As cheap as chips: obesity and early-onset type 2 diabetes

Fast food is one piece in the obesogenic mosaic fuelling a rise in type 2 diabetes among children and young people. Included in the frame are cultural attitudes, poverty and food insecurity. As Mark Greener here reports, it is becoming increasingly clear that a plethora of engrained political, economic and cultural issues need to be addressed.

Fast food – kebabs, burgers, pizza, fried chicken and, for the traditionalist, fish and chips – is ubiquitous. ‘It’s easy to underestimate just how obesogenic parts of the UK environment really are,’ says Mayank Patel, Consultant Physician in Diabetes at University Hospital Southampton NHS Foundation Trust. And the more socioeconomically deprived the area, the greater the number of fast-food outlets. After all, a take-away may be cheaper than a bag of apples: a difference of a few pence matters when you’re on the breadline.

Fast food is one piece in the obesogenic mosaic that is fuelling a rise in type 2 diabetes (T2D) among children and young people. T2D already accounts for 1-in-40 cases of diabetes among people aged 24 years and younger in England and Wales.1 Most (78.6%) children and young people with T2D are obese.1

So, the answer’s obvious: tackle childhood obesity. But patient groups, health care professionals and politicians have called for action to tackle childhood obesity for years. Yet, the consequences of childhood obesity continue to become more common: the 2016/17 National Paediatric Diabetes Audit (NPDA) reported that 715 people aged 24 years and younger in England and Wales had early-onset T2D, an increase of 77 cases from the previous year.1 It’s increasingly clear that tackling childhood obesity and early-onset T2D means changing the entrenched behaviours and engrained attitudes of some of the most disenfranchised, disadvantaged and disengaged people in our society.

**Diseases of poverty**

Health care professionals will probably see a growing number of cases of early-onset T2D over the next few years. After all, 10% of children in the reception year in England were obese, rising to 20% in year 6 in 2016/17.2 The same year, the NPDA reported, 11 children aged 5–9 years and 269 aged 10–14 years had been diagnosed with T2D.1 ‘These figures are very worrying,’ remarks May Ng, Consultant Paediatrician and Paediatric Endocrinologist, Southport and Ormskirk NHS Trust. ‘Diabetes complications are a serious concern as children with type 2 diabetes grow up.’

Indeed, many children and young people with T2D already have complications: 20.1% have albuminuria, while 45.6% are hypertensive, for instance. Both these proportions are higher than in children and young people with type 1 diabetes.1 But only a fifth (21.3%) of children and young people with T2D received all seven key health checks.1

In some ways, early-onset T2D and childhood obesity are the ‘modern rickets’: emblematic, preventable diseases of poverty.3 Children and young people from the most deprived areas of England and Wales accounted for 47.0% of the cases of early-onset T2D compared to 5.3% in the least deprived areas. Moreover, children and young people of Asian and black ethnic origin accounted for 36.3% and 13.5% respectively of the cases of early-onset T2D, despite representing just 2.2% and 7.5% respectively of the population of England and Wales, according to the 2011 census.1 Non-white children and those living in deprived areas also had poorer outcomes.1

Obesity shows a similar link with poverty. In the reception year, 13% of children living in the most deprived areas in England were obese: more than twice the proportion (6%) in the most prosperous areas. The difference persisted in year 6: 26% and 11% respectively.2 ‘We are making progress in reducing childhood obesity in many parts of the UK,’ says Max Davie, Officer for Health Promotion at the Royal College of Paediatrics and Child Health. ‘However, we’re not doing so well elsewhere, especially in deprived areas. Childhood obesity is becoming a disease of poverty.’

Obesity’s emergence as a disease of poverty marks a dramatic epidemiological reversal. Studies that followed infants born in 1946, 1958 and 1970 showed that children and adolescents from families of low socioeconomic status tended to be lower weight compared with their more prosperous peers. But children and adolescents of low socioeconomic status born in 2001 were more likely to be heavier. The inequalities in body mass index (BMI) widened as millennials reached adolescence and in those with higher BMI.4

**The fast-food culture**

Our fast-food culture seems to be at least partly to blame for childhood obesity and early-onset T2D becoming emblematic diseases of modern poverty. The density of fast-food outlets across England ranges from 26 to 232 per 100 000 of the population depending on the local authority. More deprived areas tend to have a greater density of fast-food outlets than more affluent local authorities.5

The proliferation of fast-food outlets on the UK’s poorest high streets and estates reflects strong demand among local people. One study, for instance, enrolled 193 children aged between 11 and 14 years in Tower Hamlets, one of the most deprived boroughs in England. Most of the children were from black and Asian ethnic backgrounds (19.4% and 48.3% respectively) and 30.6% were overweight or obese.6

About 1-in-10 children bought fast food either every day or four to six times a week (both 9.8%). A third (34.4%) bought fast food two to three times a week. Just 18.1%
bought fast food less than once a week. Moreover, 68.6% and 54.0% of children from black and Asian ethnic backgrounds respectively bought fast food more than twice a week compared with 39.5% of white children.6

