Excess body weight and cancer policy report

Yorkshire Cancer Research

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Foreword

Sadly, people in Yorkshire are more likely to be diagnosed with cancer and face worse cancer outcomes than many other places in England.

However, we know that with the right support, many cancers are preventable. Every year, nearly 12,000 cancers diagnosed in Yorkshire are linked to a known risk factor, such as smoking, alcohol and excess body weight. The charity is working to address the preventable causes of cancer in order to reduce this number in our region and beyond.

Excess body weight is linked to many illnesses, including at least 13 different types of cancer. Maintaining a healthy weight can reduce this risk. Research also shows that living with obesity can impact on cancer outcomes, as it is associated with increased overall and cancer specific mortality, along with an increased risk of cancer returning.

In Yorkshire, levels of excess body weight have been higher than the national average since 2015/16. There is variation in our region, with some places recording some of the highest levels of excess body weight in the country.

We know that the risk of excess body weight is linked to a wide range of factors. Factors include a person's diet, the amount of physical activity they do and even their genetics. Our report also finds that there is a link between excess body weight and inequality; areas of greater deprivation in the UK are shown to have more access to unhealthy food choices and less access to healthy ones.

Dr Kathryn Scott
Chief Executive
Yorkshire Cancer Research

Following a review of the evidence, this report makes a series of policy recommendations, which all share the goal of making our society healthier and free from cancer. We need to make sure that everyone in our society has access to healthy food choices and opportunities for physical activity, from the earliest possible age.

Yorkshire Cancer Research exists so that more people in Yorkshire can live longer, healthier lives, free of cancer, and we do this by funding vital cancer research and innovative new services to help prevent, diagnose and treat cancer more effectively in Yorkshire.

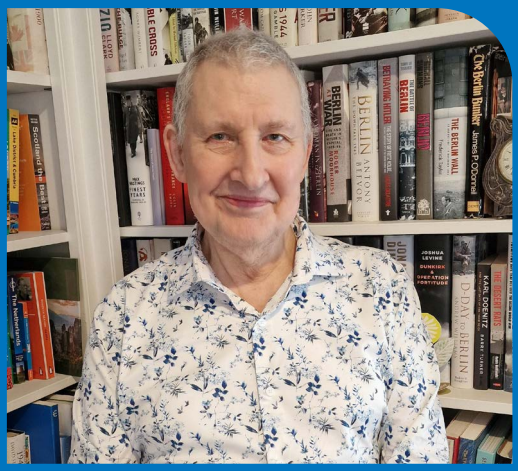
Patient and Public Involvement Panel foreword

Yorkshire is England's biggest county. It has a rich industrial heritage of steel making, coal mining and textile mills which brought with it a diverse community of people from around the world. But those industries when in decline brought with them deprivation and poverty and with it unhealthy eating, smoking and alcohol habits.

The mix of unhealthy eating and drinking habits and lack of physical exercise has led to our region having the fifth highest prevalence of excess body weight in England.

This report shines a spotlight on the links between excess body weight and cancer. More importantly, it gives hope in true Yorkshire style of bringing clarity to this issue and in offering pragmatic solutions to helping to improve food education, including mandatory labelling of nutritional content on foods and drinks, making healthier dietary choices in an affordable way for children and adults in deprived communities and in increasing opportunities for physical activity.

The Patient and Public Involvement Panel recommends you to read this report because it provides accessible remedies to helping us to reduce the risk of cancer in our society.



Robert Minton-Taylor
Public Contributor, Patient and Public Involvement Panel, Yorkshire Cancer Research

Excess body weight is linked to many illnesses including at least 13 different types of cancer. Nearly 12,000 people with cancer diagnosed in Yorkshire have cancers linked to a known risk factor such as alcohol, smoking and excess body weight.

Academic endorsements

Dr Phillipa Lally, Senior Lecturer in Psychology, University of Surrey
Prevention of excess body weight is a key challenge for society. To achieve this, it is essential that government make structural changes to create environments that support healthy diets and increased levels of physical activity. Reducing inequalities in access to healthy food is also imperative.

Professor Abigail Fisher, Professor Physical Activity and Health, University College London
Addressing obesity plays a crucial role in primary and secondary cancer prevention. Obesity is not an individual responsibility, it is a major societal problem, influenced by a complex mix of genetics, social and economic circumstances, environment, education, access to healthy affordable food and safe spaces for physical activity. A comprehensive obesity policy can guide preventive strategies, promote healthy lifestyle choices, and ensure equitable access to nutritious food and physical activity opportunities, so I am delighted to see this.

Professor Mark Hull, Professor of Molecular Gastroenterology, University of Leeds
This important Report highlights the ever-increasing burden of cancer related to excess body weight in our region, which does not fare well compared with other parts of England. Yorkshire Cancer Research is to be congratulated for putting forward Policy and research recommendations aimed at reducing excess body weight related cancer risk and outcomes.

Dr Natalie Pearson, Senior Lecturer in Behavioural Epidemiology and Public Health, Loughborough University
The latest evidence suggests that more than 1 in 10 children aged 4-5 years, and more than 1 in 5 children aged 10-11 years are living with obesity in England. These numbers are higher in Yorkshire. Children living with obesity are highly likely to become adults living with obesity, the time is now to work across multiple sectors of society to enable systems to be supportive of physical activity and healthy nutrition.

Our position

Living with excess body weight is linked to an increased risk of a number of health conditions, including at least thirteen different types of cancer. There are multiple biological, behavioural and environmental factors which interact to increase or decrease a person's risk of excess body weight.

Throughout this report, the term excess body weight is used. Excess body weight is defined as when a person's Body Mass Index is overweight and above. When excess body weight is used in this report, it refers to both overweight and obesity.

In health research, excess body weight has commonly been classified through Body Mass Index (BMI).[1]

To calculate BMI, a person's body weight (in kilograms) is divided by the square of their height (in meters).[2]

An individual's BMI is classified as one of five categories:[2]

- Between 18.5 and 24.9 kg/m2: Healthy weight
- Between 25.0 and 29.9 kg/m2: Overweight
- Between 30.0 and 34.9 kg/m2: Obesity Class 1
- Between 35.0 and 39.9 kg/m2: Obesity Class 2
- 40 kg/m2 or over: Obesity Class 3

It is important to acknowledge that there is debate as to the use of BMI in health research. Criticisms of this measure include that it does not account for other measures of health, that it does not consider body fat distribution or muscle mass, and that it is less accurate in predicting health risks in people from ethnic minority backgrounds.[3-5] Yorkshire Cancer Research will continue to review the latest literature regarding the use of this measure.

In recent decades, the number of people living with excess body weight has increased in Yorkshire and the UK. In Yorkshire, levels of excess body weight have been higher than the England average since comparable data began to be collected by the Active Lives Adult Survey in 2015/16.[6] Our region currently has the fifth highest prevalence of excess body weight in England.

Successive Governments have attempted to address rising numbers of people living with excess body weight. There have been 14 Government strategies and nearly 700 related policies since 1992.

Yorkshire Cancer Research welcomes recent Government policies to tackle childhood obesity rates, including the 9pm watershed for products high in fat, sugar or salt,[1] along with the ban of paid advertising online for these products.

Products are determined as being high in fat, sugar or salt through the Department of Health and Social Care's Nutrient Profiling Model.[7] This model allocates points on the basis of 100g of a food or drink product. Points are awarded for energy, saturated fat, total sugar or salt, which are then subtracted from points for fruit, vegetable and nut content, fibre and protein. Food and drinks scoring 4 or more points and drinks scoring 1 or more points are classified as a high in fat, sugar or salt product.

Yorkshire Cancer Research believes that Government can go further to reduce the prevalence of excess body weight in our society, by increasing access to healthy dietary choices, and reducing access to unhealthy ones. The charity supports the establishment of a new, long term strategy, which makes prevention a priority:

- Reporting on the nutritional content of the sales of large food companies should be made mandatory.
- A Sugar and Salt Reformulation Tax should be implemented. Yorkshire Cancer Research supports the proposal of the Government-commissioned National Food Strategy, which recommended a £3/kg tax on sugar and a £6/kg tax on salt which is used either in processed foods or in restaurants and catering companies.
- Government should invest in making healthier dietary choices more accessible and affordable to the general population, particularly for children and for people from deprived backgrounds.
- To encourage healthier dietary choices, Yorkshire Cancer Research recommends reform to the advertisement and labelling of food products.
- Healthy food choices should be incorporated throughout all of early years, primary and secondary education.
- Government should increase opportunities for physical activity for children.
- A national strategy should have a preventative focus. However, when people living with obesity require treatment, they should receive timely and appropriate levels of care.

