NUTRITION NORTH

Food, Health and Nutrition in the North of England: Inequalities and opportunities

nhsa
Northern Health Science Alliance
A Health Partnership for Northern England

About Nutrition North

The NHSA has established the Nutrition North network, a rapidly developing coalition of nutrition and food scientists and practitioners across the North of England. The network researches various aspects of nutrition – from basic metabolic science to policy and implementation. Nutrition North is facilitated by the NHSA and exists to support the health and economic development of the North by:

- Improving nutrition in the region through advocacy and engagement with regional public health leads
- Improving the treatment, prognosis and delivery of clinical nutrition guidance to patients in the region
- Providing coordinated access to local expertise for the region's food and nutraceutical sectors
- Supporting the North to realise its potential for academic nutrition science

Acknowledgements

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Forewords

Si King, Hairy Biker and television presenter

I have spent my life living in the North East of England, and have immense pride in calling myself a northerner. This also means I have seen first-hand the inequalities people in the North continue to face, and sadly these inequalities include what I am personally deeply passionate about – food and nutrition.

Food has the power to bring people together, tell a story, and keep us healthy. But not everybody has the same story and, for people in the North, the facts are stark. Northerners are getting less calcium, fibre, veggies, and good fats in their diets than the national average - essentials that should be on every plate but not everyone can afford. The real cost of this however is higher rates of obesity, high blood pressure, diabetes, and more lives lost to preventable cancers and heart and liver diseases. These aren't just statistics – this has a significant impact on our families, friends, and communities who deserve better.

There is a road to resolution, and it lies in the hands of our policymakers – by equipping regions most in need with place-based strategies, providing skilled nutritionists and, above all, ensuring families have secure income to access more nutritious choices, we can take the North from a place that survives to a place that thrives.

Alice Wiseman, Director of Public Health for Newcastle and Gateshead

This report brings together a compelling analysis that uncovers the scale of nutritional inequality across northern regions compared to other areas.

In the North, diet quality is worse, we have the highest levels of food insecurity, we have less to spend on food, we are exposed to more fast food outlets per person, we suffer the highest levels of adult obesity, and we have the highest mortality rates in the country for a range of preventable diseases.

It is unacceptable that families are having to make choices between heating and eating, that children are going to school too hungry to learn, and that adults are facing preventable illnesses because nutritious food is out of reach. But sadly, this is the reality for too many.
These are symptoms of entrenched structural inequities; however they are not insurmountable. This report offers hope in the form of examples of research and policy that can, and are, making a difference to communities.

The North is home to world-class expertise in nutrition science, public health, and community-led innovation. From pioneering planning policies that curb the spread of fast-food outlets, to practical interventions supporting families in accessing healthy food. There is no shortage of ideas, evidence, or will.

We need policymakers to recognise the value and potential impact of local insight. The North needs greater power and investment to tackle these challenges through place-based strategies that reflect the lived realities of people in the North.

The call to action is clear - national policies must tackle the underlying drivers of poverty if we are to create an environment that enables people to have secure income, to have access to nutritious food and live long, healthy lives.

Contents

EXECUTIVE SUMMARY

60 second summary

Poor diet is a major risk factor for avoidable ill health and mortality in the world. It is well documented that health outcomes in the North of England are consistently amongst the worst in the country, so it's perhaps no surprise that northern regions, which experience some of the highest poverty rates, have poorer diet quality compared to other areas of England.

This report investigates the state of nutrition in the North, exploring dietary habit, health outcomes, food security and the food environment.

It paints a stark picture of the challenges faced across northern regions. There are higher rates of obesity and other diet-related preventable disease such as diabetes and hypertension, in addition to greater adult and child food insecurity.

Evidence shows that poverty and food insecurity go hand in hand. Households with lower incomes, particularly those in the North of England, often struggle to put food on the table, let alone provide a healthy, nutritious diet.

Opportunities for people to make healthy food choices are further challenged due to clusters of fast-food outlets being based in more deprived areas. The North has far more fast-food outlets per person than the average for England.

Crucially, these outcomes are avoidable. Expertise, experience and collaborations already exist in the North that could inform successful regional interventions with the right support and investment. National policies that tackle the root causes of poverty which ensure people have security of income to meet their basic needs and access to healthy food will have a huge impact on health.

The evidence is clear that good nutrition is essential in supporting life-long health.

Key findings

Northern regions have poorer diet quality than the rest of England

At 13%, the North West has the highest percentage of households experiencing food insecurity in the whole of England.

Available data indicate that the dietary intake of calcium, fibre, vegetables, fruit, legumes, healthy fatty acids and sodium are all generally worse in the North than the England average.

The North on average has

103.6

fast food outlets per 100,000 people compared to an England average of

81.9

per 100,000 people.

This means that the North has

26%

more fast food outlets per person than the whole of England.

The North has greater adult and child food insecurity

The average weekly household food expenditure in the North East is the lowest in the country at **£56.30** compared to the England average spend of **£65.50**.

The average household in England spends **16%** more on food than a household in the North East.

Northern regions have higher incidence and poorer outcomes of diet-preventable disease

Weekly expenditure on fruit and vegetables is generally lower in northern regions – equating to up to

up to £3.27 less

per week spent specifically on fruit and vegetables compared to the England average.

All three northern regions have the highest levels of adult obesity in the country. **32.2% in the North East, 29.3% in the North West, 28.9% in Yorkshire and the Humber.**

At **24.5%** of the student population, the North East has the highest levels of childhood obesity in 10-11 year olds (Primary school year 6).

The lowest level of childhood obesity is **19.1%** which is seen in the South West region.

Obesity is estimated to cost the NHS over £11.4 billion every year, with wider societal costs (due to ill health) estimated at **£74.3 billion per year**.

The number of people with hypertension in the North East is the highest in the country. **The prevalence of hypertension in the North East is 54% higher than the prevalence in London** (the lowest affected region).

Diabetes prevalence in all three regions of the North is higher than the England average. The NHS spends

£10.7 billion

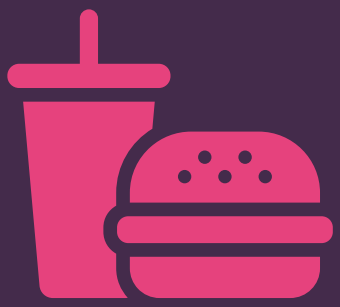
a year on diabetes which amounts to about **6% of the UK health budget**

All three northern regions have the highest mortality rates in the country for preventable cancer, preventable cardiovascular disease, and preventable liver disease.

The North has the highest rates of all-cause adult mortality across England, with over

100 additional deaths per 100,000

people compared to the England average.



