Facts

- Obesity is defined as Body Mass Index over 30 kg/m², which records weight adjusted for height.
- Obesity is a serious public health threat in Scotland: affecting one in every four adults and almost one in five children.
- Two in every three adults in Scotland (65%) are overweight; people of normal weight in Scotland are now in the minority.
- Obesity rates in Scotland are amongst the highest in the world, even higher than in England.
- The current obesity crisis results from living in obesogenic environments: where relative inactivity and overconsumption of energy dense foods is too available, affordable and accepted.
- Although personal choices are important, obesogenic environments create dangerously high levels of obesity in the population.
- Obesity harms many aspects of health; it interferes with sexual function, breathing, mood and social interactions.
- Obesity also shortens life, increasing deaths from type 2 diabetes, heart disease and common cancers.
- In Scotland, obesity reduces productivity and physical activity; it increases sickness absence, and demand for health and social care services.
- The cost of obesity to the NHS in Scotland is huge, estimated between £360 million and £600 million annually.

Definition

On a population level, overweight and obesity are usually defined using Body Mass Index (BMI). BMI is a measure of whether a person is a healthy weight for their height. For most adults a BMI of 25 – 29.9 kg/m² is overweight and BMI over 30 kg/m² is obese.

BMI, calculated from a person’s height and weight, is the most effective population measure available as it is relatively accurate, simple and cheap for large population groups. However, there will always be exceptions to the rule; for example, people who are very muscular and pregnant women will be quite heavy for their height with a high BMI, but will not have the health risks of carrying extra fat mass. In such individual circumstances other measures can be used to provide a more accurate assessment of healthy weight.

Calculate your BMI

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\text{BMI} = \left( \frac{\text{your weight in kg}}{\text{your height in metres}} \right)^2
\]

Divide your answer again by your height in metres.
Monitoring Obesity in Scotland

Carried out annually, the Scottish Health Survey provides a detailed picture of the health of the Scottish population. Each year the survey provides BMI data for adults and children.

Routine Child Health Reviews which include height and weight are undertaken in Primary 1 (age 4 to 6) covering 92% of that population group. The resulting statistics report BMI annually.

In England the National Child Measurement Programme measures height and weight at reception (age 4 to 6) and year 6 (age 10 to 11).

Overweight and Obesity in Scotland

- Two in three (65%) adults aged 16-64 are overweight or obese (had BMI over 25)
- More than one in 4 adults are obese (28% had BMI over 30)
- Between 1995 and 2014, the proportion of adults categorised as obese (BMI 30+) increased by half, from 17.2% to 28%
- Since 1995, the proportion of the population which was overweight or obese (BMI 25+) increased from 52.4% to 65%
- Women have higher obesity rates than men (29% compared with 26%)
- Obesity increases with age, with almost 35% of men and 37% of women in the 65-74 age group being obese
- Obesity does not affect everyone equally.

Childhood Obesity in Scotland

- In 2014, 31% of children in Scotland (aged 2 to 15) were at risk of overweight or obesity; of which 17% were at risk of obesity and 14% at risk of overweight
- In 2014/15, almost 22% of Primary 1 children (aged 4 to 6) were at risk of overweight or obesity; of which 10% were at risk of obesity and 12% were at risk of overweight; this was slightly less than in 2005/6 (10.5% and 12.8% respectively), however these high rates have persisted relatively unchanged over the last decade
- The proportion of healthy weight Primary 1 children has not improved in the last 10 years (in 2007/8 and 2014/15 it was 77%)
- Children in Scotland living in two most deprived quintiles, are least likely to have healthy weight
- In 2014/15 in the least deprived areas 17% of Primary 1 children were classified as at risk of overweight and obesity compared to 25% in the most deprived areas

Obesity in Pregnant Women

Provisional 2015 data indicates that 21% of pregnant women in Scotland are obese at their first antenatal booking, with a further 28% classified as overweight.
Impact of Obesity

Obesity can have a negative impact on health as well as other aspects of life for adults and children reducing their overall quality of life. Obesity increases the risk of:

**Type 2 Diabetes**: Fat cells in the body, especially from fat tissue around waist, produce hormones and proteins that interfere with body’s cardiovascular and metabolic systems, increasing risk of type 2 diabetes. Obese women are 13 times more likely to develop type 2 diabetes than normal-weight women. 47% of type 2 diabetes is attributable to obesity.

