It may be surprising that, in absolute figures, there is more childhood obesity in developing countries compared to high-income countries; for example, in Africa 10.3 million children are classed as overweight or obese, which has almost doubled in the past 25 years.1 There is also an economic motivation for tackling this issue as it is estimated that the NHS in England spends roughly £5 billion per year on treating conditions related to obesity.3

POTENTIAL CONSEQUENCES

Endocrine disorders
Childhood obesity has been shown to increase the risk of developing diabetes as an adult more than adult-onset obesity does.9

Furthermore, children as young as seven have been diagnosed with Type 2 diabetes in the UK.4,6 UK data also shows that 95% of children diagnosed with Type 2 diabetes were overweight and 83% were obese,7 which is supported by similar data from the US.8

Premature puberty is also associated with childhood overweight and obesity, which can impact on growth and behaviour.

Respiratory disorders
A recent systematic review found a 40-50% increased risk of asthma in children who are overweight or obese.10 Specifically, a rapid increase in BMI in the first two years of life is associated with an increased risk of developing childhood asthma11 and a higher BMI may be associated with a more severe form of asthma.12

Research suggests that obstructive sleep apnoea rates may be as high as 60% in obese children and adolescents.13 Overweight and obesity can also reduce exercise tolerance and increase fatigue levels.

Cardiovascular disorders
As well as increasing the risk of developing cardiovascular disease in adulthood, childhood obesity can result in cardiovascular damage in childhood.14 Studies have found that 62-70% of those with childhood obesity present with cardiovascular risk factors such as hyperlipidaemia and hypertension.15-16 A study from the US reported that children in the obese category had a fourfold increased risk of developing hypertension as an adult.17

Musculoskeletal disorders
Overweight and obesity can add excess pressure to the musculoskeletal system.
which can result in Blount’s disease (where the lower leg becomes bow-shaped due to interference with the tibial growth plate), hip disorders, back pain, knee pain, ankle and foot issues and more restricted activity levels.4

Gastro-intestinal disorders
Childhood obesity can increase the risk of developing non-alcoholic steatohepatitis (NASH), where fat can accumulate in the liver causing inflammation and damage.5

Psychological issues
Evidence shows an increased risk of: low self-esteem, reduced quality of life, behavioural issues, poor social skills, being bullied, body image dissatisfaction and eating disorders in children and adolescents who are in the obese weight category.4,18-19 These issues may contribute to the observed association between childhood obesity and reduced educational attainment.1

Chronic diseases in adulthood
Childhood obesity often leads to adult obesity and related chronic conditions1 such as: heart disease, stroke, Type 2 diabetes, dementia, certain cancers (e.g. breast, colon, endometrial) and liver disease.1,5,20

Worryingly, it has also been reported that obesity can double the risk of premature death,3 which could potentially take three to seven years off an obese adult’s life.5

CAUSES OF CHILDHOOD OBESEITY
There is ongoing research into the numerous factors which contribute to obesity; but, overall, this is a complex area. Energy imbalance is an important part of this picture, but there is ongoing research into areas such as physiological, gastrointestinal, hormonal and metabolic risk factors. The obesogenic environment has a big role in encouraging an energy imbalance, with the increased availability of cheap high energy foods and an increasingly sedentary lifestyle; which often includes a lot of ‘screen time’ when it comes to childhood obesity.1

Genetic and epigenetic responses have an impact on childhood obesity risk, as maternal malnutrition and undernutrition in early childhood have been shown to increase the risk of obesity in later life. Conversely, maternal and paternal obesity can also increase the risk of childhood obesity.1

In developed countries, the highest risk of childhood obesity in seen in lower socioeconomic groups and also within minority
groups who may be at risk of poor interaction with the health care system.\(^1\) For example, in the UK, children from the lowest income groups have double the risk of becoming obese compared to children from more affluent areas.\(^3\) However, the opposite is true in the developing world where higher obesity rates are seen in wealthier population groups; which may be related to the loss of traditional diets.\(^1\)

The way society interacts with obesity can also exacerbate this issue; as the perceived normalisation of obesity can reduce an individual’s motivation to make changes,\(^1\) but equally, the stigmatisation of obesity can hinder behaviour change due to psychological processes, especially when it comes to issues such as emotional eating and binge eating.

**REducing Childhood Obesity**

It is often discussed that ‘no single intervention will cure childhood obesity’ due to its complex background as discussed above. For this reason,
PAEDIATRIC

Figure 2: Ending childhood obesity - recommendations from WHO

The World Health Organisation (WHO) have formed a ‘Commission on Ending Childhood Obesity’ which highlights the responsibility of all stakeholders (i.e. WHO, international organisations, national governments, NGOs, the private sector, charitable organisations and universities) in reducing the risk of childhood obesity to improve health and health equity worldwide.¹

The main areas WHO has recommended to target are highlighted in Figure 2.

The UK government’s response to this call for action was the 2016 childhood obesity strategy which aims to reduce the rate of childhood obesity in England over the next 10 years.³ This has received a lot of criticism for being too weak in its proposals and the document itself states that ‘the launch of this plan represents the start of a conversation, rather than the final word’.

The main points of the UK’s ‘Childhood Obesity: A Plan for Action’ are summarised in Table 1.

From my experience of working in a childhood weight management setting, I feel that the way we interact with children and their families is key, especially ensuring that we focus on the positives, set realistic goals, boost the children’s self-esteem as much as possible and focus on ‘healthy choices’ and moderation rather than obsessing over a ‘healthy weight’. It can also be useful to highlight the benefits of healthy changes without mentioning weight; for example, explaining the benefits of a healthy diet regardless of weight, or how physical activity is associated with healthy bones and joints, improved fitness, improved mood, better sleep and improved academic performance.³

CONCLUSION

Childhood obesity is evidently a crucial and topical issue worldwide which has far-reaching implications. Hopefully, in the next 10 years we will see an improvement in the prevalence of childhood obesity, but for this to happen large scale changes and cooperation between all key players is urgently needed.

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