COAG funding
- PHT and Blewett report – need action

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**Romp & Champ**

(Geelong) <5s

2004–’08

$100k for 12,000 children

Δ behaviours and environments

Δ state prevalence

↓ 1.8% (2) & 2.7 % (3.5) over 3 y

**Be Active, Eat Well!**

(Colac) 4-12

2002–’06

~1kg, 3cm waist over 3 y

Greater effect in lower SES children

No Δ ‘safety measures’

**IT’S YOUR MOVE!**

(E Geelong) 13-18

2004–’08

↓ 5.8 % over 3 years

Δ community capacity

Δ in school environments

No Δ behaviours

Δ state prevalence
ACE Modelling studies (R Carter & T Vos)

- Technical analyses
  - Assess costs & health impacts (DALYs) of agreed interventions
- Due process with stakeholders
  - Agree on interventions, assumptions, and implementation filters
- ‘What evidence would it take for policy-makers to act?’
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Target population</th>
<th>DALYs saved</th>
<th>Gross costs (AUD $m)</th>
<th>Net cost per DALY saved (AUD $m)</th>
<th>Strength of evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unhealthy food and beverage tax (10%)</td>
<td>Adults</td>
<td>170,000</td>
<td>1</td>
<td>Cost-saving</td>
<td>6</td>
</tr>
<tr>
<td>Reduction of advertising of ‘junk food and beverages to children’</td>
<td>Children age 0-14</td>
<td>37,000</td>
<td>0.13</td>
<td>Cost-saving</td>
<td>2</td>
</tr>
<tr>
<td>Front-of-pack traffic light nutrition labelling</td>
<td>Adults</td>
<td>32,000</td>
<td>4</td>
<td>Cost-saving</td>
<td>5</td>
</tr>
<tr>
<td>School-based education to reduce TV viewing</td>
<td>Primary school children (8-10)</td>
<td>8,600</td>
<td>27.7</td>
<td>Cost-saving</td>
<td>3</td>
</tr>
<tr>
<td>Multi-faceted school-based program including nutrition and physical activity</td>
<td>Primary school children (age 6)</td>
<td>8,000</td>
<td>40</td>
<td>Cost-saving</td>
<td>3</td>
</tr>
<tr>
<td>School-based education program to reduce sugar sweetened drink consumption</td>
<td>Primary school children (7-11)</td>
<td>5,300</td>
<td>3.3</td>
<td>Cost-saving</td>
<td>3</td>
</tr>
<tr>
<td>Family-based targeted program for obese children</td>
<td>Obese children (ages 10-11)</td>
<td>2,700</td>
<td>11</td>
<td>Cost-saving</td>
<td>1</td>
</tr>
<tr>
<td>Multi-faceted targeted school-based program</td>
<td>Overweight/obese primary school children (ages 7-10)</td>
<td>270</td>
<td>0.56</td>
<td>Cost-saving</td>
<td>3</td>
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<tr>
<td>Gastric banding – adults</td>
<td>Adults BMI &gt;35</td>
<td>140,000</td>
<td>120</td>
<td>5,800</td>
<td>1</td>
</tr>
<tr>
<td>Family-based GP-mediated program</td>
<td>Overweight/ moderately obese children (ages 5-9)</td>
<td>510</td>
<td>6.3</td>
<td>4,700</td>
<td>3</td>
</tr>
<tr>
<td>Gastric banding - adolescents</td>
<td>Severely obese adolescents (ages 14-19)</td>
<td>12,300</td>
<td>130</td>
<td>4,400</td>
<td>1</td>
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<tr>
<td>Multi-faceted school-based program without an active physical activity component</td>
<td>Primary school children (age 6)</td>
<td>1,600</td>
<td>51.2</td>
<td>21,300</td>
<td>3</td>
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<tr>
<td>Diet and exercise</td>
<td>Adults BMI &gt;25</td>
<td>3,000</td>
<td>140</td>
<td>28,000</td>
<td>1</td>
</tr>
<tr>
<td>Low fat diet</td>
<td>Adults BMI &gt;25</td>
<td>1,900</td>
<td>94</td>
<td>37,000</td>
<td>1</td>
</tr>
<tr>
<td>Active After Schools Communities Program</td>
<td>Primary school children (5-11)</td>
<td>450</td>
<td>40.3</td>
<td>82,000</td>
<td>5</td>
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<td>Weight Watchers</td>
<td>Adults</td>
<td>54</td>
<td>5</td>
<td>84,000</td>
<td>1</td>
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<tr>
<td>Lighten Up Healthy Lifestyle weight loss program</td>
<td>Adults</td>
<td>38</td>
<td>4</td>
<td>94,000</td>
<td>4</td>
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<tr>
<td>TravelSMART Schools</td>
<td>Primary school children</td>
<td>90</td>
<td>13.1</td>
<td>117,000</td>
<td>4</td>
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<tr>
<td>Orlistat</td>
<td>Adults BMI &gt;30</td>
<td>2,100</td>
<td>1,500</td>
<td>700,000</td>
<td>1</td>
</tr>
<tr>
<td>Walking School Bus</td>
<td>Primary school children</td>
<td>450</td>
<td>40.7</td>
<td>760,000</td>
<td>3</td>
</tr>
</tbody>
</table>
Interventions