National data on health outcomes in different UK regions was readily available but national data on regional dietary habit and nutrition was very limited. This had to be sourced from international research.

Key recommendations

1. **Implement place-based strategies to prevent food insecurity and to improve access to healthy food in the North:** Expansion of voucher schemes, Auto-enrolment onto Free School Meals, Holiday activity and food programmes for children, Restricting fast food advertising and planning permission for take-aways at Local Authority level, Delivering targeted food assistance schemes.
2. **Embed a skilled nutrition workforce in the North**
3. **Improve collection and availability of diet data at regional level**
4. **Ensure families have adequate and secure income to meet their basic needs**

1. INTRODUCTION: THE STATE OF THE NORTH

Poor diet is the major risk for avoidable ill health and mortality in the world[7]. Previous research consistently highlights that health in the regions of the North of England is amongst the worst in the UK[8-11]. It is known that food environments and dietary habit are a key reason for this.

When it comes to having easy access to healthy food (food security), northern households have lower food security and spend less on food than the average English household (Figures 1 & 2). The regions of the North also have the highest proportion of eligibility for free school meals, a known indicator of economic hardship[8] (Figure 3) and the highest density of fast-food outlets (Figure 4).

Poverty and food insecurity (meaning limited or uncertain access to nutritious food) go hand in hand. Research from the Food Foundation found that, on average, healthier foods are more than twice as expensive (per calorie) as less healthy foods. In the last two years healthier food has increased in price at twice the rate of less healthy food. The most deprived fifth of the population would need to spend almost 50% of their disposable income on food to afford the government-recommended healthy diet. This rises to 70% for households with children[12].

Evidence also shows a strong link between obesity and food insecurity[22]. In fact, the risk of obesity significantly increases as food insecurity rises, and people living with the highest levels of food insecurity have a much higher risk of obesity than people living in a food secure environment[34]. The North West, in particular, has the highest proportion of food insecurity in England.

The average dietary habit in the UK is far from ideal - fewer than 1 in 1,000 people meet all the recommended food-based guidelines[13]. Data from the Global Burden of Disease database however shows that dietary habits linked to poor health are considerably worse in the North than the England average.

Healthy diets, for example, should include good levels of calcium, fruit, vegetables, unsaturated fatty acids, and fibre and low levels of sodium. Northern diets look worse in all these areas compared to the average for England (Figure 5).

Certain illnesses and health problems are unequivocally linked to poor dietary habit and are major contributing factors to morbidity (ill health) and mortality (death) in England[14]. The Office for Health Improvement and Disparities (OHID) holds health data for the whole of England and for each geographical region[15]. For all the diet-related health conditions investigated, all three northern regions always had higher levels than the England average and were also considerably higher than many other regions. In most cases, the worst rates of illness or mortality in the country fall within one of the three northern regions.

Common diet-linked health issues include obesity, cardiovascular disease, high blood pressure (Hypertension), diabetes, liver disease and various types of cancer. Many of these are defined by the Office for Health Improvement and Disparities (OHID) as "preventable" diseases with a significant nutritional component in their risk.

The UK has amongst the world's highest prevalence of obesity in adults and children[16, 17] but the North has the highest levels of adult obesity in England (Figure 6). Recent research found that children in the most deprived areas of the country are nearly twice as likely to be living with obesity as those in the least deprived by their first year of school [12]. All

Figure 1: The percentage of households experiencing food insecurity in the regions of England (2022/23)

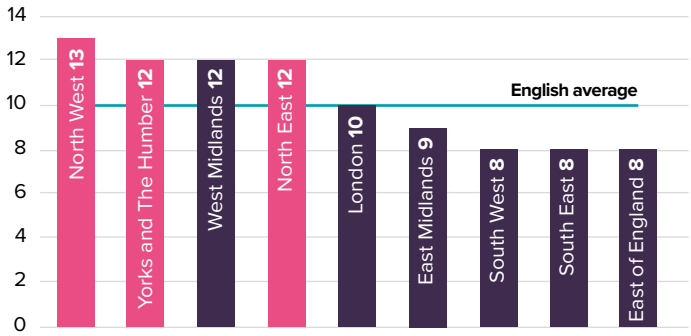


Figure 2: Total household expenditure per week

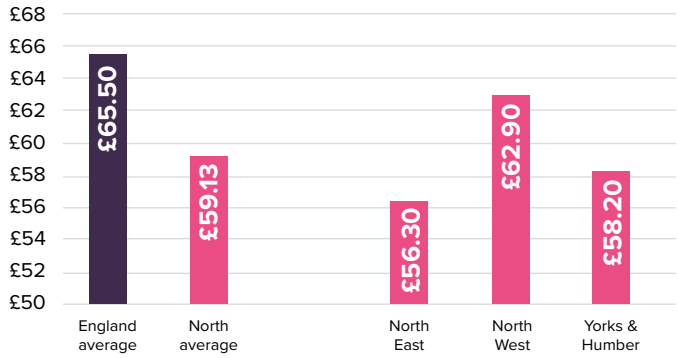


Figure 3: The difference in regional eligibility for free school meals compared to the National average

Note: Understanding what is meant by "the North"

Geographically and administratively, the North of England is defined as the area bounded by the three northernmost governmental regions – the North West, North East and Yorkshire and the Humber [1].

The North covers an area of around 40 million km2 [2] and includes almost 16 million of the estimated 57 million people in England [3]. While this report focuses on collating information for "The North", the authors acknowledge that there is no singular and homogenous population of this area, with many previous reports highlighting differences at a regional, organisational or even neighbourhood level [4-6].

three northern regions have above average levels of childhood obesity (Figures 7a & 7b).

Cardiovascular disease remains the major cause of death in the UK[18] and mortality in the North is well above average for the whole of England (Fig 8). Cardiovascular disease is also linked to diets high in sodium and saturated fat and low in whole grains and fibre. All these diet risk factors appear to be more common in the North (as mentioned above and discussed in more detail later).

Hypertension is more prevalent in the North, with the North East being the worst affected region in the country. Diabetes prevalence in all three regions of the North is also higher than the England average. The treatment and management of diabetes (and its associated health complications) are estimated to cost the NHS more than £10 billion every year[19]. Where there is data available, across almost all major health issues considered preventable (such as liver disease, cancer and cardiovascular disease) the regions of the North are the worst in England. OHID data also underlines that the North has the highest proportion of deaths from cancer in England (Figure 9).

