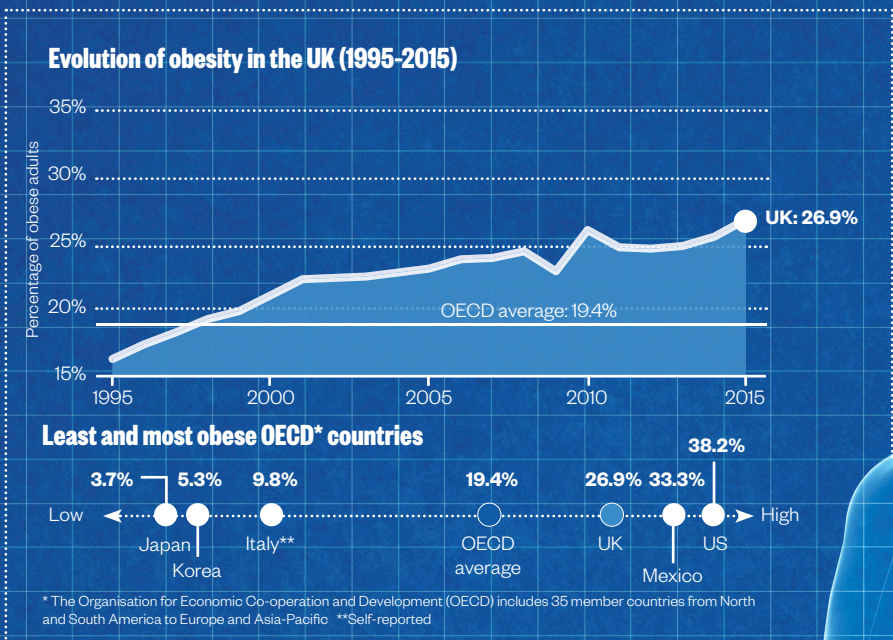


CHARTING OBESITY

In the UK, the prevalence of obesity is continuing to grow, bringing with it a whole host of hidden diseases affecting a number of body systems – from cardiovascular to skeletal.

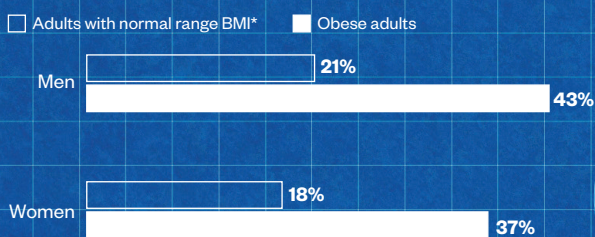
JULIA ROBINSON



CARDIOVASCULAR SYSTEM

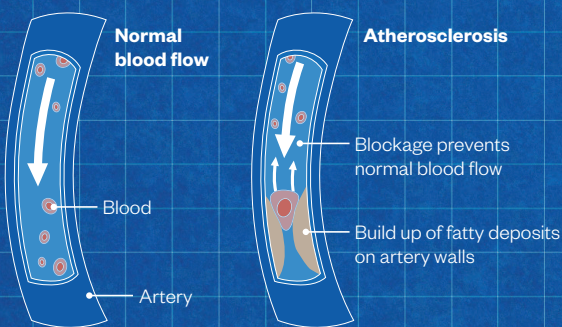
Obese individuals have more fatty tissue, which increases their vascular resistance and in turn increases the work the heart has to do. They are at greater risk of **hypertension** and **heart disease**.

Hypertension is twice as common in obese adults



Heart disease

Obesity can increase the risk of developing high cholesterol and a build-up of fatty deposits on the walls of the arteries around the heart (**atherosclerosis**).



DIGESTIVE SYSTEM

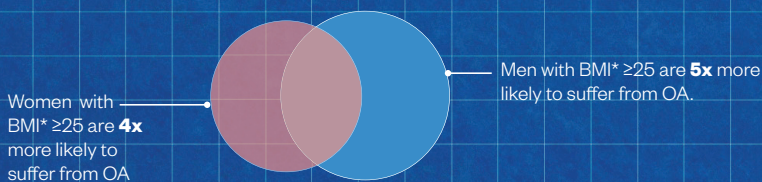
Obesity increases the risk of **gastro-oesophageal reflux disease (GORD)** because fat exerts pressure on the stomach. It also increases the risk of **gallstones** because of increased cholesterol in bile, and of **non-alcoholic fatty liver disease**.

