Obesity & Socio-economic groups in Europe:
Evidence & implications for action

The Expert Group on Social Determinants and Health Inequalities
European Commission, DG Health & Consumer Protection,
Public Health & Risk Assessment, Unit C4 - Health Determinants
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Aim

to bring together information on the relationship between obesity and trends in obesity in relation to socio-economic groups in the European Population;
to review evaluations of policy measures and interventions to tackle obesity which take into account variations in prevalence by socio-economic group;
to make recommendations relevant to policies at European and national levels.
Methods & evidence reviewed

- Several databases (including Pubmed, CAB Abstracts, the Cochrane Library, Web of Knowledge) were used to identify relevant published literature.
- The Medline database 1997-2007 using search terms ‘obesity’, ‘prevention’ or ‘intervention’ and ‘inequality’ or ‘socio-economic’
- Systematic reviews of controlled interventions and other interventions;
- National evidence-based guidelines for reducing obesity;
- Primarily papers of European origin;
- Governmental reports & documents, unpublished reports & other publications;
- The database search was complemented by an extensive search for grey literature.
Main findings - epidemiology

• An unweighted crude estimate across 13 MS suggests 26% of obesity in men & 44% in women, is attributable to inequalities in SES

• Eurothine study (2007) (19 countries) - estimated 26% & 50%

• Martinez et al (1997) - estimated 13% & 45%
### Relative importance of inequality in overall obesity prevalence

<table>
<thead>
<tr>
<th>Country (SES indicator)</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
</tr>
<tr>
<td>Belgium (education)</td>
<td>60%</td>
</tr>
<tr>
<td>Denmark (education)</td>
<td>15%</td>
</tr>
<tr>
<td>Estonia* (income) age 25-34</td>
<td>-46%</td>
</tr>
<tr>
<td></td>
<td>age 25-44</td>
</tr>
<tr>
<td>Finland (education)</td>
<td>12%</td>
</tr>
<tr>
<td>France (household income)</td>
<td>59%</td>
</tr>
<tr>
<td>Germany (SES index)</td>
<td>47%</td>
</tr>
<tr>
<td>Greece (SES) age 20-39</td>
<td>50%</td>
</tr>
<tr>
<td>Malta (education)</td>
<td></td>
</tr>
<tr>
<td>Netherlands (education)</td>
<td>45%</td>
</tr>
<tr>
<td>Poland (education)</td>
<td>3%</td>
</tr>
<tr>
<td>Portugal (education)</td>
<td>41%</td>
</tr>
<tr>
<td>Sweden (education)</td>
<td>39%</td>
</tr>
<tr>
<td>UK England (income)</td>
<td>9%</td>
</tr>
<tr>
<td>UK Scotland (deprivation index)</td>
<td>11%</td>
</tr>
<tr>
<td><strong>Unweighted average</strong></td>
<td><strong>26%</strong></td>
</tr>
<tr>
<td>European Union 1997 (from Martinez et al\textsuperscript{68})</td>
<td><strong>13%</strong></td>
</tr>
<tr>
<td>European Union 1999-2004 (from Eurothine\textsuperscript{69})</td>
<td><strong>26%</strong></td>
</tr>
</tbody>
</table>
Evolution of SE gradient in adult obesity in France from 1997 to 2006

ADAPTED BY N. DARMON FROM THE FOLLOWING REPORTS:

Portugal – steep gradient in women

Portugal: obesity prevalence trends by gender and educational level

- under 6 yrs school
- 6 - 12 yrs school
- over 12 yrs school

Prevalence (%)

<table>
<thead>
<tr>
<th>1995-6</th>
<th>1998-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>men</td>
<td></td>
</tr>
<tr>
<td>women</td>
<td></td>
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</tbody>
</table>
Main findings - epidemiology

- Obesity & overweight in children associated with SES of parents, especially mothers

- Cross-country comparisons show prevalence of childhood overweight linked to MS’s degree of income inequality or relative poverty.
Child obesity and relative poverty

Source WHO and IOTF ($r=0.74$, $p<0.001$)
Main findings – Determinants of obesity

Food and Beverages
- Cost/price
- Taste and appearance
- Infant & young child feeding practices
- Food preparation skills
- Marketing
- Convenience
- Meals outside the home / catering
- Availability / access

Psychological and cultural
- Cognitive development
- Culture, attitudes
- Religion, moral beliefs
- Family influences
- Self esteem
- Health beliefs
- Peer pressure, bullying
- Discrimination at school and in the workplace
- Stress management
- Advertising and role models

Socioeconomic Status
- Education
- Employment
- Income
- Social isolation
- Social cohesion
- Welfare benefits

Physically active lifestyle
- Social environment
- Access to green spaces
- Urban design
- Transport system
- Land use patterns
- Leisure time activities
- School and workplace
- Pre-school play areas