Many factors driving food choice and nutrition are outside the control of individuals[20]. Which means that there is scope for local and national interventions to improve the dietary habit of almost everyone in England[13]. This report investigates the poor state of nutrition in the North of England. It looks at dietary habit, health outcomes, food security and the food environment and compares these factors to other regions and the country as a whole. We provide examples of regional work that has successfully transformed or helped understand food environments and dietary intake in our local populations. We believe these can inform and support future national and regional governmental planning.

2. HOUSEHOLD FOOD PURCHASING IN THE NORTH

Data from the Office for National Statistics (ONS) on household expenditure from 2020-2022[21] suggest that the absolute amount spent on food is less in the three regions of the North of England than the England average. The average household food expenditure per week in England is £65.50. The average weekly household food expenditure across the three regions in the North is £59.10, with the North East showing the lowest amount spent on food (£56.30) (Figure 2). **This means that the average household in England spends 16% more on food than a household in the North East.**

When you look at different food categories, the proportion of weekly expenditure on each is mostly similar in the North and nationally but the percentage of expenditure on fruit and vegetables is generally lower in the North (North East 19.6%, North West 20.0%, Yorkshire and the Humber 21.3% versus England average of 22.4%) (Figure 10). **This equates to up to £3.27 less per week spent specifically on fruit and vegetables in the North.**

The lower absolute food spend in the North could be a result of either lower income or lower food prices regionally. However, the lower proportional spend on fruit and vegetables suggests food shopping habits or availability that limit the quality of diet.

Figure 4: Fast food outlet density across the North of England

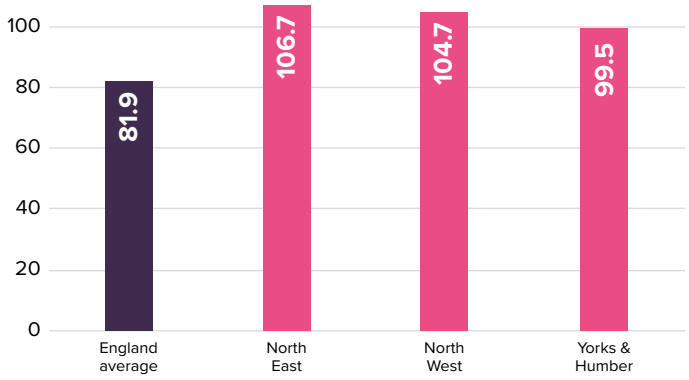


Figure 5: Food groups and nutrients considered major risk factors for disease - Intake in the North compared to the England average

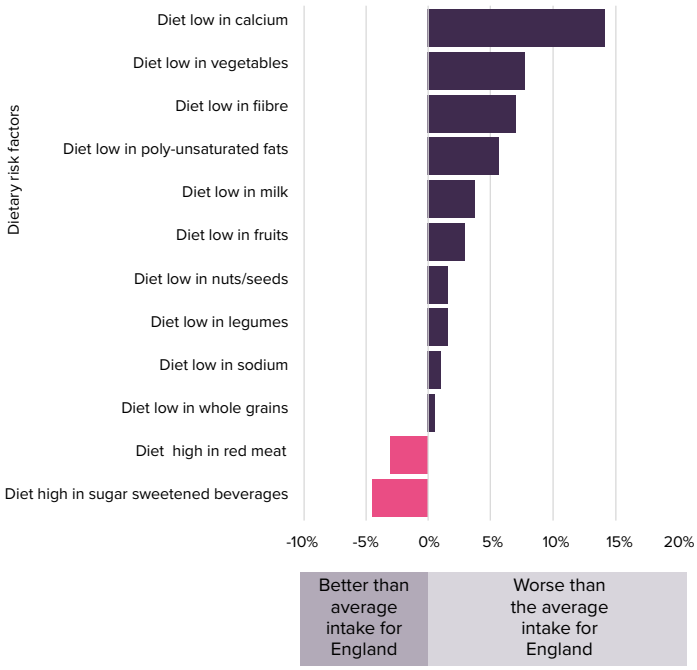
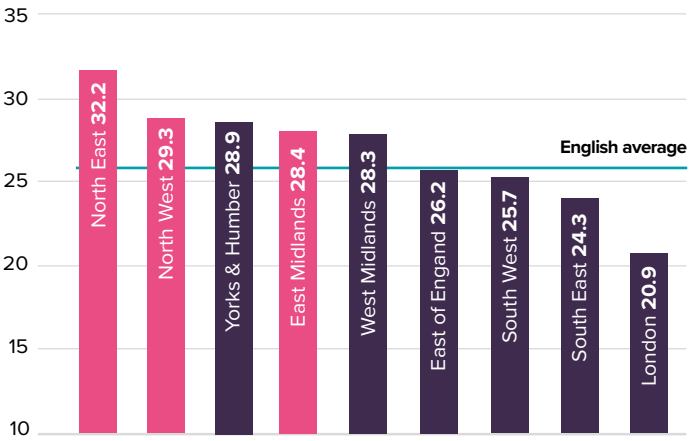


Figure 6: Percentage of the adult population (18+ years old) with obesity



3. ACCESS TO HEALTHY FOOD IN THE NORTH

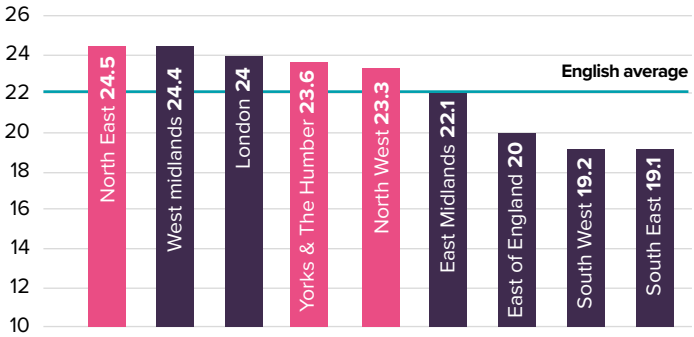
Food insecurity is the limited or uncertain access to nutritious food and is both a social and a health problem. Evidence has indicated that there is over 40% increased in risk of obesity in people living with food insecurity [22,34]. Household food insecurity data from across England suggest that the regions of the North all have higher food insecurity than the average for the country [15] and considerably more than other regions in the South (Figure 1). **At 13%, the North West has the highest percentage of households experiencing food insecurity in England.** The North East and Yorkshire and the Humber regions are only slightly lower at 12% whilst the national average is 10%. Free school meal eligibility is often used as a proxy of lower household income. The percentage of school students eligible for free school meals has been increasing nationally for several years and is currently the highest it has ever been [15]. **The regions of the North have a much higher proportion of eligibility than average and are higher most other regions of England** (Figures 3 & 11).