Further research is required in the following areas:

- To better understand the biological mechanisms which link excess body weight with cancer.
- To better understand why obesity is associated with an increased overall and cancer specific mortality risk, yet for a small number of cancer types such as lung cancer, the opposite effect is observed.
- To develop targeted weight management interventions for people living with excess body weight following a cancer diagnosis.
- To better understand the causes of the link between ultra-processed foods and increased risk of excess body weight.
- To better understand how a person's genetics interact with their environment to determine their risk of obesity.
- To determine a simplified nutrient labelling model to be used in the UK, where consumers can clearly understand the healthiness of a food or drink product.

These policy and research recommendations support the reduction of the prevalence of excess body weight, whilst increasing understanding of the condition and its connection to cancer.

The national and regional landscape

Yorkshire has had a higher prevalence of excess body weight than the England average since comparable data began in 2015/16.[6] Presently in Yorkshire, 68.5% (2 in 3) of adults live with excess body weight, compared to 64.5% in England.[2] Levels of excess body weight vary significantly across the country. As shown in Figure 1, Yorkshire has the 2nd highest prevalence of excess body weight out of the 9 regions of England.

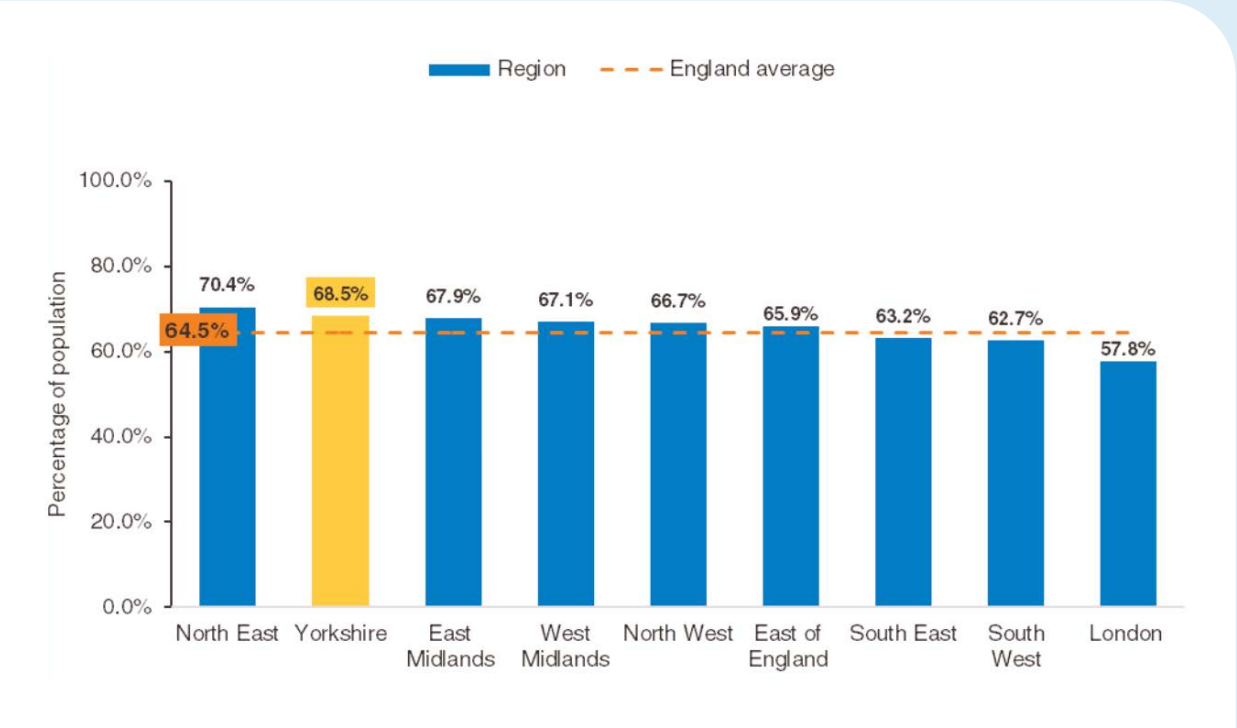


Figure 1. *Percentage of the population aged 18+ living with excess body weight (measured as overweight and obesity) by England region in 2023/24. The overall prevalence of excess body weight in England is shown by the orange dashed line.*

Within Yorkshire, there is variation in the prevalence of excess body weight. In Hull, 74.9% of the population live with excess body weight, compared to 60.1% in Sheffield.

Figure 2 shows the prevalence of excess body weight in Yorkshire and England over time. National and regional prevalence has been steadily increasing over the last 10 years. Yorkshire Cancer Research estimate that, if the annual rate continues to increase at the same rate, more than 8 in 10 adults in Yorkshire will live with excess body weight by 2040.

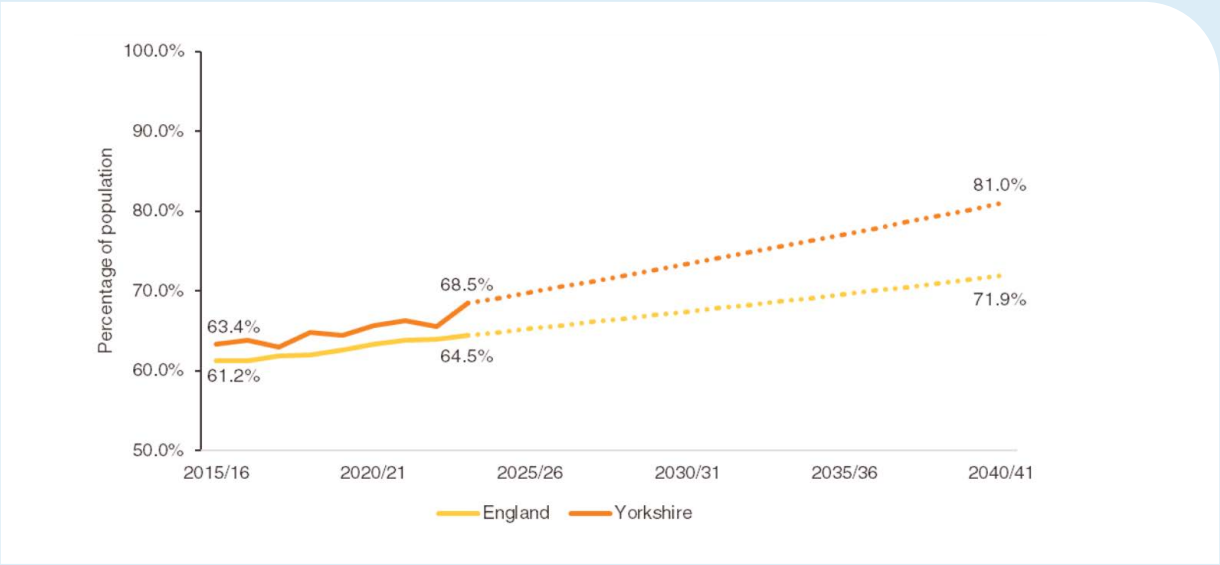


Figure 2. *Percentage of population aged 18+ living with excess body weight (measured as overweight and obesity) over time for England and Yorkshire and projected future percentage. Estimated projected figures are shown in dotted lines.*

Approximately 6% of cancer cases are attributable to excess body weight.[8] Yorkshire Cancer Research estimates that 2,004 new cancer cases every year are due to excess body weight in Yorkshire. It is estimated that 369 breast cancers and 447 bowel cancers are caused by excess body weight each year in Yorkshire.

As the prevalence of excess body weight continues to rise in the UK, the number of cancer cases attributed to this are likely to also rise. It is projected that excess body weight will overtake smoking as the leading cause of cancer among women by 2043.[9]

Economic impacts of excess body weight

The societal costs attributable to excess body weight are substantial. It is estimated that the cost of excess body weight in the UK is £97.9 billion annually.[10] This includes costs to the NHS, social care, productivity, welfare and individual costs. Obesity alone, excluding the costs of people who are overweight, is estimated to cost the NHS £11.4 billion and a total of £74.3 billion a year.

If rates continue to rise as projected, it is estimated that the cost of excess body weight could rise by approximately 10% to £109.4 billion a year by 2040.

The cost of obesity alone in Yorkshire is estimated at £6.3 billion a year. This is over £2 billion more than smoking costs Yorkshire annually. Yorkshire Cancer Research estimates that by 2040, the cost of obesity in Yorkshire will be £9.2 billion each year.