Fast food panders to innate preferences, some of which are ‘hard-wired’ by natural selection. For example, 92% of children from Tower Hamlets said that they liked the taste of fast food and take-away meals. Even children who bought fast food less than once a week enjoyed the taste.6 Moreover, infants prefer sweet and salty tastes and dislike bitter flavours, preferences that probably evolved to maximise the likelihood of survival. A preference for sweet and salty tastes would be beneficial at times of scarce energy-rich and mineral-dense foods. Typically, toxic plants are bitter to deter herbivores.7

Today, the Scientific Advisory Committee on Nutrition recommends free sugars should account for no more than 5% of the dietary energy intake from two years of age. The Committee defines free sugars as ‘monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and unsweetened fruit juices’. So, free sugars exclude lactose naturally present in milk and milk products as well as sugars within foods’ cellular structures.8

In 2004/15 and 2015/16, however, only 13% of children aged 1.5–3 years, 2% of those aged 4–10 years, and 5% of those aged 11–18 years met this target. Sweetened soft drinks (those that are not low calori) contributed 7%, 10% and 22% of the sugar respectively (Figure 1).9 Sugar-sweetened soft drinks also tend to displace milk, pure fruit juice and other healthy beverages.10 For instance, 79% of the children from Tower Hamlets preferred sweetened soft drinks, rather than other beverages, with their fast food.6

In response, the House of Commons Health Committee commented recently that the government should help local authorities ‘limit the proliferation of unhealthy food outlets ... Health should be made a licensing objective for local authorities’.11 But ‘the proliferation of unhealthy food outlets’ also reflects the economic realities of everyday life for millions of people: some parents may be simply unable to afford or access high-quality food.

### Food insecurity and poverty

According to some measures, the UK is the world’s 5th largest economy. Yet millions of people worry, literally, where their next meal is coming from – so-called food insecurity. In 2014, the Food Foundation estimated 3.7 million people in the UK lived in households facing moderate food insecurity: they compromised the quality and variety of their diet, reduced quantities or skipped meals. Another 4.7 million people lived in homes with severe food insecurity: they went without food and experienced hunger.12 ‘Fast food is often cheaper than a healthy diet for people on low incomes,’ Dr Patel says. ‘Fast food is often a quick fix.’

The Social Market Foundation (SMF) found that 39% of households with an income of £10 000 or less and 23% of those with a household income of between £10 001 and £20 000 felt that buying groceries strained their finances. Even more affluent households feel the pinch: 14% and 6% of those with incomes of between £50 001 to £70 000 respectively said that buying groceries strained their finances.13

Shoppers regard less healthy food as more affordable than healthier alternatives: 23% of respondents overall and 34% with a household income of £10 000 or less reported that the cost of food means they buy cheaper and less healthy food. The SMF reported that 44% and 35% of households said that fresh meat and fish respectively were the most unaffordable part of their grocery basket. (Respondents could choose up to three items.) Moreover, 17% and 11% felt that fresh fruit and vegetables respectively were the most unaffordable. Far fewer regard crisps, chocolate bars and other snacks (5%), and soft drinks (4%) as the most unaffordable.13

Fast food, on the other hand, is cheap. For example, 47.8% of the children from Tower Hamlets spent less than £2 on a fast food meal, with 25.5% spending £2–3.6. ‘In addition, households in deprived parts of the country often don’t have basic food preparation equipment. They may have just one ring and one pan,’ Dr Patel notes. ‘The family may face budgetary problems outside the food bill. So, any interventions must be low cost and easy to implement in busy and less than ideal circumstances.’

At the same time, many deprived areas are food deserts, ‘poorly served by food stores’.6 Disabled people and those without a car, in particular, may experience difficulties in obtaining a wide range of

![Figure 1. Sources of free sugar in children’s diets. (Data derived from: Public Health England and the Food Standards Agency. National Diet and Nutrition Survey)](image-url)
healthy, affordable foods. But almost all (97%) people living in Tower Hamlets live within 10 minutes of a fast-food outlet.6

The SMF reported that 8% of deprived areas – home to 1.2 million people – in England and Wales are food deserts.13 While attention tends to focus on inner cities and economically depressed towns, during 2016/17, 19% of children in rural areas lived in households with relatively low incomes (below 60% of median income) after housing costs compared with 34% in urban areas.14 The SMF estimated that 26% and 17% of rural and urban areas respectively are food deserts.13

Empowering people
Against this background, Dr Davie stresses the importance of helping people make healthy food choices for themselves and their children, despite environmental pressures. ‘We need to find ways of empowering parents and building their resilience to these pressures. We’re not really doing enough to address the social context of obesity and type 2 diabetes,’ he says. ‘For instance, choosing the unhealthy option is too easy. Faced with a choice of a donut or an apple most people will choose the donut. Healthy choices and smaller portion sizes should be easily available in restaurants and supermarkets. Pricing should favour healthy food choices, while labelling needs to be clearer.’

Dr Davie underscores the importance of tackling entrenched social and cultural attitudes. ‘Simply providing leaflets won’t help,’ he says. Dr Patel agrees, noting that interventions need to be sensitive and relevant to people of various ethnic backgrounds. Where appropriate, this might involve local community leaders. ‘We need to better understand the social and psychological background to unpick the reasons for poor choices,’ Dr Patel. ‘This will help us deliver the right bespoke solution in the right setting, at the right time.’