Physiological
- Energy expenditure
- Pregnancy
- Taste development
- Brain development
- Medical & Dental health
- Genetic factors
- Appetite

Knowledge
- Nutrition & Physical Activity education through the life course
- Nutrition Labelling
- EU Health & Nutrition claims

INDIVIDUAL CHOICE

FOOD CONSUMPTION AND PHYSICAL ACTIVITY LEVELS

PHYSICAL AND MENTAL HEALTH STATUS

OBESITY
Main findings - determinants of obesity

• **Women more vulnerable than men in lower SEGs** – discrimination; employment; income; family gatekeeper; less physical activity; pregnancy; lower self-esteem

• **Women in lower SEGs** more likely to have under- or over-weight infants & less likely to follow recommended breastfeeding & infant feeding practices
Lifecourse: undernourished mothers, LBW infants & risk of obesity

- Elderly Malnourished
  - Inadequate food, health & care
  - Reduced capacity to care for baby
- Baby LOW Birth Weight
  - Inadequate foetal nutrition
  - Inadequate growth
  - Higher mortality rate
  - Impaired mental development
  - Early Weaning (Taste)
  - Frequent infections
  - Inadequate food, health & care
- Visceral obesity, H/T, Diabetes
  - Rapid Weight gain
  - Reduced mental capacity
- Child Stunted
  - Inadequate food, health & care
- Adolescent Stunted
  - Reduced mental capacity
- Woman Malnourished
  - Pregnancy
  - Low Weight Gain
  - Higher maternal mortality
  - Inadequate food, health & care

Adapted from James et al. SCN Millennium Rep. Food & Nutrition Bulletin, 2000, 21, 3S.
Lifecourse: Obese mothers, HBW infant and risk of obesity

- Elderly Diabetic, arthritic, Ob
- Reduced capacity to care for baby
- Disordered foetal nutrition
- Impaired mental development later
- Normal/high growth
- Impaired mental development later
- Early Weaning (Taste)
- Frequent fast foods
- Inadequate physical activity
- Reduced play and social isolation
- Poor school conditions
- Inadequate obstetric care
- Reduced job opportunities
- Inadequate health care system
- Visceral obesity, H/T, Diabetes
- Adult chronic diseases
- Mortality rate
- Adult chronic diseases
- Adult chronic diseases

- Baby HIGH Birth Weight
- Rapid weight gain
- Poor school conditions
- Inadequate obstetric care
- Reduced job opportunities
- Inadequate health care system
- Visceral obesity, H/T, Diabetes

- Pregnancy Glucose intolerance Diabetes
- Woman O/W - obese

- Reduced fertility; CVD, HT Cancers
- Early onset Type 2 Diabetes
Breastfeeding recorded at 6-8 wks by maternal age and SES
Main findings - interventions

- Few controlled interventions targeted at lower SEGs or the effect of intervention on different SEGs.

- Lower SEGs show less response to health promotion programmes & higher drop-out rates.

- Interventions are of short duration & fail to take account of ethnic & social diversity.
Main findings - interventions

• **Information alone** is relatively **ineffective** & may increase inequalities

• Exception to this is targeted support & information on breastfeeding
Intervention options for low SES obese women of reproductive age

- High gestational weight gain
  - High BMI before conception
  - Ever attempts to breastfeed
  - Events at delivery

- High BMI at delivery
  - Biological, medical, mechanical, psychosocial and socio-demographic factors
  - Early lactation failure
  - Retention of fat store after pregnancy
  - Eating habits and physical activity

Source: adapted from Prof K.M. Rasmussen, Cornell
Intervention options for infants of low SES women

Early cessation of breastfeeding and too early introduction of solid food

Formation of taste preferences

High birth weight - Risk of obesity

Low birth weight - Risk of stunting

Excessive infant growth and/or Abdominal obesity

Biological, psychosocial and socio-demographic factors

Primary health care and welfare benefits

Failed attempts to improve feeding practices

Overweight infant

Eating habits and physical activity

Overweight Young child
Main findings – policy review

• Lack of awareness of links between SES & obesity

• Health Sector alone is unlikely to reduce the social gradient in obesity

• Cross-sectoral population-wide policies are needed e.g. improved availability & access to food & physical activity; welfare & social benefits; fiscal policies (subsidies & taxes); controls on marketing
Supportive new policy initiatives

- EU Health Strategy - HIAP; Inequalities; Lifecourse approach;
- EU 2 White papers: Nutrition; Sport
- WHO 2nd Action Plan for Food & Nutrition Policy
- WHO Charter on Obesity
Main findings – gaps in our knowledge

- mechanisms of how food & nutrition insecurity & obesity can co-exist within SEGs

- % disposable income & absolute amount spent on food by SEG

- % income (& absolute amount) spent on food compared with cost of a healthy food basket & levels of obesity

- Measured heights & weights by SEG in MS

- Food & physical activity indices by SEG in MS
Main findings – gaps (cont.)