The North East has the highest eligibility in the whole country with 30.4% of the student population entitled to enrol for free school meals. The North West (26.8%) and Yorkshire and the Humber (26.0%) have lower levels but, with the average value across England at 23.8%, these are still worryingly elevated and underline previous reports on the increased risk of economic hardship [8]. London and the West Midlands also show above average eligibility for free school meals, but the remaining regions are much lower. The region with the lowest percentage of the student population eligible for free school meals is the South East (18.8%). **The proportion of children eligible for free school meals in the North East is therefore 28% higher than the national average and 62% higher than the South East.**

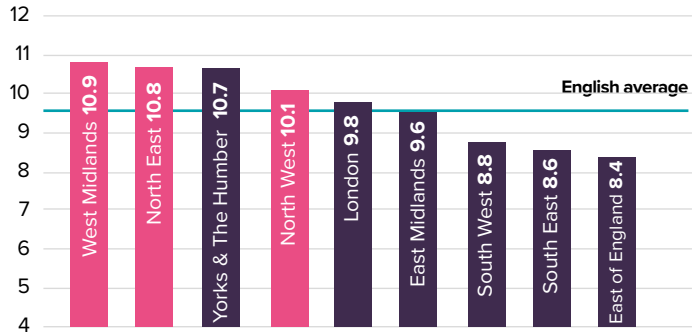
Evidence suggests that less healthy food environments cluster in socio-economically deprived areas. **The North East has the highest density of fast-food outlets in the whole of England** (106.7 per 100,000 people), with the North West (104.7 per 100,000) and Yorkshire & Humber (99.5 per 100,000) also well above the average for the whole of the country (81.9 per 100,000 people – Figure 4). The North on average therefore has 26% more fast food outlets per person than England as a whole. Data collected back in 2014 showed very similar results and also highlighted the high density of fast-food outlets across the three regions of the North [15].

Figure 7: Percentage of school children with obesity

(a) School Year 6 age (10-11 years old)



(b) School Reception age (4-5 years old)



4. CONSIDERING DIETARY RISK FACTORS

The Global Burden of Disease database [14] holds information on world-wide dietary risk factors for disease. In the UK, some of these risk factors are naturally linked to government plans for health improvement. The National Food Strategy recommendations are to limit the intake of foods high in salt while also targeting increased intake of fibre and fruit and vegetables [23].

The available data highlight that several of these core dietary risk factors appear to be considerably worse in the North of England compared to the England average (Figure 5). In particular, the region's diet is worse when it comes to the dietary intake of calcium, fibre, vegetables, fruit, legumes, healthy fatty acids and sodium.

Taken as a whole, this dietary pattern could predispose populations to be at greater risk of cardiovascular, metabolic (including obesity) and musculoskeletal disease. Healthcare costs of ill health as a result of poor diet and excess body weight were previously estimated to be over £10 billion a year in the UK[24] (Roughly equivalent to the non-staff budget of the NHS). **In the most recent evaluations, obesity alone is estimated to cost the NHS over £11.4 billion every year, with the wider societal costs (due to ill health) estimated at £74.3 billion annually [36].**

The available data also suggest that not all aspects of dietary habit in the North of England are worse. This would be interesting to investigate further as it could highlight factors which are influencing positive food choices and reinforces the need for more locally-targeted interventions [25].

5. DIET RELATED HEALTH OUTCOMES IN THE NORTH OF ENGLAND

Health outcome data are available for each region of England[15]. **This report focuses on illnesses that are unequivocally linked to poor dietary habit and are major contributing factors to ill health (morbidity) and death (mortality) in England [14]** (as well as the associated wider societal and economic impacts)[35]. Beyond the individual health issues discussed below, the North has the highest rates of all-cause, adult mortality across England, with over 100 additional deaths per 100,000 people compared to the national average over the last three years of available data [26].

5.1 Obesity

The UK has amongst Europe and the world's highest prevalence of overweight and obesity in adults and children [16,17]. Furthermore, a much higher proportion of children are defined as obese and overweight by the time they leave primary school compared to when they started. This is a national problem but within the North of England, the figures are particularly high. All three northern regions have the highest levels of adult obesity across England with the North East showing the highest levels of obesity in both adults and children in the country. Prevalence of obesity at Reception, Year 6 and in adults is worse in the North than most other regions of the country [15] (Figures 6, 7a & 7b). **In Primary school children (Year 6) in the North East, levels of obesity are 11% higher than the England average and 26% higher than the levels in the lowest affected region (The South West). Levels of adult obesity in the North East are 23% higher than the England average and 54% higher than the levels in the lowest affected region (London).**

The high levels of food insecurity and fast food exposure as well as the increased dietary risk factors that have been discussed earlier, would all have an impact on lifelong body weight status. Obesity is also the leading cause of multiple long-term conditions, including cardiovascular disease and cancer and so (as mentioned above) will have significant cost implications to NHS Trusts in the region.

5.2 Cardiometabolic health

Cardiovascular disease remains the major cause of death in the UK[18] and has also been highlighted as the major cause of diet-related disease globally [7]. Cardiovascular disease is often linked to diets high in sodium and low in healthy fats, whole grains and fibre. These diet risk factors are more common in the North (as discussed above).

Cardiovascular mortality at all ages in the North is the highest in England. Overall mortality in 2023 was worst in the country for the Yorkshire and the Humber region (258 deaths per 100,000 people), with the North West only slightly lower (255 deaths per 100,000 people), followed by the North East (246 deaths per 100,000 people)[15]. The average number of cardiovascular deaths in the North was 9% higher than the England average of 232.4 deaths per 100,000 and 19% higher than the best region in the country, which was the South East (213 deaths per 100,000) (see Figure 8).

Hypertension prevalence was also looked at as a marker of cardiometabolic health. **The number of people suffering from hypertension in the North East (17.2% of the adult population) is the highest in the country [15].** Values in the North West (15.5%) and Yorkshire and the Humber (15.6%) are lower but are still above average. (14.8%) [26] (Figure 12). The lowest levels of hypertension in England are seen in the London region (11.1%) which means that the level in the worst region (the