In addition, tackling childhood obesity and early-onset T2D means implementing barrier-free education to dispel myths and misconceptions, help children and their parents make healthy choices, and maintain the improvement despite economic and peer pressures. ‘We need, for example, to get rid of the myth that excess childhood weight is just puppy fat,’ Dr Davie says. ‘We need to get rid of the misconception that feeding someone shows that a parent cares. Most children don’t need a snack when they come in from school, for example. We need to stop grandparents being over-indulgent with sweets and parents using confectionery to manage a child’s behaviour.’

Dr Patel suggests leveraging social media to reach people who may not engage with traditional education. ‘To take one simple example, a “celebrity” chef could promote cheap healthy recipes on YouTube,’ he says. ‘If you can see how to prepare something that is realistic for someone’s situation and circumstances, it might be easier for some than reading a recipe. But we need to encourage families to eat together and not in front of the television or a screen. People tend to eat more when they are in front of a screen rather than sitting around a table.’

Energy efficient
In addition to addressing the supply and demand for obesogenic food, tackling childhood obesity and early-onset T2D means increasing physical activity. ‘The World Health Organisation recommends that children and young people aged between five and 17 years should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity a day,’ Dr Ng comments. ‘This is not happening in our culture where more sedentary activities, such as watching TV and computer gaming, are becoming more prevalent.’

But the body is remarkably energy efficient. Walking a kilometre means taking more than 3280 steps, but is fuelled by the energy from just two teaspoons of sugar.15 So, exercise needs to be regular. This means, Dr Davie stresses, that children need access to open spaces. However, exercising in some parts of the country is dangerous. ‘We should provide free physical activity programmes for children that are targeted at socially deprived areas,’ Dr Ng says. In addition, the family needs to do more than sit on the side-line. ‘Social prescribing might be part of the answer,’ says Dr Patel. ‘You could give a voucher to encourage families to take a healthy activity together.’

Dr Patel notes that more innovative approaches might help break the exercise impasse. ‘Southampton Football Club offered football fans, men aged 40 to 50 years, the opportunity to participate in a local three-month programme to get fit and lose weight. Fitness and training support was provided at the ground itself,’ he remarks. ‘It worked very well and the peer-support was especially important. Such initiatives could be extended to children. You need different approaches to engage different people.’

‘We need to be much more sophisticated in the ways that we support and educate people,’ Dr Davie says. ‘It’s patronising to believe that people from deprived areas don’t appreciate that eating too much junk food causes obesity and diabetes. They know they should exercise. We need to consider the social context and leverage support from all agencies. People from deprived areas are not victims, they’re part of the solution.’

Westminster calls for change
In other words, tackling childhood obesity and early-onset T2D means tackling a plethora of engrained political, economic and cultural issues – which places the government in the vanguard. In 2016, the government published its childhood obesity plan followed by the second chapter last year. The plan aims to ‘halve childhood obesity and significantly reduce the gap in obesity between children from the most and least deprived areas by 2030’.16 The report does not, however, define the reduction in obesity that represents a significant improvement in equality. ‘The government has a multi-layer approach to tackling obesity, which they are, rightly in my view, introducing slowly,’ Dr Davie says. ‘They are seeing what works and building from there. Of course, we’d say that the changes aren’t going far enough, but there are encouraging signs of progress.’
Indeed, the Health Committee, which published the report to inform the development of chapter three, said that the ‘case for stronger action on this unacceptable and widening health inequality is compelling’. To deliver, the Committee called for ‘a joined-up, “whole systems” approach’ that includes a Cabinet-level committee to review the implementation of the childhood obesity plan, with mandatory reporting from all departments and ‘clear and ambitious targets’. ‘We need a suite of approaches that we can ramp up or down and combine as required,’ Dr Patel says. ‘This may be technology, interventions from health care professionals, or government policy. We need to be flexible.’

Among several suggestions, the Committee called for a ban on using brand-generated characters or licensed TV and film characters to promote high-fat, -sugar and -salt foods and drinks on broadcast and non-broadcast media. In addition, regulations for non-broadcast and broadcast media should align. Dr Davie welcomes the suggestion to extend the restrictions around junk food advertising to encompass digital channels.

The Committee also wants regulations to ‘restrict discounting and price promotions on high fat, sugar and salt food and drinks, and particularly those that drive increased consumption, such as multi-buy discounts and “extra free” promotions’. The Committee argues that ‘regulation “levels the playing field” so that those who are doing the right thing are not disadvantaged.’

But the government will need to monitor any regulation to ensure that the promotions do not penalise those already struggling financially who often use fast food and promotions to make ends meet.

‘The easy availability of cheap and large quantities of calorically rich fast food combined with sedentary activities produced a generation of overweight people. In addition, schools and local authorities facing financial constraints have limited many of their free physical activity after-school programmes,’ Dr Ng concludes. ‘The key to the cultural changes needed to address childhood obesity is education and support. After all, the environment we live in makes it difficult for us to avoid unhealthy lifestyle choices.’

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References