Excess body weight and cancer

The relationship between excess body weight and cancer risk

The International Agency for Research on Cancer (IARC) has assessed the relationship between excess body weight and cancer.[11] Their review brought together the results of over 1,000 studies on the link between excess body weight and cancer risk. It found that for 13 different cancer types there was 'sufficient' evidence to state that not living with excess body weight as an adult reduced cancer risk, in comparison with living with excess body weight:[11]

- Oesophagus: adenocarcinoma
- Stomach (gastric cardia)
- Bowel (colon and rectum)
- Liver
- Gallbladder
- Pancreas
- Breast (postmenopausal)
- Uterus
- Ovary
- Kidney (renal cell)
- Brain (meningioma)
- Thyroid
- Multiple myeloma

Research has calculated the relative risk of being diagnosed with various cancers for those living with excess body weight compared to those of a healthy weight.[8] The risk increases with the degree of excess body weight. For the above cancer types, the risk of being diagnosed was higher for people with overweight compared to people with a healthy weight. The risk increases further when looking at people living with obesity compared to the healthy weight group.

How does excess body weight cause cancer?

The 2016 IARC review identified mechanisms which partly explain the relationship between excess body weight and cancer.[11] These factors included alterations in inflammation levels, hormones and insulin.

Inflammation

The IARC review found strong evidence that chronic inflammation was linked to the relationship between excess body weight and cancer.[11] Chronic inflammation refers to a state of low grade, persistent inflammatory response in the body. Obesity has been recognised by the World Cancer Research Fund (WCRF) as a 'chronic inflammatory state' which increases cancer risk.[12]

There are different explanations for the association between excess body weight and inflammation, and in turn its links to cancer. As the degree of excess body weight increases, fat cells enlarge and become inflamed, releasing an increased amount of pro-inflammatory proteins called cytokines and growth factors.[13-15] Multiple cytokines are linked to cancer development through several mechanisms, including the activation of signalling pathways which increase cancer cell survival and division.[16,17]

Hormones

The IARC review also found strong evidence that changes in hormones were linked to the relationship between excess body weight and cancer.[11]

The production of the hormone oestrogen has been identified as a linking factor between excess body weight and breast, endometrial and ovarian cancers in postmenopausal women.[15] Androgen is converted to oestrogen at higher levels in postmenopausal women living with obesity.[18] Oestrogen is linked with cell mitosis, a process which sets up cell division.[19] The more that cells divide, the greater the chance of genetic error and cancer development.

However, for premenopausal women, research shows that excess body weight is in fact linked with a decreased risk of breast cancer.[20] One explanation could be differences in oestrogen, with studies showing significantly lower oestrogen levels in premenopausal women with excess body weight compared to those who were not.[21]

Insulin

Moderate evidence was found linking insulin to the relationship between excess body weight and cancer by the IARC review.[11] Insulin is a hormone produced by the body, which helps to manage blood sugar levels by transporting glucose to insulin dependent cells.

Research has shown that people living with obesity are more likely to be insulin resistant, which is when the body's cells do not respond properly to insulin that the body produces.[22] Obesity is also linked to hyperinsulinemia (an excess of insulin levels).[23] Increased insulin levels result in the increased production of the hormone insulin growth factor-1 (IGF-1), which is linked to cell division, growth and the survival of responsive cells.[24,25] Cell division is key to cancer formation and development.[24]

However, other researchers have questioned the link between weight, levels of insulin growth factors and cancer risk, with some studies showing that total concentrations of IGF-1 in fact increased following intentional weight loss.[26]

The microbiome, excess body weight and cancer

In addition to the factors above, there is a growing body of evidence to suggest that excess body weight and cancer could be linked by the gut microbiome. The gut microbiome refers to all of the genetic material from the microbes in the intestine.[27] Research shows that the composition of the gut microbiota changes with obesity, and that changes to gut microbiota composition may directly or indirectly promote cancer development.[28] For example, changes to the gut microbiota may contribute to chronic colonic inflammation.[28]

Further research is needed across each of these factors to develop understanding of how they are link excess body weight to cancer.

Excess body weight, cancer treatment and cancer outcomes

Excess body weight and cancer treatment

Excess body weight could potentially influence cancer treatment decisions and efficacy, though the evidence base is limited.[29] More research is needed to develop specific clinical guidelines for the surgical management of people with excess body weight and cancer.[29,30]

Living with obesity could also impact upon outcomes of cancer surgery. Research has found that living with excess body weight could increase the risk of surgical complications.[31,32]

Whilst obesity can increase the risk of complications from cancer surgery, the evidence as to whether interventions which promote intentional weight loss can improve cancer outcomes is currently inconclusive.[33]

Yorkshire Cancer Research's Active Together programme is a multimodal prehabilitation and rehabilitation service that offers free, personalised fitness, nutrition and wellbeing support for people who have received a cancer diagnosis. A proportion of the participants of the Yorkshire Cancer Research's Active Together programme were advised to lose weight by their surgeon prior to surgery.[34] In line with current evidence, Active Together dietitians have rarely recommended weight loss. Nonetheless, those who were advised to lose weight by their surgeons reported that Active Together had helped them safely meet the requirements to proceed with treatment.

Obesity and cancer outcomes

Research has identified a link between obesity and survival outcomes for cancer. A meta-analysis of 203 studies with more than 6.3 million participants found that obesity was associated with reduced overall and cancer-specific survival.[35]

The study identified various explanations for why obesity is associated with reduced overall survival rates in certain cancer types. These include hormonal factors, reduced physical activity, metabolic conditions and potential undertreatment in people with obesity.[35] Further research is needed to fully determine if the effect of reduced physical activity is independent of obesity.

However, for lung cancer and melanoma, living with obesity was associated with better all-cause and cancer specific survival rates in comparison to those without obesity.[35] This is known as the 'obesity paradox', which describes when the mortality risk of a disease (in this case cancer) is expected to increase with BMI but is instead reduced.

Cancer cachexia: expert guide

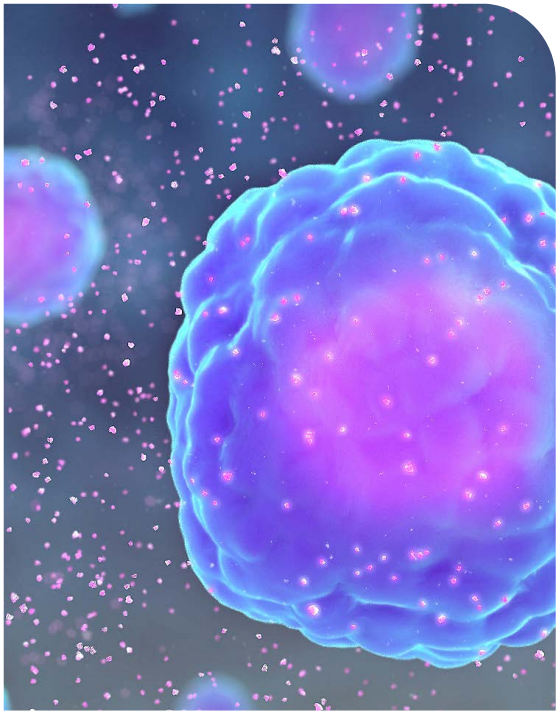
Dr Alex Bullock is the Trial Manager of the Yorkshire Cancer Research funded CANFit trial and a lecturer in Nutrition and Dietetics at the University of Hull. Dr Bullock is a Registered Dietitian and is an expert in cancer cachexia and sarcopenia, completing her PhD on this subject in 2022.

Cancer cachexia is a condition associated with advanced cancer, that can affect anyone with a cancer diagnosis, and results in the loss of skeletal muscle mass, with or without loss of fat mass.[36]

Cancer cachexia is a complex condition with multiple explanatory mechanisms, including a loss of appetite and metabolic changes.[37] Elevated levels of inflammatory proteins called cytokines in skeletal muscle can also lead to muscle wasting (increasing someone's risk of developing sarcopenia), a principal characteristic of cancer cachexia.[36]

Research shows that cancer cachexia can occur in people with excess body weight and that the condition can be masked by excess body weight.[38] People with cancer may live with excess body weight and lose skeletal muscle mass, therefore meeting the diagnostic criteria for cancer cachexia.

