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Should obesity be recognised as a disease?

An evidence review

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Foreword

"The many government policies to address obesity over the last 30 years have failed. It is thus high time to declare high tide and recognise the right of all of us to healthy weight and to an environment in which healthy weight maintenance, and appropriate treatment and support is universally accessible"

Christina Marriott

Chief Executive, Royal Society for Public Health

These words, taken from the 2021 Obesity Health Alliance paper *Turning the Tide: A 10 year Healthy Weight Strategy,* captures both the perceived intractability of combatting obesity, and the urgency for action. Obesity is one of the most significant public health threats we are currently facing, with nearly one in three UK adults in 2017 classified as obese, and low socioeconomic groups disproportionately affected. Addressing this requires a coordinated and sophisticated response, as well as a willingness to innovate new approaches.

In recent years there has been much debate about how obesity is classified. We know that obesity is the precursor to many diseases, including hypertension, cardiovascular disease, diabetes, and cancer. But there is increasing discussion about classifying obesity itself as a disease, and the positives and negatives of taking such an approach. Would classifying obesity as a disease change public perceptions of what causes it, and facilitate positive changes to how it is treated? This paper seeks to contribute to this debate through a review of the current literature, as well as providing insights from interviews and

It gives us great pleasure to have supported the next generation of Public Health Researchers at the University of Nottingham through this report. We hope you enjoy reading it, and we look forward to seeing more of their research in the future.

Christina Marriott

Chief Executive, Royal Society for Public Health

Key Points

- Obesity is a serious public health challenge in the UK and around the world, highlighted recently by the association between obesity and Covid-19 risk and severity.
- To address increasing rates of obesity, some countries have recognised it as a disease, and there are calls for the UK to do the same.
- Our research, conducted before the coronavirus pandemic, found that both healthcare professionals and the public do not have a clear view as to whether obesity should be recognised as a disease: around one third (38%) of the public are in favour of disease recognition, while 36% do not support disease recognition.
- Other countries that have recognised obesity as a disease have seen mixed outcomes around the way obesity is perceived more generally, and approached in healthcare, but fundamentally obesity rates and referrals for bariatric surgery have continued to increase.
- The evidence presented here is not strong enough to conclude whether obesity should be recognised as a disease in the UK – however, it is clear that more needs to be done to address understanding of obesity and how to reduce it, to make prevention strategies and weight management services more robust and accessible to all, and to combat stigma and discrimination. Whether these outcomes are more or less likely to happen if obesity is recognised as a disease is yet to be determined, but Covid-19 has completely changed the public health landscape and presents a newly energised will to take bold action on obesity.

Recommendations

- Further research to explore in greater depth the full implications of recognising obesity as a disease, along with patient, public and professional views on doing so, and how this might have been altered by Covid-19.
- The UK and devolved governments to push forward the prevention agenda alongside adequately providing weight management services. Given the principle 'prevention is better than cure', we must alter the obesogenic environment to make it easier to be a healthy weight, while helping those who are overweight or obese take action if appropriate.
- Training for healthcare professionals on overweight, obesity, reducing and preventing excess weight, stigma and weight bias to be mandatory in undergraduate studies and Continuing Professional Development. Training should include how to communicate appropriately, building on the guidelines developed for policymakers on positive communication about obesity.[1]
- Raise public awareness of the causes of obesity to limit judgement, stigma and discrimination. The effect of weight on mental health is not just experienced by people who have been stigmatised, and greater understanding and acceptance may benefit many, particularly following the stressor of the coronavirus pandemic.

Background

'Obesity' describes a person who is very overweight with high levels of body fat, and is clinically classified using body mass index (BMI), a tool which assesses if weight is within a healthy range in relation to height[1]. Multiple health conditions, including Type 2 diabetes, coronary heart disease, cancer, stroke and depression are associated with having a BMI in the obese range[1]. Obesity disproportionately affects those from lower socioeconomic groups[2]. In 2017, nearly one in three UK adults (29%) were classified as obese, shown in Figure 1[2,3]. This is forecast to reach 50% by 2050 (4). There are many causes of obesity; the 2007 Foresight Report identified biological, genetic, social, cultural, environmental and economic factors among others as drivers of obesity[5]. The multifaceted nature of obesity makes it very complex to approach.

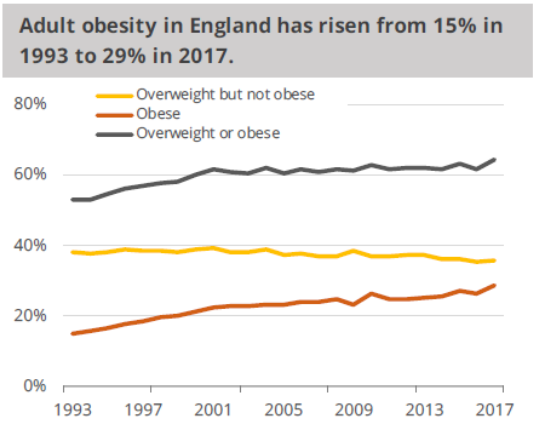


Figure 1: The rate of adult obesity in England from 1993 to 2017. Taken from Obesity Statistics: Briefing Paper, August 2019.