Figure 8: Deaths from Cardiovascular Disease across England

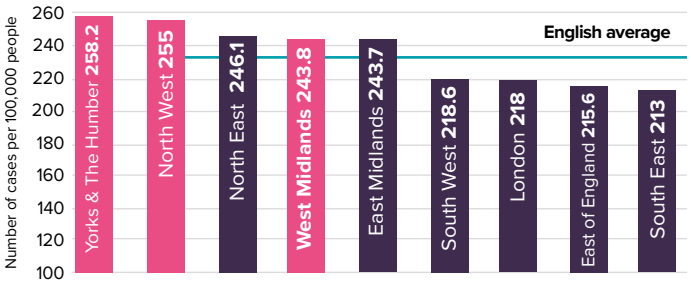


Figure 9: Deaths from Cancer (all types, all ages) across England

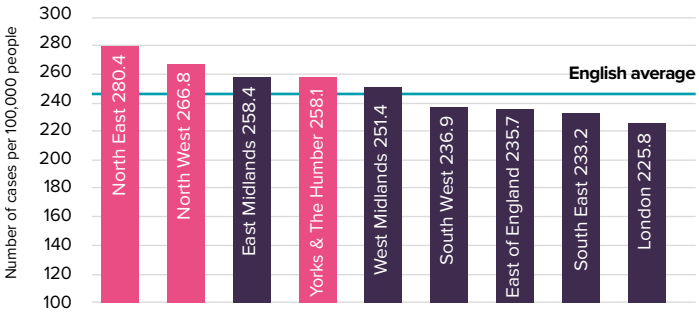


Figure 10: The difference in food spend on the main food categories - Northern regions compared to the England Average

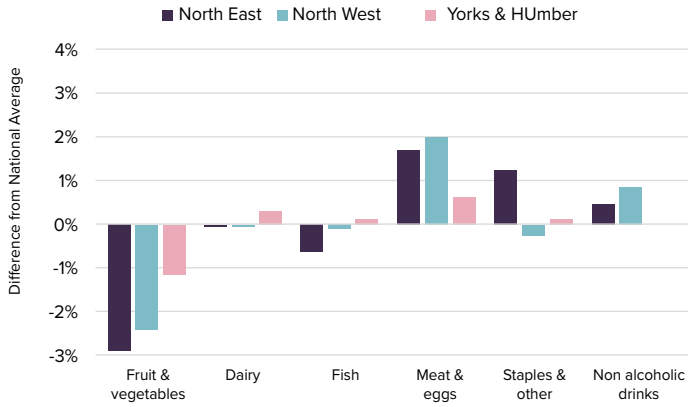
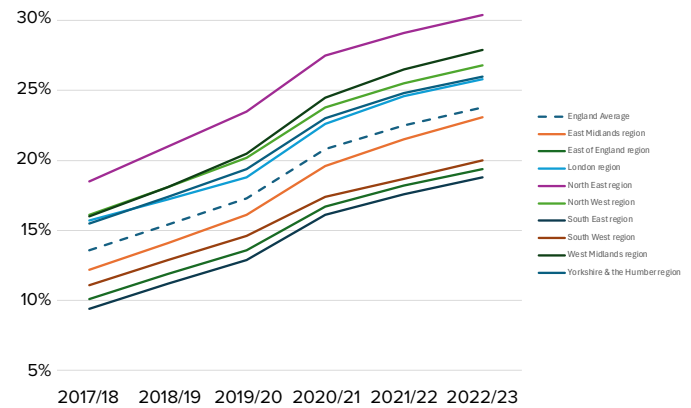


Figure 11: The percentage of the student population eligible for free school meals (2017 - 2023)



North East) is 54% higher than the best region (London).

Diabetes prevalence in all three regions of the North is higher than the England average. In England, 7.7% of adults have diabetes (data from 2023/24), but the prevalence in the North East is 8.5%, Yorkshire and the Humber is 8.1% and the North West is 7.9% (see Figure 13)[15]. Once again, London has the lowest prevalence in the country at 7.0%. Diabetes is noted to be especially problematic in terms of long-term management and associated health issues[27]. Research carried out recently by York Health Economics Consortium, showed that the NHS spends £10.7 billion a year on diabetes (Type I, Type II and gestational) which amounts to about 6% of the UK health budget[38] and the number of cases is projected to increase significantly in the next few decades[19]. Type II Diabetes is particularly linked to diet. The risk of developing type II diabetes is increased by obesity and the risk can be reduced by diet, exercise and weight loss. The condition can even be reversed with these lifestyle changes[37].

Figure 12: Hypertension prevalence across England (2023/24)

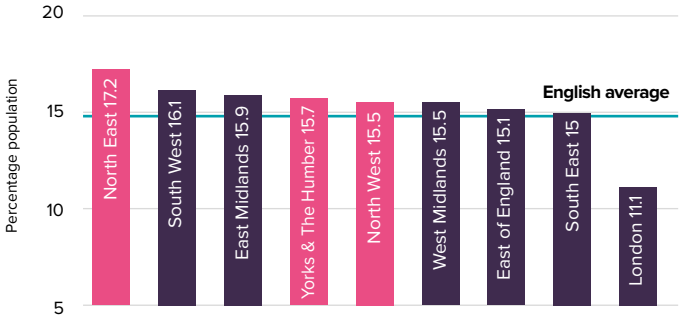
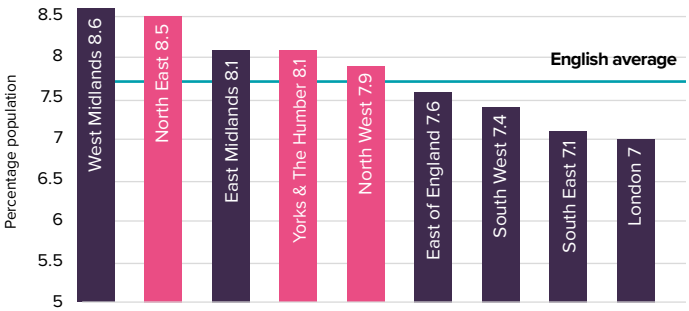


Figure 13: Diabetes prevalence in adults across England (2023/24)



5.3 Preventable diseases

The Office for Health Improvement and Disparities (OHID) defines "preventable" disease as all causes of disease that could be impacted by public health interventions (particularly improvement in dietary habit). Across almost all major health issues considered preventable by OHID, the North has the highest number of deaths across England.

For preventable cardiovascular disease and cancer, all three northern regions have the highest mortality rates in the country. In the case of liver disease, the North East and North West have the highest mortality in England but the mortality rate in Yorkshire and the Humber (20.2 cases per 100,000 people) is better, and closer to the England average (19.6 cases per 100,000 people) (see Figures 14, 15 & 16). OHID data also underline that the North has the highest cancer mortality across England (all ages, all cancers) (see Figure 9). The North East particularly has the highest number of deaths from cancer in the country at 280.4 cases per 100,000 people. The lowest cancer mortality in the country is in the London region at 225.8 cases per 100,000 people. **This makes the North East 14% worse for deaths from cancer than the England average and 24% worse than the best region in England.**

There is an unmet need for region-specific interventions to limit the economic and societal burden of diet-related diseases.