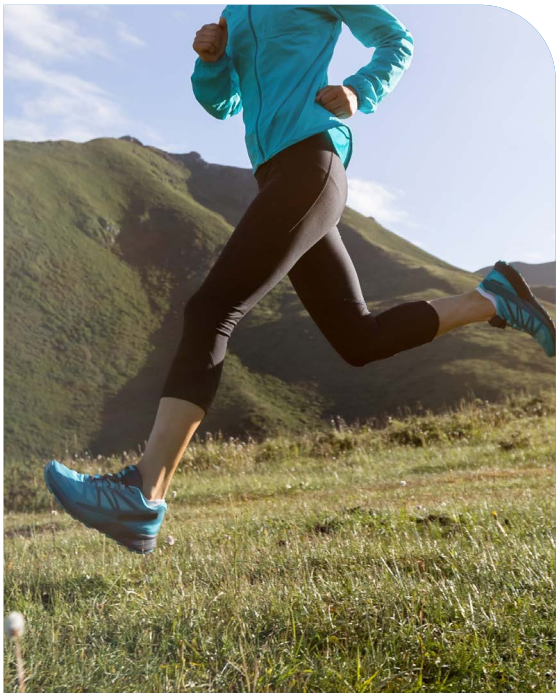
Studies have found that a significant proportion of people with cancer have sarcopenia, cachexia, or both conditions. Having one or both of these conditions increased the risk of worse health outcomes.[36,39]

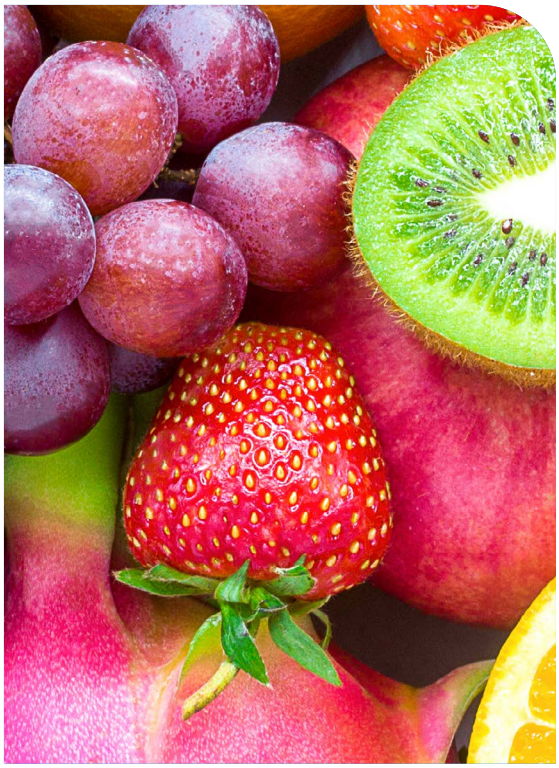


Weight management following cancer treatment

Research has shown the importance of maintaining a healthy weight following cancer treatment. Living with obesity following cancer treatment has been shown increase the risk of cancer recurrence.[35]

Living with obesity following cancer treatment can also impact upon a person's quality of life. Research has found that living with obesity after treatment is associated with the reduction of both physical and social functioning.[40]





Yorkshire Cancer Research's Active Together service integrates person-centred care and behaviour change methods to support participants to maintain lasting healthy lifestyle changes following cancer treatment. As a result, the physical activity levels of participants in the post-rehabilitation phase of the programme are higher than their pre-treatment fitness levels. In addition, the service has been shown to improve quality of life outcomes of participants, with 97% of participants reporting that Active Together had a positive impact on their health and wellbeing.[34]

Risk factors for excess weight

There are a range of biological, behavioural and environmental factors which increase or decrease the risk of excess body weight.

Diet

Weight gain is determined by calorie intake exceeding expenditure. The NHS recommends that on average, a woman requires 2,000 kcal per day and a man requires 2,500 kcal per day.[41] These guidelines are based on the average energy expenditure of adults in the UK.

A Western diet has been identified as a 'probable' cause of weight gain, and excess body weight by the WCRF.[42] This diet, which is most common in northern Europe, is typically characterised as featuring high amounts of the following: [42]

- Free sugars: Sugar sweetened beverages, fruit juices, desserts, chocolate, breakfast cereals
- Fat: Butter and cheese
- Meat: Red meat, poultry, processed meat

In Yorkshire and England, similar amounts of products high in free sugars and fat along with meat products are consumed per person per week.[43] By contrast, levels of fruit and vegetable consumption are low. In Yorkshire, 31.3% of adults meet the recommended consumption of 5 portions of fruit and vegetables per day.[44] Similar levels are evident in England, with 29.1% of adults meeting this recommendation.

There is variation in dietary habits across England by sociodemographic factors, including socioeconomic status and ethnicity.[45]

Many high fat and sugar products are energy dense and nutrient poor: providing high levels of energy and low levels of nutrients in comparison to their weight.[46] In contrast, low energy density foods include fruit and vegetables, which provide high levels of nutrients in comparison to their calorie density. Research indicates people tend to consume the same mass of food every day.[42] A high energy density diet could therefore increase the likelihood of 'passive overconsumption', whereby a person eats the same mass of food but with a significantly higher energy intake.[42] This can lead to a surplus of energy, resulting in weight gain.

Ultra-processed foods

One of the key developments of the global food system in recent decades has been the mass introduction of ultra-processed foods.[47] The global increase in levels of excess body weight has corresponded with a more industrialised food system.

An analysis of the UK National Diet and Nutrition Survey found that over half of the British diet consists of ultra processed foods, as seen in Figure 3.

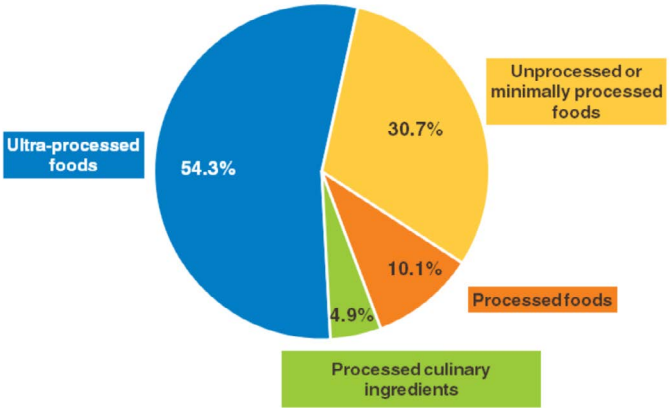


Figure 3. The proportion of total energy intake made up by NOVA food groups in the diet of the UK population aged 19 or over between 2008 and 2016.[48]

Figure 3 uses the NOVA classification.[48-50] This classifies food and drink products into four groups:

- Unprocessed or minimally processed foods (fruit or vegetables, grains, meat)
- Processed culinary ingredients (oils, butter, salt)
- Processed foods (cheese, vegetables in brine, canned fish)
- Ultra processed foods (soft drinks, confectionery, packaged breads, pre-prepared meals)

Ultra-processed foods typically have five or more ingredients, often including ingredients and processes that do not occur in home cooking such as dyes, colour stabilisers, flavour enhancers, processing aids, and pre-processing for frying.

There is evidence that ultra-processed foods are associated with risk of excess body weight.[51] Research has compared the effect of consuming a diet of ultra-processed foods compared to unprocessed foods, finding that ultra-processed foods were associated with increased caloric intake and weight gain.[52] There are several potential explanations for this result. Ultra-processed foods are associated with higher intakes of energy, free sugars and saturated fat along with lower levels of nutrients.[53] Other theories include that ultra-processed foods are more palatable, accessible and that they alter digestive processes.[54] Recent studies have proposed that the consumption of UPFs could alter the composition of the gut microbiota, the collection of microorganisms which live within the gut.[55] Changes to the gut microbiota may increase the risk of obesity.[56] However, evidence that ultra-processed foods directly cause weight gain is inconclusive.[53, 54]

Further research is needed to fully understand the links between ultra-processed foods and the increased risk of excess body weight. This would provide consumers with the ability to make informed, evidence-based decisions regarding their continued consumption of ultra- processed foods.

Physical activity

Physical activity is defined by the WHO as 'any bodily movement produced by skeletal muscles that requires energy expenditure'.[57] It is recommended that adults undertake a minimum of 150 minutes (2.5 hours) of moderate physical activity per week, or 75 minutes of vigorous physical activity per week.[58]

The proportion of adults who are physically active varies significantly across Yorkshire, ranging from 73.6% in York to 55.8% in Barnsley.[59]

The WCRF state that physical activity 'probably protects' against weight gain and excess body weight.[60] Physical activity is one of the key contributors to energy expenditure. Increasing the level of physical activity increases the level of energy use. If energy expenditure exceeds intake, the body uses stored fat cells as energy and weight will therefore be lost.