The Covid-19 pandemic has shone a spotlight on obesity and brought to the public's attention the serious health consequences of living with overweight and obesity. Obesity is a risk factor for Covid-19, along with other factors more prevalent amongst the most deprived in our society. The crisis hit the most vulnerable the hardest, further exacerbating the gaping health inequalities present in the UK.

After his own experience of contracting coronavirus, the Prime Minister Boris Johnson expressed a reignited political will to address obesity. As the public and politicians are now more than ever before aware of the urgent need to take bold action on obesity to improve the health of the population, the stage has been set for brave new policies, one of which could be recognising obesity as a disease.

Results from our[1] public polling (conducted before the Covid-19 pandemic and presented in full later) revealed that the public currently don't fully understand the complex nature of the many causes of obesity. When presented with different factors that cause obesity, just over half of respondents (51%) scored eating too much as a factor that definitely causes obesity, followed by not being physically active enough (35%), and a lack of willpower or self-control (29%), shown in Figure 2. Half the people we polled (50%) agreed that current societal factors make it challenging for individuals to have a healthy weight and lifestyle, yet the public felt that factors perceived to be within an individual's control were the greatest causes of obesity – a contradictory result, given we know that diet and activity, which in part determine weight, are strongly influenced by the social determinants of health which are largely beyond individual control. For instance, the latest figures from Public Health England (PHE) showed that in both Reception and Year 6 children, obesity prevalence was over twice as high in the most deprived areas than the least deprived areas[3]. The view that current societal factors make it challenging for individuals to have a healthy weight and lifestyle was more prevalent in younger adults (63% of 18 to 24 year olds) than older adults (33% of over 65s), suggesting there may be an age related shift in attitudes and understanding.

[1]'Our' refers to the Royal Society for Public Health (RSPH) and the Masters in Public Health students at the University of Nottingham, who jointly undertook this review.

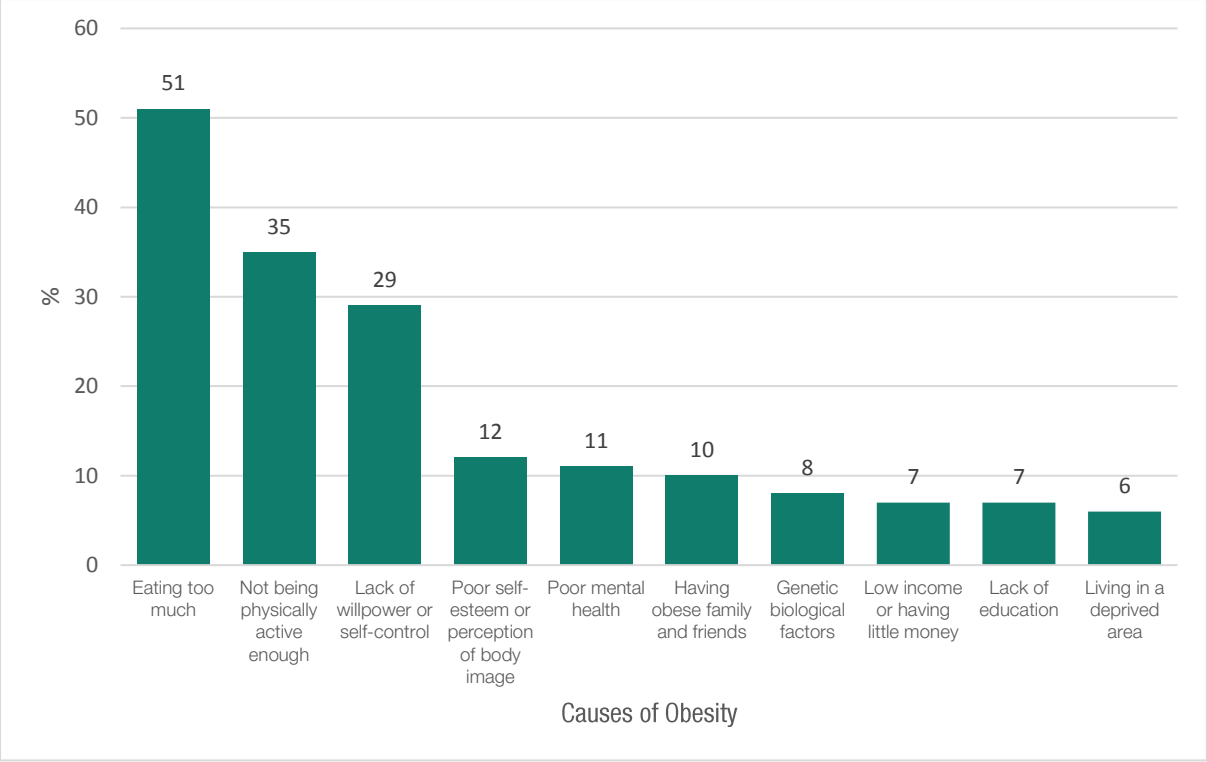


Figure 2: Responses to the question 'To what extent do you feel the following cause obesity?' There is a disparity between what we know causes obesity (all the factors listed), and what the public actually thinks causes obesity (diet, exercise and willpower). These results suggest there is a lack of awareness of the role the social determinants of health play in influencing weight.