• **Welfare services** – more focus on diet & PA to support disadvantaged reproductive-age women

• More evidence on **effectiveness** of interventions in lower SEGs

• The **cost of interventions** to allow estimates of cost-effectiveness.
Key theme is prevention of escalating rates of obesity in next generation by reducing health inequalities and the social gradient in obesity.
Conclusions & Recommendations

A special initiative generated by DG SANCO and DG Employment, Social Affairs & Equal opportunities using OMC & NAPS could facilitate the establishment of a reporting system and effective responses from MS & EU.
Conclusions & Recommendations

• Monitoring & Target setting to evaluate interventions & policies e.g. weight of reproductive age women by SES; birth weight (both under- & overwt) by SES
Target is to reduce the under 75 coronary heart disease mortality rate (per 100,000) in the most deprived areas by 27.1% from 112.0 in 2003 to 81.7 in 2008. An average annual reduction of -6.1% is required to meet this target. During the first 2 yr the rate has decreased by 12.7% (from 112.0 in 2003 to 97.8 in 2005). If this continues the 2008 target will be met. Mortality rates in the most affluent areas also fell, but not as much as in the most deprived areas. The inequality ratio therefore decreased and so the inequality gap narrowed.
Conclusions & Recommendations

• Given that maternal obesity is a key determinant of the next generations health - & social gradient in obesity appears to be increasing

• EU guidelines for nutrition, PA, and weight gain during pregnancy are needed
Conclusions & Recommendations

• Investigate the co-existence of obesity & food/nutrition insecurity in children in lower SEGs

• Comprehensive pre-school & school policies because of increase in intelligence & IQ in children who are properly nourished

• Child health – better returns on investing while children are young
Conclusions & recommendations

• Intersectoral coordination mechanisms needed:

EU White paper “The Commission will set up a High Level Group focused on nutrition & physical activity related health issues. The objective of the Group would be to ensure that the exchange of policy ideas & practices between Member States takes place, with an overview of all government policies.”
## Conclusion & Recommendation

Population-wide action combined with life-course approach

<table>
<thead>
<tr>
<th>Age</th>
<th>Stage</th>
<th>Issue</th>
</tr>
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<tbody>
<tr>
<td>0—6 months</td>
<td>Post-natal</td>
<td>Breast-vs bottle-feeding to programme later health</td>
</tr>
<tr>
<td>6—24 months</td>
<td>Weaning</td>
<td>Growth acceleration hypothesis</td>
</tr>
<tr>
<td>2—5 years</td>
<td>Pre-school</td>
<td>Adiposity rebound hypothesis</td>
</tr>
<tr>
<td>5—11 years</td>
<td>1st school</td>
<td>Development of physical skills</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development of food preferences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development of independent behaviours</td>
</tr>
<tr>
<td>11—16 years</td>
<td>2nd school</td>
<td>Exposure to alternative cultures/behaviour/lifestyle/patterns (e.g. work patterns, living with friends etc.)</td>
</tr>
<tr>
<td>16—20 years</td>
<td>Leaving home</td>
<td>Health awareness prompting development of new behaviours</td>
</tr>
<tr>
<td>16+ years</td>
<td>Smoking cessation</td>
<td>Maternal nutrition</td>
</tr>
<tr>
<td>16—40 years</td>
<td>Pregnancy</td>
<td>Development of new behaviours associated with child-rearing</td>
</tr>
<tr>
<td>16—40 years</td>
<td>Parenting</td>
<td>Biological changes</td>
</tr>
<tr>
<td>45—55 years</td>
<td>Menopause</td>
<td>Growing importance of physical health prompted by diagnosis or disease in self or others</td>
</tr>
<tr>
<td>60+ years</td>
<td>Ageing</td>
<td>Lifestyle change prompted by changes in time availability, budget, work-life balance. Occurrence of II health.</td>
</tr>
</tbody>
</table>
“The greater prevalence of obesity among poorer social groups implies that efforts to counter health inequalities must take account of obesity; conversely, action on obesity must take account of socioeconomic factors. Obesity is not exclusively a matter of social class and inequality. The suggestion that it is primarily a feature of lower-income groups would be to disguise the society-wide character of the epidemic. However, efforts to combat obesity in lower-income groups will have positive consequences for both health and inequality”
EURO-PREVLOB
Prevention of Obesity in Europe

- Improve understanding of broad determinants of inequalities in obesity;
- Identify initiatives that can impact positively on determinants;
- Develop & pilot tools to assess impact of policies on determinants;
- Develop, disseminate guidelines & recommendations for best practice
Thankyou

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