Genetics

Genetics affect the risk of obesity. NICE explains that a wide range of genes are associated with obesity and describe how genetics contribute between 40% to 70% of individual differences in obesity.'[61] Genetics can cause obesity either directly or indirectly. Genes can influence how effectively the body processes nutrients, or how full a person feels after a meal.

Further research is needed to develop our understanding of how a person's genetics interact with their environment to influence the risk of obesity.

Age

In England, people in middle to older age groups are more likely to live with excess body weight than those in younger age groups.[6] The age group with the lowest prevalence of excess body weight is 18-24 years (36.7%), with the highest prevalence in the 55-64 years age group (73.5%).[6]

There are several physiological changes in adulthood which can influence the risk of excess body weight. Firstly, there are changes in body composition. The amount and proportion of body fat changes during adulthood and is shown to peak in middle age.[62] Both body fat percentage and BMI peaks in the sixth decade of life and then begin to gradually decrease.

Childhood influences

In Yorkshire 23.5% of Year 6 children (aged 10 to 11) are living with obesity compared to 22.1% in England. There is significant variation in levels of childhood obesity within Yorkshire, ranging from a fifth of Year 6 children living with obesity in York (19.2%) to over a quarter in Hull (27.9%).[6] Rates of childhood obesity have increased in recent decades. In 1984, roughly 1.9% of Year 6 children were obese in the UK.[63]

Research shows that children and adolescents with obesity are approximately five times more likely to live with obesity in adulthood than children who are not.[64] Studies show that this relationship is influenced by the diet and physical activity habits formed in childhood.[65]

There is evidence highlighting the importance of the family and social environment for children's diet and physical activity levels. Research demonstrates that the health behaviours of a child's family can influence the risk of childhood obesity, emphasising the importance of focussing on the family to create lifelong healthy habits.[66] The school environment can impact the risk of childhood obesity. Overall health education programmes in schools result in small but significant reductions in BMI, through a number of mechanisms including the availability and accessibility of healthy food options and the provision of quality physical activity opportunities.[67]

Food environment

The food environment has been defined as 'the combination of the physical, economic, political, and sociocultural surroundings as well as the opportunities and conditions that can influence an individual's food choice'.[68] This can include food accessibility, affordability and quality.

A key aspect of the food environment is the type and location of retail outlets in proximity to different community settings. A study on exposure to fast food outlets in the UK found that exposure to these outlets was linked to higher BMI and greater risk of excess body weight.[69]

Data from 2024 shows that the number of fast-food outlets per 100,000 in Yorkshire is significantly higher than the national average, at 133 per 100,000 compared to 116 per 100,000. By region, this is the third highest rate in the country behind London and the North West.

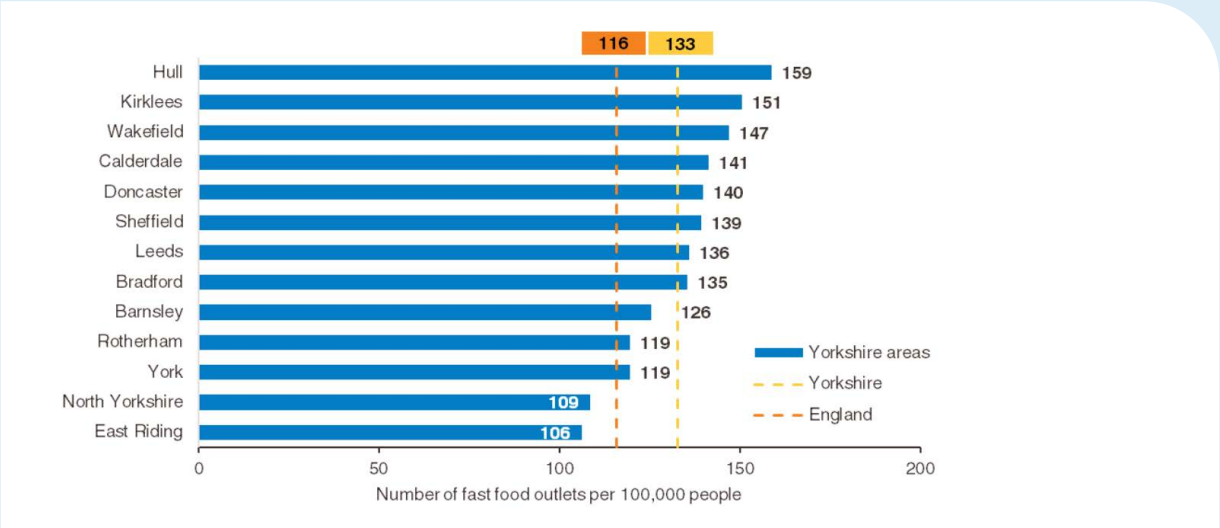


Figure 4. *The number of fast-food outlets per 100,000 people in the population by area in Yorkshire in 2024. The overall figures for Yorkshire and England are shown by the yellow and orange dashed lines.*[6]

Approximately 6% of cancer cases are attributable to excess body weight.[8] Yorkshire Cancer Research estimates that 2,004 new cancer cases every year are due to excess body weight in Yorkshire. It is estimated that 369 breast cancers and 447 bowel cancers are caused by excess body weight each year in Yorkshire.

On the other hand, the closer proximity of supermarkets has been shown to result in significantly lower levels of obesity, because they enable healthier food choices, increasing access to products including fruit and vegetables.[70]

Built Environment

The built environment is about the accessibility of green spaces and the walkability of residential areas. The built environment is an important risk factor for excess body weight because it provides either opportunities or barriers for physical activity. This is shown to have a 'probable' protective effect against the risk of excess body weight.[42]

Research has examined the link between access to green spaces and the risk of excess body weight.[2] A meta-analysis found that the majority of studies showed that exposure to green spaces in residential areas was linked to lower risk for both adults and children.[71] Within Yorkshire, there is significant variation in the provision of green spaces, ranging from 3.5% to 33.6% of the population who are not within a ten-minute walking distance of a green space.[72]

[2]Green spaces are defined as any publicly accessible park, garden, informal recreational space, children's playground, formal sports areas such as multi-use games areas (MUGA), tennis courts and playing fields.

Health inequalities and the risk of excess body weight

The section will explore the relationship between excess body weight and health inequalities, such as gender, ethnicity and socioeconomic status.

Socioeconomic status

The risk of childhood obesity is shown to be linked to deprivation. Data from 2023/24 on obesity levels in children in Year 6 shows that childhood obesity in England's most deprived areas was over double the obesity rate found in the most affluent areas.[73] This was also the same within Yorkshire & the Humber, with 29.2% of Year 6 children in the most deprived decile living with obesity compared to 12.9% of those living in the least deprived decile. A similar pattern is observed in adulthood for excess body weight: for 2022/23, 71.2% of English adults from the most deprived areas were overweight or obese, compared to 59.4% of adults in the least deprived.[74] In Yorkshire, a third of the population live in the most deprived 20% of areas.[75]

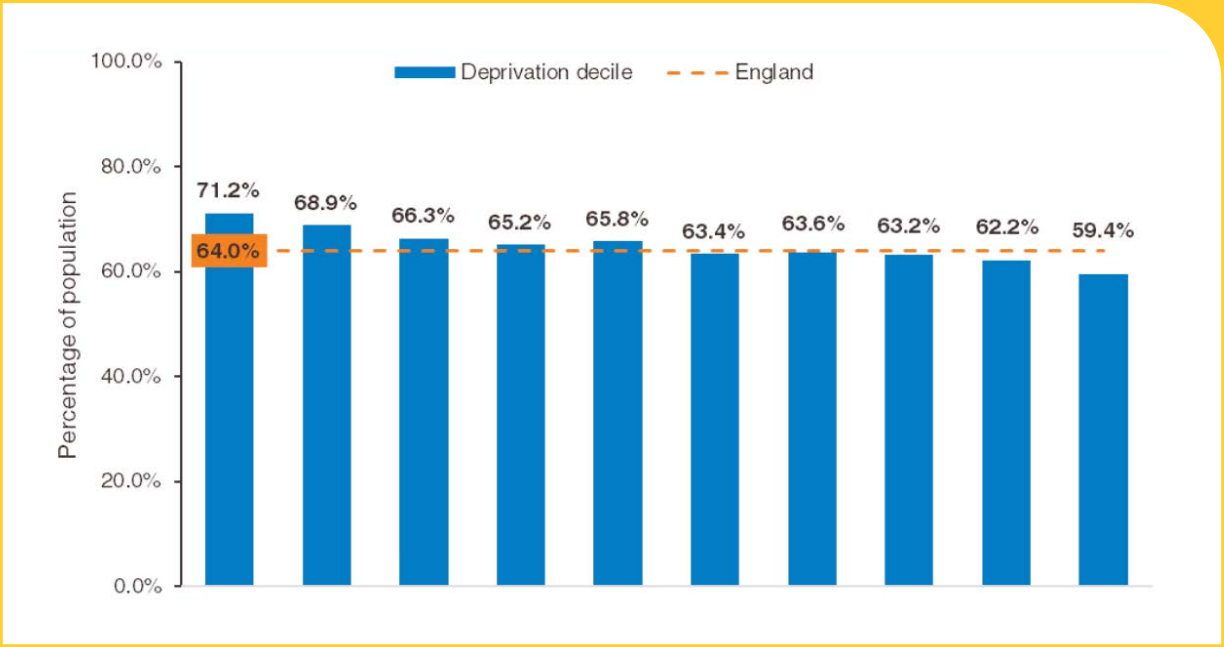


Figure 5. *Percentage of the population aged 18+ living with excess body weight (as measured by overweight and obesity) in each deprivation decile in England in 2023/24. The overall England figure is shown by the orange dashed line.*[6]