Figure 14: Deaths from preventable Cardiovascular Disease in under 75 year olds

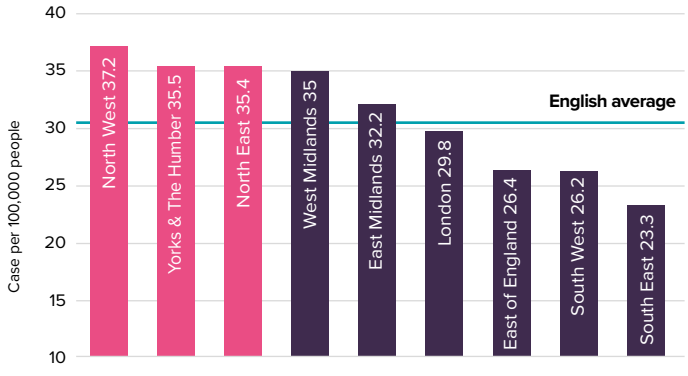


Figure 15: Deaths from preventable Cancer in under 75 year olds

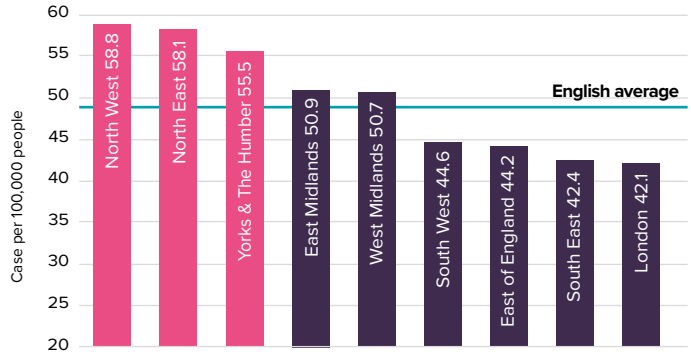
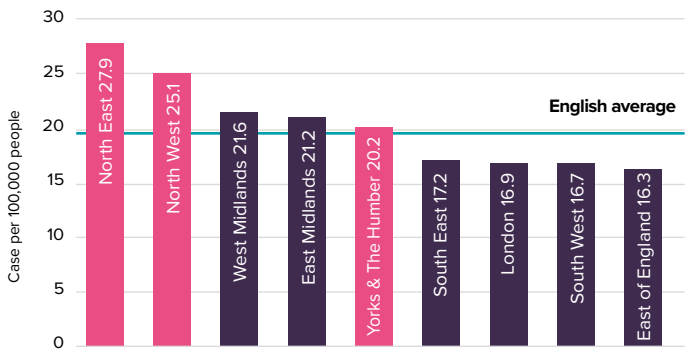


Figure 16: Deaths from preventable Liver disease in under 75 year olds



Case Study 1: How do patients engage with current strategies to reverse Type 2 Diabetes?
Dr Ruth Boocock (Teesside University)

Living with type 2 diabetes and its complications places a significant burden on adults but weight reduction offers the possibility of reversing the disease. People with type 2 diabetes have successfully achieved remission using various healthy diets. However, many adults with type 2 diabetes struggle to take part in or finish the diet and lifestyle changes needed to manage their illness. Individual approaches are known to work best, but for this you need to know exactly what helps and blocks people who are trying to self-manage their condition. This Sport England-funded project interviewed patients in two of the most deprived local authorities in England (Middlesbrough and Redcar & Cleveland). From the patients' perspectives the research team could then investigate the problems with choosing, and sticking to, a diet and lifestyle plan.

The project showed that sticking to an advised diet strategy enabled an improvement in blood sugar levels caused by weight loss. 1 in 7 of the patients achieved short-term reversal of their type 2 diabetes. The views of the patients revealed several factors that would help them change their nutrition behaviour and stick to a plan.

Having a scale of diet and exercise options, a good relationship with the dietitian and exercise coach, a more sympathetic and less judgemental environment, support from peers and using modern technology were examples of things that provided strong positive influence.

The results from the project have been published in a research journal and have been used to make a number of recommendations including:

- The narrative around obesity in healthcare settings needs to change
- Limited resources should be targeted towards patients who have more barriers and fewer opportunities for changing their nutrition behaviour (for example, those who are deprived and those with poor mental or physical health)
- Rewards, incentives, and patient-centred feedback are strong motivators for dietary change.

Case Study 2: Food Active's "Healthy Weight Declaration"
Nicola Calder, Food Active Programme Lead (Health Equalities Group)

The nation continues to experience widespread preventable illness and inequalities in health. In parts of the UK the conditions for living life in good health are poor and continue to deteriorate. The impact of the COVID-19 pandemic has exacerbated inequalities and had a disproportionate effect on disadvantaged communities. Wider action on prevention will help people to stay in good health and moderate demand across the health and social care system.

The Local Authority Declaration on Healthy Weight (HWD) enables local authorities to lead on adopting a systems approach to healthy weight. Local authorities are in a strong position to provide strategic leadership on behalf of their communities.

The HWD is a statement owned by each adoptive authority, signalling a strategic commitment made across all council departments to reduce unhealthy weight in local communities; protect the health and wellbeing of staff and citizens; and, to make an economic impact on health, social care and the local economy.

The Declaration has been adopted by over 30 councils across England (23 within the North). Emerging evidence demonstrates that this is an effective tool in bringing together a range of stakeholders and raising the profile of policies and practices to improve diet and physical activity. A range of resources have been developed to support the implementation of the HWD. "Place based" versions of the declaration are also available for different groups (for example "NHS HWD" for the NHS and "HWD Partner Pledge" for schools).

For more information see:
https://foodactive.org.uk/new-healthy-weight-declaration-impact-and-influence-report/

7. FOOD FOR THOUGHT: RECOMMENDATIONS BASED ON RESEARCH AND EXISTING POLICY

1. Implement place-based strategies to prevent food insecurity and to improve access to healthy food in the North

There is unlikely to be a singular approach that can improve diet or health outcomes at a population level. Multipronged strategies (for example Food Active's Healthy Weight Declaration – see Case Study 2) are positive templates that can guide future approaches in the North of England. **There is a need for greater expenditure to support health and positive dietary habits in the North of England. However, the health and economic risks of a lack of change would be far greater than the cost of appropriate interventions and policies.** Due to the urgent need for change at a regional level, we have considered existing policy options that can be rolled out by local authorities with appropriate governmental support and funding:

- **Expansion of voucher schemes** – The Healthy Start scheme allows pregnant women or families with children aged 4 or below to buy fruit, vegetables, pulses milk and infant formula [29]. We have already discussed that households in the North spend less on food per week than the average for the whole of England. Making sure that the Healthy Start scheme is readily available and that the uptake is high in the North of England would help to offset the cost of nutritional household food shopping. Such a scheme could be rolled out to support a wider demographic by age or socio-economic status.