**11 Common Cancers**: breast, womb (endometrial), bowel, pancreas, oesophageal, kidney, ovarian, prostate, gallbladder, liver and stomach. Hormones and proteins produced by fat cells are released into the bloodstream and carried around the body to many organs increasing the cancer risk. 29% of colon cancers, 14% of endometrial, 13% ovarian, 3% prostate and 1% rectal cancers are attributable to obesity.

**Cardiovascular disease**: hypertension, atherosclerosis, heart failure, ischaemic heart disease, ischaemic stroke. Obesity increases the risk of cardiovascular disease through causing high blood pressure and type 2 diabetes. 36% of hypertension, 18% myocardial infarction, 15% angina pectoris, and 6% of strokes are attributable to obesity.

**Alzheimer's disease** and dementia

**Gastrointestinal disorders**: gallstones, pancreatitis, liver disease, gastro-oesophageal reflux disease, irritable bowel syndrome. Gastrointestinal disorders are 2 to 3 times more common in obese individuals than in people of normal weight. 15% of gallstone cases are attributable to obesity.

**Infertility** in women and impotence in men. Losing weight improves women’s chance of getting pregnant and in men improves hormone imbalance and erectile dysfunction.

**Complications during pregnancy and birth**: miscarriage, gestational diabetes, high blood pressure and pre-eclampsia, blood clots, baby’s shoulders becoming “stuck” during labour, heavier than normal bleeding after birth.

**Musculoskeletal problems**: gout, osteoarthritis, and lower back pain are caused by the mechanical and/or metabolic strain of excess fat mass on the bones. 47% of gout and 12% of osteoarthritis are attributable to obesity.

**Mental health problems**: depression, bipolar disorder and anxiety are associated with obesity. Mechanisms are still being investigated and could include higher inflammation levels, insulin resistance, hormonal changes and social and cultural factors.

**Respiratory disorders**: asthma, chronic obstructive pulmonary disease, obstructive sleep apnoea are caused by mechanical factors and metabolic pathways related to obesity.

**Kidney disease**

**Premature death**: obesity reduces life expectancy by an average of 3 years; severe obesity (BMI > 40) reduces it by 8-10 years.

**Unemployment**

**Discrimination and stigmatisation**

Increased risk of hospitalisation. Severely obese people (BMI > 40) have been found to be 3 times more likely than those of healthy weight to need social care.

Healthy weight for all
**Additional Risks for Obese Children**

- Emotional and behavioural impacts: stigmatisation, bullying, low self-esteem, and school absence
- Breathing difficulties, increased risk of fractures, hypertension, early markers of cardiovascular disease, insulin resistance and psychological effects
- Risk becoming obese adults
- Higher risk of morbidity, disability and premature mortality in adulthood

**Causes of Obesity**

Obesity, understood as the accumulation of excess body fat, occurs when energy intake from food and drink is greater than the body’s energy requirements over a prolonged period.

An obesogenic environment promotes weight gain, acts on individual biology and psychology influencing individual lifestyles. Although personal responsibility plays an important role in weight gain, in obesogenic environments inactivity and overconsumption of energy dense foods are easy, affordable and widely accepted, making an unhealthy lifestyle the default option.