Groceries have been shown to take up an increased proportion of the household budget of families experiencing deprivation.[76] In the lowest income quintile, 14.4% of household expenditure was spent on food and non-alcoholic drinks, compared to 8.5% for the highest income quintile.[77] This has a number of impacts on people living in deprived areas, including on their risk of excess body weight.

Healthy food choices are less affordable to the people from the most deprived backgrounds compared to the least. The Food Foundation estimates that the most deprived fifth of the population would need to spend 45% of their disposable income on food to afford the NHS Eatwell Guide recommended healthy diet.[78] This rises to 70% of disposable income if the household has children.

Geographic access to healthier choices is also an issue for people living in deprived areas. A report found that 8% of deprived areas in England lacked supermarkets and transport links, limiting people's access to fresh fruit and vegetables.[76] These areas are known as 'food deserts'.

In contrast, people living in deprived areas have greater access to unhealthy food choices. In the most deprived fifth of areas, 31% of all places to buy food are fast food outlets, compared to 22% in the least deprived fifth.[78]

Greater affordability and availability of unhealthy food and drink for people living in deprived areas can contribute to dietary choices which increase the risk of excess body weight. Research shows that children from the most deprived income quintile consume 20% less fruit and vegetables per day than the least deprived.[78] Children from the most deprived quintile were also less likely to consume oily fish, fibre and other foods with known health benefits.[79]

Deprivation is also linked to the physical activity levels of children and adults. Children from a less affluent background were less likely to meet the national guideline of 60 minutes of physical activity per day.[3,80] In the least deprived areas, 75.1% of adults aged between 16 and 74 record at least 150 minutes of physical activity, compared to 53.8% of adults in the most deprived areas.[81]

Sex

In England, the prevalence of excess body weight is higher among men than women. In 2022, 69.2% of men and 58.6% of women were living with excess body weight. A similar proportion of males and females live with obesity at 26.2% and 26.9% respectively.[82]

One key factor which could explain differences in the prevalence of excess body weight between men and women in England is that there are gender differences in diet. The National Diet and Nutrition Survey, published in 2021 finds that on average, men aged between 19 and 64 consume higher amounts of meat, free sugars and saturated fats than women aged between 19 and 64. Each of these food types contribute to an increased risk of excess body weight.

Ethnicity

In England, variation can be observed in the levels of excess body weight of people from different ethnic backgrounds. The prevalence of excess body weight is highest in the Black (73.4%) and White British (65.7%) aggregated ethnic groups. These are the only two groups that are higher than the England average (64.5%). All other aggregated groups (Asian, Chinese, Mixed, White Other, Other) are below the England average, with the aggregated Chinese group having the lowest prevalence (32.3%).[6]

[3]In the Sport England Active Lives Children and Young People survey, affluence is measured by children and young people by questions about their family life and their home.

Clinical interventions and guidelines

The National Institute for Health and Care Excellence (NICE) recommends that people are supported to achieve and maintain a healthy weight.[83] The main recommended approaches to weight management interventions are dietary approaches, physical activity, behavioural change, weight loss surgery and weight loss medications.

Dietary approaches

NICE recommends that dietary approaches to weight loss should be flexible and individualised taking into account people's preferences, including circumstances, existing dietary restrictions and other health issues. For adults, NICE recommends that dietary management approaches should aim to keep the person's total energy intake below their energy expenditure.

Physical activity

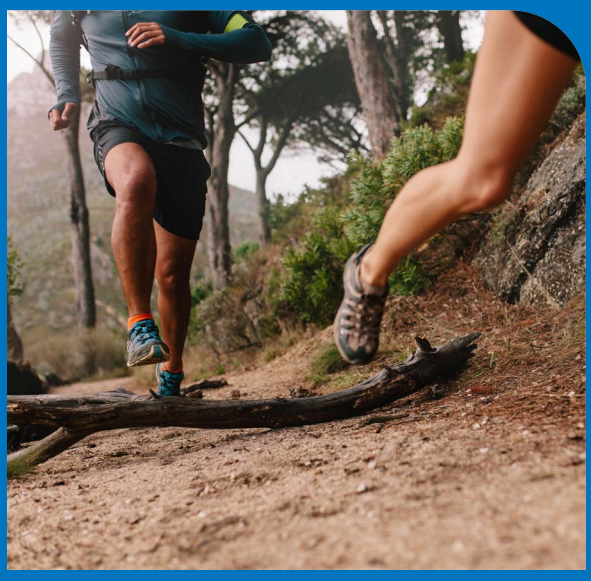
NICE recommends that physical activity should be encouraged for both children and adults even if it does not result in weight loss due to wider health benefits. For adults, NICE recommends that weight loss strategies should aim to incorporate physical activity into everyday life, for example through walking, cycling and gardening. NICE also recommends supervised physical activity programmes. Children should be given the opportunity and support to include more physical activity into their daily activities as well as more regular structured physical activity such as football or dance.

Behaviour change

Behaviour change interventions aim to reduce a person's energy intake and increase their levels of physical activity. Behaviour change is important not only for active weight loss but also healthy weight maintenance. This intervention is built around developing good habits and changing lifestyles.

Weight loss surgery

Weight loss surgery (or bariatric surgery) makes the stomach smaller, so it feels fuller sooner and less food is eaten. People living with obesity should only be offered weight loss surgery if they have a BMI of 40 kg/m2 or more, unless they are living with a significant health condition that could be improved if they lost weight.



Weight management services in Yorkshire

Varying intensities of weight loss interventions are divided into four tiers:

Tier 1 – Universal interventions

Tier 1, universal interventions are provided by local and regional public health teams and is often comprised of public health campaigns promoting prevention, healthy eating and physical activity messages.[86]

Tier 2 – Lifestyle weight management services

Tier 2 services are community-based services which provide a combination of dietary, physical activity and behavioural change interventions. Tier 2 services should aim to increase levels of physical activity and reduce energy intake, encouraging participants to follow Government guidelines on healthy eating.[87]

Tier 3 - Specialist weight management services

Tier 3 services are specialist weight management services, led by a multidisciplinary team. These services support participants to lose weight through dietary improvements, increased physical activity and behavioural changes.[88] Currently, weight loss medications are generally delivered at tier 3 and tier 4 services.[89]

Tier 4 - Severe and complex obesity services

Tier 4 services provide weight loss (bariatric) surgery and medications alongside specialist weight management programmes. Tier 4 bariatric surgery should only be considered for individuals who are living with class 3 obesity (or class 2 if they also have type two diabetes) and who have previously been treated in a tier 3 specialist weight management service.[90]

Variation in provision

The provision of tiers 1 and 2 is the responsibility of local authorities and provision of tiers 3 and 4 is the responsibility of Integrated Care Systems (ICSs).

A 2025 study which submitted freedom of information requests to all ICSs in England to evaluate the provision of tier 3 and 4 weight management services found that there is significant variation in access and eligibility for services across the country.[91]

Of the 41 out of 42 ICSs that responded to the question on tier 3 services, 83% stated that they commissioned a tier 3 specialist weight management service. Within Yorkshire, Humber and North Yorkshire ICS and South Yorkshire ICS both commission and deliver tier 3 services within their area. However, West Yorkshire ICS do not commission a tier 3 service.

The study found that 38 of the 41 ICSs who responded funded bariatric surgery. All three Yorkshire ICSs commissioned a bariatric surgery service within their catchment area.