- **Auto-enrolment onto Free School Meals** – The free school meals system provides school food to children that must legally meet healthy dietary standards. The current system requires parents to opt-in for Universal Free School Meals, but uptake can be limited and data indicates that **11% of entitled children do not take up free school meals** [30]. With such high numbers of children eligible for free school meals in the North, auto-enrolment is a way of ensuring a significant proportion of children receive a nutritious meal and have positive eating habits encouraged. Middlesbrough Council are currently running a pilot scheme where all children eligible for free school meals are automatically signed up [31] (www.middlesbrough.gov.uk/benefits-and-support/free-school-meals/free-school-meals-automatic-enrolment/). Researchers from the University of York are also investigating how to improve the reach of free school meals [30].

- **Holiday Activity and Food programmes** – These provide activities and food in the school holidays. They follow the same legal dietary standards as schools and are targeted at children (aged 5-16 years) from lower income households [32]. **Ensuring continuation of such schemes will support positive dietary behaviour throughout the year for all school age children and help reduce household food insecurity.** As discussed previously in this report, all three of the northern regions have higher than average household food insecurity and the North West has the highest levels of food insecurity in the country.

- **Supporting 'High Fat, Salt and Sugar Food (HFSS) Ad Bans' at Local Authority level** – bolstered by the evidence from the Transport for London ban on food advertising, some local authorities are aiming to restrict fast food advertising. Research carried out by the University of Liverpool showed that food advertising is extensive on bus shelters in deprived areas of the North East. A substantial proportion of this advertising is for fast food that would not be permitted to be advertised around children's TV programmes (see case study 3). Such work suggests that restrictions on bus shelter advertising should be considered and supported.

- **Supporting Local Authorities to develop Healthy Planning guidance to shape their local food environment spaces** - We have highlighted in this report that the North East has the highest density of fast food outlets in the whole of England. To promote a healthier food environment, many local authorities in England since 2010 have implemented Supplementary Planning Documents (SPD) restricting planning permission for new hot food takeaways. Nutrition experts from Lancaster and Teesside Universities investigated how effective supplementary planning documents have been in the North East. They found that **planning restrictions implemented in Gateshead had reduced the density of take-away food businesses and had also reduced the number of overweight and obese children by almost 5%** (see case study 4). Newcastle City Council is now also following the Gateshead model.

- **Delivering targeted food assistance/support schemes** – Recent challenges to the food supply chain (eg. During the pandemic) and the cost of living have highlighted the value of food assistance programmes.

2. Embed a skilled nutrition workforce in the North

The current National Food Strategy [23], mentions expanding the skilled work force at a regional level. This includes staff supporting the maintenance of ideal body weight status and adherence to the national "Eatwell" guidelines. Such a workforce would be able to present public health guidelines in a regionally informed and culturally appropriate manner. **Better nutrition advice could be provided at all stages of the life course.** Researchers in Liverpool, for example, are doing excellent work educating midwifery students to give nutrition advice to pregnant women as part of their antenatal care (see case study 5). A larger nutritionist workforce would also make it easier to deliver more individual dietary strategies. **Research on type 2 diabetes from Teesside University has highlighted the benefits of good patient and nutritionist relationships and the need for more individualised interventions (see case study 1).**

3. Improve dietary data at a regional level

Other work suggests that there are issues with overall diet quality that are specific to the North of England [25] but our existing national dataset - **the National Diet and Nutrition Survey (NDNS) - is not adequately scaled for region-specific investigations.** Since 2012, NDNS has aimed to collect nationally representative data from a relatively small cohort (about 5,000 participants) [33]. A dataset of this size does not allow regional sub-analysis with adequate accuracy. Without regional information on dietary habits that aligns with health outcome data, it is very difficult to develop region-specific plans for improving dietary habit. The

National Diet and Nutrition Survey (NDNS) will soon include online data collection which will hopefully expand the information collected. **We need to ensure that the respondents to a national survey include equal representation from across regions and sub-groups.** This will allow the data to inform targeted, regional, decision-making.

4. Ensure families have adequate and secure income to meet their basic needs

Central government must maintain and enhance the National Living Wage to ensure its real value keeps pace with the cost of living, expand investment in early years services and remove the two-child benefit cap, ensuring all children receive support regardless of family size.

Case Study 3: An analysis of food and beverage advertising on bus shelters in Middlesbrough and Redcar & Cleveland.

Amy Finlay, Mark Green & Emma Boyland (University of Liverpool), Scott Lloyd (Newcastle University, Middlesbrough Council and Redcar & Cleveland Borough Council), Amelia Lake, Thomas Armstrong, Helen Moore & Claire O'Malley (Teesside University) & Mark Fishpool (Middlesborough Environment City)

Food marketing is associated with childhood obesity, because it increases the awareness and preference for advertised foods. This study identified that almost half of the adverts on bus shelters were for foods or non-alcoholic drinks (a total of 370 food and drink adverts). 35% of these were considered less healthy by the UK Government's Nutrient Profiling Model. The food and drink products that were most frequently advertised were sugar sweetened beverages (35%), ready-made or convenience foods, such as burgers and sandwiches (24%) and McDonalds fries (21%). In comparison, there were no adverts for fresh or dried pasta, rice and grains; fresh or frozen fruit, vegetables or legumes; or fresh or frozen meat, poultry or fish. The food brand advertised most frequently was McDonalds (62.7% of all food ads). Persuasive strategies were frequently used (such as food images and competitions) which deliberately increase the appeal of food marketing to children.

Over half of food adverts were in the most deprived areas, while there were no food adverts in the least deprived areas.

In conclusion: Food advertising is extensive on bus shelters in parts of the UK. A substantial proportion of this advertising is classified as less healthy and would not be permitted to be advertised around television programming for children.

This study was done together with experts from universities and local councils across the north and the charity, "Middlesborough Environment City". It was published in an international journal[28] and has been used to recommend restrictions on bus shelter advertising as part of the UK policy on healthy food marketing.

Case Study 4: Policies to limit new fast-food outlets and reduce childhood obesity

Professor Heather Brown (Lancaster University) and Professor Amelia Lake (Teesside University)

To promote a healthier food environment, many local authorities in England since 2010 have implemented Supplementary Planning Documents (SPD) restricting planning permission for new hot food takeaways. We investigated if and how different types of supplementary planning documents changed the food environment and if these changes had any impact on childhood overweight and obesity. We looked at Newcastle City Council's SPD restricting new takeaways near schools. We also investigated Gateshead Council's more restrictive SPD that prevented any existing non-fast-food commercial property from being converted into a hot fast-food takeaway.