The Foresight Report for the UK Government identified 7 clusters of factors / behaviours that are contributing to obesity (termed a systems map):

- **Food Consumption** – characteristics of the food market in which consumers operate e.g. the level of food abundance and variety, the nutritional quality of food and drink, the energy density of food, and portion size
- **Food Production** – drivers of the food industry e.g. the pressure for profitability, the price of food, effort to increase efficiency of production; variables reflecting the wider social and economic situation in the UK e.g. purchasing power and societal pressure to consume
- **Individual Psychology** – psychological attributes e.g. self-esteem, stress, ‘demand for indulgence’, level of food ‘literacy’; variables related to the level of parental control and level of children’s control of diet
- **Social Psychology** – factors that have influence at the societal level e.g. education, media availability and consumption, TV watching; variables related to social norms around weight and body image
- **Physiology** – biological variables e.g. genetic predisposition to obesity, level of satiety and resting metabolic rate
- **Individual Activity** – individual’s or group’s level of recreational, domestic, occupational and transport activity, parental modelling of activity and learned activity patterns
- **Physical Activity Environment** – factors that may facilitate or obstruct physical activity e.g. cost of physical exercise, perceived danger in the environment and the ‘walkability’ of the living environment; variables that reflect cultural values associated with activity patterns

These clusters are interconnected. For example, some individuals may exhibit compensatory behaviour such as allowing themselves an energy-dense snack as a ‘reward’ after exercising.

This connectivity is important when designing/delivering interventions, as it may help to explain unexpected impacts or losses of impact due to mitigating effects of different factors/behaviours.
Scotland vs the World

- Obesity rates in Scotland are higher than in England: 65% vs 60% are overweight and obese, and 28% vs 24% are obese.
- Obesity rates in Scotland are the highest in the United Kingdom.
- Obesity rates in Scotland are among the highest in the developed world, with current projections suggesting that by 2030 rates could exceed 40%.
- A global analysis indicated that prevalence of obesity and overweight in children and adolescents in developed countries was 23%. The rate in Scotland is 31%.
- Scotland had the highest prevalence of obesity in pregnant women when compared to 11 other European countries (where BMI data is available). In 2010, a European comparison indicated that 21% of pregnant women in Scotland were obese. The next closest rate was Germany at 14% which has a similar age distribution for pregnant women as Scotland.
- If worldwide obesity trends continue, the probability of meeting the World Health Organisation’s global obesity target which aims for no rise in obesity above 2010 levels by 2025 will be close to zero.

Cost of Obesity in Scotland

- The annual cost to the NHS in Scotland of overweight and obesity is estimated to be between £360 million and £600 million.
- Average NHS costs for people with a body mass index of 40 (severe obesity) are estimated to be twice those for people with a BMI of 20 (within normal weight range). The costs to the health service of obesity and its comorbidities may be comparable to those attributable to smoking.
- Treating smoking-related illness costs NHS Scotland around £400 million per year. ASH Scotland estimated that societal costs of tobacco use in Scotland were nearly £1.1 billion.
- Healthcare expenditure is only part of the issue; there are also the indirect economic costs of overweight and obesity. The McKinsey Institute estimates that the cost to the UK is equivalent to 3% of gross domestic product ($73 billion).
- This analysis takes into account of the loss of productivity attributable to loss of life or impaired life quality, direct health care costs and investment to mitigate the impact of obesity.

REFERENCES

2. Information Services Division Scotland. Primary 1 body mass index (BMI) statistics Scotland - school year 2014/15. 2016.
REFERENCES


Obesity Action Scotland

Obesity Action Scotland was established mid-2015 to provide clinical leadership and independent advocacy on preventing and reducing overweight and obesity in Scotland.

Our main aims:
- To raise awareness and understanding of what drives obesity and the health problems associated with obesity and overweight with health practitioners, policy makers and the public
- To evaluate current research and identify strategies to prevent obesity and overweight based on the best available evidence
- To work with key organisations in Scotland, the rest of the UK and worldwide, to promote healthy weight and wellbeing

Overseeing our work is the Steering Group whose membership spans various disciplines involved in preventing and tackling obesity and its consequences: clinicians, public health experts, epidemiologists, nutritionists and dieticians, GPs and weight management experts.

There are four members of staff.

Further copies can be downloaded from our website