Policy landscape

For decades, successive Governments have sought to address the challenge of rising rates of excess body weight. The scale of this effort is illustrated by an analysis which identified a total of 14 obesity strategies and 689 obesity-related policies from 1992 to 2020.[92]

Labour administration 2024-29

As part of its Child Health Action Plan, the Labour Party committed to a 9pm watershed for junk food advertising on television, and to ban paid advertising of less healthy foods on online media aimed at children.[93] The Labour Party also pledged in its manifesto to introduce free breakfast clubs in every primary school. A total of 750 schools will be selected as pilot schools for the new programme, beginning in April 2025.[94]

The Government has also introduced a series of reforms to the NHS. The 10 Year Health Plan aims to deliver the Government's national mission of an NHS that is fit for the future. It pledges to address the causes of ill health, to support people to stay healthy and independent for longer and reduce the pressures on the NHS.

The Government has also introduced plans for elective care reform, which state that only patients are confirmed in pre-assessment as fit to proceed would progress to surgery. However, this rule does not apply to cancer operations.

Whilst these actions are welcome, there is yet to be a Government strategy. Yorkshire Cancer Research establishes its priorities for a strategy in the 'Policy recommendations' section.

Sugar and Salt Reformulation Tax

In recent years, there have been calls for a more comprehensive health tax to encourage the reformulation of high fat, sugar or salt products by the food industry. In 2024, the Food, Diet and Obesity Committee recommended the implementation of a Sugar and Salt Reformulation Tax.[97]

This tax was first proposed by the National Food Strategy, an independent review of the UK's national food system which was commissioned by the Government in 2021.[98] This review found that foods and drinks high in fat, sugar or salt were more affordable, profitable and advertised than healthier products.

The National Food Strategy recommended a Sugar and Salt Reformulation Tax.[99] This would introduce a £3/kg tax on sugar and a £6/kg tax on salt sold for use in processed foods, catering businesses and restaurants. The tax would also apply on the imports of processed foods. A three-year implementation period was proposed, to encourage the reformulation of products by industry.

An analysis using Government modelling suggests that this tax could halt the trend of weight gain at a population level in the UK, and save an estimated 400,000-1,030,000 quality adjusted life years (QALYs) over 25 years.[99, 100]

It is estimated that this tax could save the NHS between £1.6-£4.1 billion. The economic output of the UK was also estimated to increase by between £2.2-£5.7 billion because of a healthier workforce and the consequent increase in productivity.[99] The National Food Strategy estimates that the tax itself could provide an additional £2.9bn - £3.4bn of revenue to HM Treasury.[99]

One of the key challenges of implementing the Salt and Sugar Reformulation tax is the financial impact, particularly on low-income households. The impact of the tax on low-income households could be mitigated. For example, the tax revenue could be used to increase investment in the Healthy Start Scheme. This scheme offers women, who are pregnant or have a child under the age of four, certain benefits to buy fruit, vegetables, pulses, milk and infant formula. The Food, Diet and Obesity Committee propose increasing the value of the prepaid card to account for inflation since 2021, enabling auto-enrolment into the scheme, and widening eligibility to all households earning under £20,000 with a pregnant woman or children under five.[97]

Reporting

The National Food Strategy illustrates how selling unhealthy products compared to healthy ones is more profitable to the food industry.[79] High fat, sugar or salt products generally tend to be more durable than perishable products. As a result, they are often produced, stored and sold in high volumes, enabling manufacturers to maximise profit.

In this context, there is a lack of transparency within the food and drink industry about the healthiness of products sold. Currently, manufacturers do not have to report on the healthiness of their sales. The Food Foundation report that only 1 in 4 major UK food companies do so.[101] The National Food Strategy recommend mandatory reporting for food companies with over 250 employees.[99] Companies should report on:

- Sales of food and drink high in fat, sugar or salt, excluding alcohol.
- Sales of protein.
- Sales of fruit and vegetables.
- Sales of fibre, saturated fat, sugar or salt.
- Food waste.
- Total food and drink sales.
- This could increase the accountability of food companies by encouraging self-regulation and ambitious targets.

Product advertising

The Government has recently committed to a 9pm watershed for advertisements of high fat, sugar or salt products. In addition, the Government has confirmed that there will be a total ban on paid advertising online for products high in fat, sugar or salt. These policies will come into force on 1 October 2025. They are intended to reduce the number of advertisements for high in fat, sugar or salt products that are viewed by children.

Whilst these actions are welcome, the scale and impact of unhealthy food advertising in the UK remains incredibly high. It is estimated that children were exposed to 15 billion online adverts for high fat, sugar and salt products in 2019.[97]

In 2024, the total spend on traditional media advertising on food and drink products in the UK was £1.235 billion.[78] £444.8 million (36%) was spent on foods including confectionery, snacks, desserts and soft drinks. By contrast, £24.9 million is spent on advertising for fruit and vegetables, representing just 2% of the total spending on food advertisements. The impact of advertising challenges the ability of the Government to address rising levels of excess body weight. Research has shown that advertisements can influence diet from childhood onwards.[102]

The prevalence and impact of advertising has led the Food, Diet and Obesity Committee to call for a complete ban on all physical and digital advertising of products high in fat, salt or sugar by the end of the Parliament.[97]

Product promotions

Legislation to restrict high fat, sugar or salt promotions in physical stores by location was introduced in October 2022. However, the Food, Diet and Obesity Committee found implementation and enforcement of restrictions has been inconsistent and limited to date. The Committee recommends a review on the implementation of location promotions to close loopholes.[97]

The Government will also implement a ban on volume promotions of high fat, sugar or salt promotions in October 2025. The Food, Diet and Obesity Committee recommend that the restrictions should move further to restrict other forms of price promotions.[97]

Yorkshire Cancer Research's full evidence review shows that ultra-processed foods are linked with an increased risk of living with excess body weight. Therefore, an option for further reform to product promotions is to extend restrictions on volume promotions to all ultra-processed foods.

Product marketing and labelling

Businesses frequently market food and drink products with exaggerated health claims. Research found that 57% of 500 commonly consumed food and drink products which had health claims are in fact high in fat, sugar or salt.[103]

The evidence demonstrates the need for greater clarity on the nutritional content of products. Currently, the UK nutritional labelling scheme is voluntary. Under this scheme, pre-packed foods have front of pack labelling, which shows the nutritional content of a product and a traffic light system on whether the product contains high, moderate or low amounts of a nutrient.

The Food, Diet and Obesity Committee highlighted inconsistencies in this voluntary system.[97] Companies can display unrealistic serving sizes or make labelling deliberately small on products, making customers less likely to consider the nutritional content of the products they consume. This system may also lead to customers underestimating the dietary content of products.

Research has found that other labelling systems have proven more effective at informing consumers the nutritional content of products. For example, the Nutri-Score system orders food products into five categories of quality, from category A to category E.[104] The score is calculated through points for the content per 100 grams of energy, saturated fats, sugars, salts, fibres and proteins, and fruits, vegetables, legumes and nuts.

The Committee also considered the adoption of a warning label system for ultra-processed foods, which would more clearly distinguish this product type to consumers.

Online delivery services

One significant change to the food environment in recent years has been the expansion of the digital food environment. Companies such as Deliveroo and Uber Eats operate primarily as an online platform, providing food companies with a third party delivery network.[105]

The Obesity Health Alliance has identified the growth of online only delivery services as an area of concern, because of their potential to increase access to high fat, sugar or salt foods.[105]

Legislation has not kept pace with the rapid development of online delivery services. The Food, Diet and Obesity Committee recommend banning online delivery apps from having price promotions of high fat, sugar or salt products, bringing these companies in line with physical retail stores.[97]

Further research is needed to understand the scale of the online only delivery service model, its impact on the risk of obesity, and how policy recommendations could mitigate this risk.

Childhood nutrition and physical activity policy

Areas of child nutrition policy present challenges and opportunities to address childhood obesity rates.

Nutritional standards

Increasing nutritional standards across educational settings could reduce childhood obesity rates.

The Government has reported that the use of processed fruit ingredients in commercial infant foods meant that some had a higher sugar content than biscuits or sweet confectionary products.[106] To address high sugar levels, the Food, Diet and Obesity Committee recommend mandatory nutritional standards for commercial infant foods.[97]

Standards for food and drink products offered in early years settings are not mandatory. Standards differ between local authorities, with many operating with insufficient funding.[107] The Food, Diet and Obesity Committee recommend an updated set of mandatory nutrition guidance for early years settings. Local Authorities should receive the levels of funding needed to deliver these guidelines.