30% increased risk of colorectal cancer in obese men and women



SKELETAL SYSTEM

Excessive loading of weight-bearing joints, such as the knees and hips, along with poor posture means that obese individuals are at an increased risk of developing **osteoarthritis (OA)**.



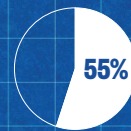
*Body mass index (BMI) is a surrogate marker of body fat which does not take account of factors such as age, sex, ethnicity, and muscle mass. BMI: <18.5 = underweight; 18.5–24.9 = normal; 25.0–29.9 = overweight; 30.0–39.9 = obese.

CENTRAL NERVOUS SYSTEM

Obese people are more likely to become depressed because of poor health or being unhappy with their appearance. In addition, people who are depressed are more likely to become obese because of physiological changes in the hormone and immune systems.



Risk of depression



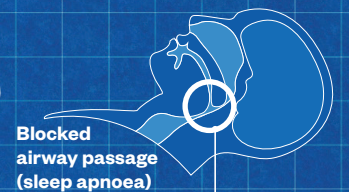
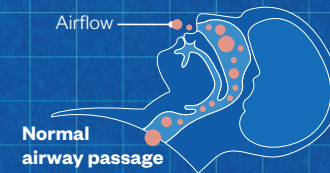
Risk of stroke



People who have depression have a **58%** higher risk of becoming obese

RESPIRATORY SYSTEM

Excess body fat around the neck and stomach can lead to breathing difficulties causing **sleep apnoea**. It is also thought that there is a link between obesity and asthma but the mechanisms are not fully understood.



50%-75% of individuals with obstructive sleep apnoea are obese

Excessive body fat increases the bulk of soft tissue in the neck, which can place a strain on the throat muscles. The soft tissue then blocks the airways, interrupting sleep

ENDOCRINE SYSTEM

Obese people have enlarged fat cells that contain more fat. This is associated with increased inflammation and impaired metabolic function, and can lead to insulin resistance, the hallmark of **type 2 diabetes**.

Prevalence of diagnosed and undiagnosed diabetes in adults



Risk of developing Type 2 diabetes



Men with BMIs* ≥ 30 have a **7x** increased risk of developing type 2 diabetes

Women with BMIs* ≥ 30 have a **12x** increased risk of developing type 2 diabetes

ADDITIONAL RISKS FOR WOMEN

Being overweight increases the risk of complications for pregnant women and their babies as well as making it more difficult to conceive

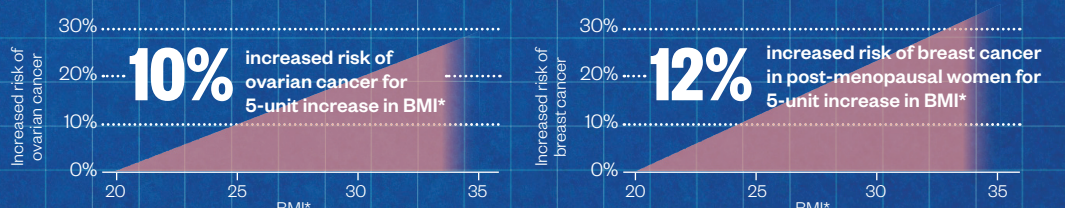


Risk of miscarriage



Cancer risks

Excess fat changes the levels of sex hormones, such as oestrogen, in the body which can increase the risk of cancer



Evolution of obesity in the UK: Organisation for Economic Co-operation and Development (OECD); Cardiovascular system: Obesity Action, NHS Digital; Digestive system: Obesity Action, National Institute of Diabetes and Digestive and Kidney Diseases, National Cancer Institute; Skeletal system: Johns Hopkins Arthritis Center; Central nervous system: Science Daily, Arch Gen Psychiatry 2010;67:227, Stroke 2010;41:e42; Respiratory system: NHS Choices, Thorax 2008;63:651; Endocrine system: Diabetes.co.uk, NHS Digital (2017), BMC Public Health 2009;9:16; Additional risks for women: National Cancer Institute, NHS Choices; Other: Asthma UK, BBC Science, National Obesity Forum, British Heart Foundation. Infographic: MAG. Editorial adviser: Terence Maguire, community pharmacist in Northern Ireland