We looked at data from the Food Standard Agency food hygiene ratings as well as local area deprivation and population measures from the Office of National Statistics.

We found that Newcastle's plan that restricted new takeaways from opening with 400 metres of secondary schools had no impact on the food environment. Whereas Gateshead's more restrictive plan led to a reduction in the density and proportion of hot food takeaways. In deprived areas in Gateshead with the highest concentration of fast-food outlets, we could see that the prevalence of overweight and obese children was reduced by almost 5% (compared to other local North East neighbourhoods).

Following this research, Newcastle City Council has now revised its supplementary planning document to follow the Gateshead model.

Case Study 5: improving maternal diet through nutrition education for midwives

Dr Julie Abayomi & Dr Genevieve Stone (Edge Hill University), with Dr Margaret Charnley (Liverpool Hope University)

Good nutrition during the first one thousand days of life (from conception to a child's second birthday) is the most influential on individual health across the whole lifespan. UK Antenatal Care Guidelines state that midwives should discuss nutrition at booking-in appointments. However, midwives have limited training regarding nutrition and so often don't prioritise nutrition discussions. Pregnant women describe the nutrition advice they receive as "non-existent", "vague", or "inconsistent". Supporting midwives to have effective conversations with pregnant women about nutrition is urgently needed to improve maternal nutrition.

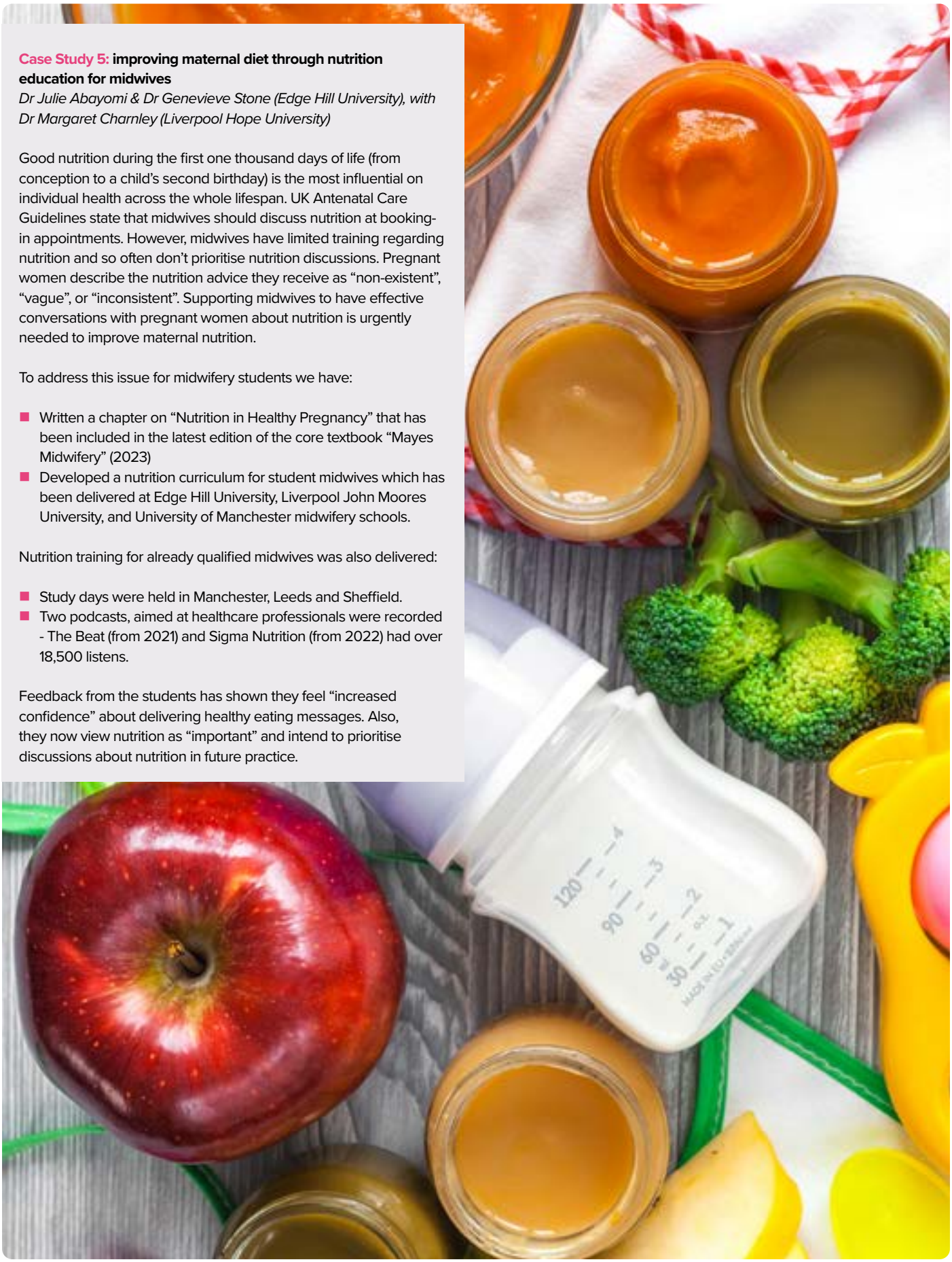
To address this issue for midwifery students we have:

- Written a chapter on "Nutrition in Healthy Pregnancy" that has been included in the latest edition of the core textbook "Mayes Midwifery" (2023)
- Developed a nutrition curriculum for student midwives which has been delivered at Edge Hill University, Liverpool John Moores University, and University of Manchester midwifery schools.

Nutrition training for already qualified midwives was also delivered:

- Study days were held in Manchester, Leeds and Sheffield.
- Two podcasts, aimed at healthcare professionals were recorded - The Beat (from 2021) and Sigma Nutrition (from 2022) had over 18,500 listens.

Feedback from the students has shown they feel "increased confidence" about delivering healthy eating messages. Also, they now view nutrition as "important" and intend to prioritise discussions about nutrition in future practice.



Conclusions

Dietary habit of people in the North of England is worse than the national average in several areas, notably in terms of calcium, fibre, healthy fatty acid, fruit and vegetable, and sodium intake. Such dietary habits have far-reaching health implications.

This poorer diet is associated with a higher burden of preventable disease in the North with higher than national rates of obesity, cardiometabolic disease, cancer and overall poorer

Food insecurity, the availability of food of limited nutritional quality, and access to healthy affordable foods, are all challenges facing the population in the North.

Expertise, experience and collaborations already exist in the North that could inform successful regional interventions with the right support and investment.

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