In schools, reporting on food standards is not currently mandatory, leading to highly uneven provision nationwide. Accreditation systems could also help to raise school food standards. For example, the Soil Association's Food for Life scheme is currently partnered with a quarter of all primary schools in England.[108] This scheme encourages freshly prepared, healthy food and drink in schools. If this accreditation was made mandatory, it is estimated that one million more children would be eating five fruit and vegetables per day.[108]

Free school meals

Free school meals are an opportunity to ensure that all children have at least one nutritious meal per day.[99, 109] However, this is conditional upon the raising of food standards within schools. In Yorkshire, 26.8% of all school children are eligible for free school meals, above the national average of 24.6%.[110]

There are opportunities to increase access to free school meals for children from deprived backgrounds. Firstly, funding for free school meals has not risen with inflation during the last decade. An inflationary rise in the allowance may enable more school children to consume healthier meals in school. Secondly, the current system does not automatically register eligible families for free school meals, resulting in 11% of children who are eligible not claiming them.[97] Moving to an auto-enrolment model would help to ensure that every child who is eligible for support receives it.

Food education

This evidence review found that the dietary behaviours established in childhood continue into adulthood.[65] Improvements to food education across the education system[97] can support children to make positive dietary choices.

The National Food Strategy recommends that food education classes become more important across the entire education system. For early years pupils, the Strategy proposes that the Early Years Foundation Stage framework is updated to include sensory food education. The Department for Education explains that this teaches children 'to use all five senses to explore food and their own food preferences'.[111] Research has linked sensory food education strategies to an increase in the willingness of early years children to consume fruit and vegetables.[112]

Food education could also be improved in schools. The National Food Strategy proposes reducing barriers to food education, recommending that Government provides funding for all of the ingredients that children use in cooking lessons in early years settings and schools.

Physical activity

The 'Risk factors for excess body weight' section highlights how many children do not meet physical activity guidelines of 60 minutes of physical activity per day. Furthermore, children from a less affluent background are less likely to meet this guideline than children from a more affluent background.

The Youth Sport Trust's Manifesto for Action calls for a long-term plan to guarantee all children 60 minutes per day of moderate to vigorous physical activity, in line with the guidance of the UK Chief Medical Officer.[113] In primary and secondary schools, it is proposed that at least two hours of high quality and inclusive physical education per week should be guaranteed for every school pupil. Outside of schools, the Youth Sport Trust argue call upon a new mandate for all Local Authorities to ensure that all children have opportunities for physical and recreational activity.

Yorkshire Cancer Research policy recommendations

This evidence review has demonstrated the link between living with excess body weight and cancer risk. Excess body weight is associated with at least 13 different cancer types and could cause more cases of cancer than smoking in women by 2043.

Yorkshire Cancer Research recommends the establishment of a long-term, cross-Government strategy which makes prevention a priority. This strategy should have clear, evidence-based targets, which are monitored to ensure that the prevalence of excess body weight is consistently reduced. For lasting change, this strategy should focus on reforming the food system rather than appointing responsibility to individuals. The below measures aim to balance the food system, so that healthy choices are as equally accessible and affordable for everyone.

This strategy should place an emphasis on preventing the causes of excess body weight:

1. Reporting on the nutritional content of the sales of large food companies should be made mandatory.
2. Government should invest in making healthier dietary choices more accessible to the general population, particularly for children and for people from deprived backgrounds.
3. To encourage healthier dietary choices, there should be reform to the advertisement and labelling of food products.
4. Healthy food choices should be incorporated throughout all of early years, primary and secondary education.
5. Government should increase opportunities for physical activity for children.
6. A national strategy should have a preventative focus. However, when people living with obesity require treatment, they should receive timely and appropriate levels of care.

1. **Mandatory reporting of nutritional content**
   Food companies with over 250 employees should report on the nutritional content of their food, including sales of food and drink high in fat, sugar or salt. The Food Foundation report that only 1 in 4 major UK food companies report on the healthiness of their sales.[101] Greater transparency on the content of food and drink products sold would increase the accountability of food companies to make positive changes and offer healthier choices to customers.

2. **Sugar and Salt Reformulation Tax**
   Yorkshire Cancer Research supports the proposal of the Government-commissioned National Food Strategy, which recommended a £3/kg tax on sugar and a £6/kg tax on salt which is used either in processed foods or in restaurants and catering companies.

   The introduction of a reformulation tax would have transformative effects on the nation's health. An analysis using Government modelling suggests that it could halt the trend of weight gain at a population level in the UK, with an estimated 400,000-1,030,000 quality adjusted life years (QALYs) saved over 25 years. [99, 100] The NHS would save an estimated £1.6-£4.1 billion because of reduced use of healthcare resources. The economic output of the UK would also increase by an estimated £2.2-£5.7 billion, due to a healthier, more productive workforce.

3. **Increasing access to healthy choices**
   Using the projected £2.9-£3.4 billion in revenue from the sugar and salt Reformulation Tax, Government should invest in measures to support low income families to access healthy food choices. The Healthy Start Scheme should be reformed to increase the value of payments to account for the impact of inflation. Eligibility should be increased to earning £20,000 or less and auto -enrolment into the scheme should be enabled. The value of Free School Meals should be raised, so that every school pupil can afford to have a nutritious meal whilst at school. Auto-enrolment into the scheme should be introduced.

4. **Reforming food advertising**
   A ban on all physical and digital advertising of products high in fat, sugar or salt and ultra-processed products should be introduced. Restrictions on high fat, sugar or salt promotions should be extended to include ultra-processed foods. Price promotions for food and drink products from online delivery services should be banned.

   A simplified, front of pack food and drink labelling system should be made mandatory. This should include clear labelling of ultra-processed food and drink products.

   Collectively, these measures would limit the negative impacts of food advertising, whilst providing greater clarity about the healthiness of food and drink products.

5. **Establishing lifelong healthy habits**

Research demonstrates the importance of establishing healthy eating habits in childhood.

Mandatory nutritional standards for commercial infant foods should be introduced. Standards should restrict processed content and limit the sugar content of these products. Sensory food education should be introduced in early years settings, to help children establish healthy eating habits from the earliest stage. Government should fund ingredients for food lessons in all educational settings, to make food education accessible to all children. An accreditation scheme for school meals should be made mandatory nationwide, with schools given the funding to deliver upon improved standards.

These measures can help to establish healthy habits for all children from the earliest possible age.

6. **Increasing opportunities for physical activity**

A guarantee of at least two hours of physical education lessons per week should be introduced, ensuring that lessons are of a high standard and are inclusive of all children. English local authorities should be mandated to assess and provide sufficient opportunities and spaces for physical activity.

7. **Timely and appropriate treatment**

Government should mandate that every Integrated Care Board provides the entire range of weight management services, to end the variation in service provision both in Yorkshire and nationwide. Inequalities in uptake should be addressed, with Integrated Care Boards ensuring that services are accessible across all sociodemographic groups. Weight loss drugs should be considered a targeted treatment for those with the greatest clinical need under NICE guidelines.

Conclusion

Excess body weight is a major challenge to public health, both in Yorkshire and nationwide. In Yorkshire, the number of people living with excess body weight has been higher than the England average since the current measure began in 2015/16.

There multiple biological, behavioural and environmental factors interacting with one another to increase or decrease a person's risk of excess body weight. These factors can be outside of an individual's control, such as their genetic profile or the environment in which they live. Research suggests that this health issue is linked to inequality, with deprived areas of the UK having greater access to unhealthy food choices.

Evidence from leading international organisations shows conclusively that excess body weight is linked to at least thirteen different types of cancer. In England, approximately 6% of cases of cancer are attributable to excess body weight.[8] Yorkshire Cancer Research estimates that in Yorkshire, 2,004 new cancer cases every year are due to excess body weight. Furthermore, obesity is linked with worse overall and cancer specific survival outcomes. Further research is needed to comprehensively understand this relationship and its causes.

The food environment is shown to shape the dietary choices we make. Reform to the food industry has the potential to halt current trends towards weight gain. Yorkshire Cancer Research supports the establishment of a long-term strategy which makes obesity prevention a priority.

Within this strategy, the charity supports specific measures including:

- Mandatory reporting on the nutritional content of sales by major food companies.
- A Sugar and Salt Reformulation Tax.
- Restrictions to unhealthy food advertising and simplified food labelling.
- Expanded support for children living in low-income households.
- Prioritising food education and standards in educational settings.

These policies will ensure lasting change to the prevalence of excess body weight through targeted reforms to the food system, reducing the emphasis on the individual to make lifestyle changes and making healthy food choices accessible and affordable.

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