• Policy interventions (usually effective and cost saving)
  – Priorities
    • Bans on junk food marketing to children
    • Public sector healthy food service policies
    • Traffic light front-of-pack labelling
    • Fiscal interventions (eg SSB tax, F&V subsidies)

• Programs (increasing evidence of effectiveness)
  – Systems-oriented, multi-setting, child-focused

• Health care interventions
Food Wars
The Global Battle for Mouths, Minds and Markets
Tim Lang and Michael Heasman
Agricultural revolution

Industrialisation of food

Chemical revolution

Transport revolution

Productionist paradigm

Food Wars

Life Sciences Integrated paradigm

Ecologically Integrated paradigm
Conclusions

• Obesity is a major and rising burden
• The increase in mean body weight is predominantly driven by ↑ energy intake
• Individuals respond ‘normally’ to an obesogenic environment
• Private sector responds ‘normally’ to the consumption-based growth policies
• Obesity: a commercial success but market failure
• Cost-effective policies are available and should be used as recommended
‘Productionist’ features

• *Drivers*: raise output, mass markets
• *Approach*: quantity, efficiency, monoculture
• *Science*: agriculture, chemistry
• *Policy*: agriculture (subsidies)
• *Consumers*: price, convenience, safety
• *Problems*:
  – Overconsumption; unsustainable; uni-dimensional; health, environmental & social impacts (externalised costs)
Life Sciences Paradigm

Individual health

Consumer choice

Food system

Personalised diet & medicine

Predisposition Testing Pharmaco-genetics

Genetic Inheritance Normal biology

Metabolism Gene expression
‘Life Science’ features

- *Drivers*: science, control food chain
- *Approach*: biotechnology (GM), monoculture
- *Science*: genetics, nutrition, biotech
- *Policy*: expert-led, trade/finance, challenges regs
- *Consumers*: individual health, functional foods
- *Problems*:
  - Unproven impacts; technology solutions (magic bullet); rich/poor divide; consumer resistance; sustainability; food industry as nutrition educators
Ecological paradigm

Economic capital

Natural capital

Food system

Human and Environmental health

Nutrients

Genes

Diet

Consumers

Choice

PA

Food culture

Social capital
‘Ecological’ features

- **Drivers**: environments, diversity, waste reduction
- **Approach**: local/regional, organic, internalise costs
- **Science**: ecology, biology, some technology
- **Policy**: partnership (govt, industry, civil society)
- **Consumers**: citizens, broad health definitions
- **Problems**: 
  - Unproven feasibility, weak political base (fringe); more difficult to quantify benefits; intensive local specialist knowledge; higher prices with internalised costs