The UK Government has produced numerous strategies since the turn of the century to address obesity, with ambitious reduction targets. Healthy Weight, Healthy Lives, released in 2008, aimed to reduce the number of overweight and obese children by 2020 to the levels recorded in the year 2000[6]. This was followed by Healthy Lives, Healthy People, which echoed the target of reducing child and adult levels of excess weight by 2020[7]. Most recently, the Government released its Childhood Obesity Plan in 2016[8], followed with a second chapter in 2018[9], and a third part announced in the 2019 Prevention Green Paper[10]. These plans set a new target to halve childhood obesity by 2030, which is seen as bold given the fact that previous targets were not met (see Figure 3).

As we emerge from the coronavirus pandemic, the link between Covid-19 and obesity may drive further plans for improving population health, which could include recognising obesity as a disease.

Our research asked the public what would be the most and least effective strategies to tackle obesity (Figure 4); the most highly ranked effective strategy was education, while the least effective strategy was a tie between disease recognition and bariatric surgery. While there is some doubt about the effectiveness of wider public education as a strategy to change behaviour, evidence suggests that altering the environmental influences of health are effective at a population level[11]. Environmental strategies such as making unhealthy food less affordable and reducing advertising for unhealthy food and drink featured as the second and third most effective strategies in our public polling; this suggests there is some public understanding of the whole systems approach that is required to tackle obesity, but perhaps public health messaging has not been fully amplified.

There is speculation that as Covid-19 has changed the public health landscape there may be greater recognition in the future of health as a form of resilience, and public acceptance of health interventions.

Obesity has a detrimental effect on society and individuals, and therefore should be approached

as a serious public health issue, yet past strategies have not produced the anticipated results. Moving in a different direction, The Royal College of Physicians (RCP) announced in 2019 that the UK should recognise obesity as a disease to reduce its prevalence[12]. The World Health Organisation (WHO) described obesity as a disease in 2000[13], and since then the US, Canada, Japan, and Portugal have followed suit[14]. But should the UK do the same, and would it actually do anything to change the high rate of obesity in this country and attitudes and perceptions of obesity?

Strategy	Target	Reality
Healthy Weight, Healthy Lives (2008)	Reduce the number of overweight and obese children by 2020 to the levels in the year 2000 • 15.2% of girls and 16.8% of boys with obesity in England in 2008 • 14.2% of girls and 14.5% of boys with obesity in England in 2000	Data for 2020 not available yet • 16% of girls and 17% of boys with obesity in England in 2017 Obesity has increased; not on track to meet the 2020 target
Healthy Lives, Healthy People (2011)	Reduce child and adult levels of excess weight by 2020 • 15.9% of girls and 16.6% of boys with obesity in England in 2011 • 25.9% of women and 23.6% of men with obesity in England in 2011	Data for 2020 not available yet • 16% of girls and 17% of boys with obesity in England in 2017 • 30% of women and 27.4% of men with obesity in England in 2017 Obesity has increased; not on track to meet the 2020 target
Childhood Obesity Plan: Chapter 1 (2016)	Significantly reduce England's rate of childhood obesity within the next 10 years (fewer obese children in 2026 than if obesity rates stay at 2016 levels) • 16% of girls and boys with obesity in England in 2016	Earliest figures show we may be on track for girls but not for boys • 16% of girls and 17% of boys with obesity in England in 2017 Six more years to reach target
Childhood Obesity Plan: Chapter 2 (2018)	Halve childhood obesity rates by 2030 • 20.1% of Year 6 children with obesity in England in 2017/18 • 9.5% of Reception aged children with obesity in England in 2017/18	To be determined • Target of around 10% of Year 6 and 5% of Reception aged children with obesity in England by 2030
Prevention Green Paper: Childhood Obesity Strategy (2019)	Halve childhood obesity rates by 2030 • 20.1% of Year 6 children with obesity in England in 2017/18 • 9.5% of Reception aged children with obesity in England in 2017/18	To be determined • Target of around 10% of Year 6 and 5% of Reception aged children with obesity in England by 2030

Figure 3: The target figures for obesity in the UK set out under various Government strategies, compared to actual obesity rates. Figures obtained from publically available data from NHS Digital.

What does the public think the most effective strategies in tackling obesity would be?	
Educate young people and parents on nutrition and physical activity	43%
Making unhealthy food less affordable than healthy food	35%
Reduce the amount of advertising for unhealthy foods and drinks e.g. fast food	26%
What does the public think the least effective strategies in tackling obesity would be?	
Recognising obesity as a disease	29%
Offering bariatric surgery to all with obesity	29%
Campaigns to tackle obesity stigma	19%

Figure 4: Responses to the questions 'What would be the most effective strategies in tackling obesity?' and 'What would be the least effective strategies in tackling obesity?'

What is a disease?

The Oxford English Dictionary defines 'disease' as 'a disorder of structure or function… that produces specific symptoms or that affects a specific location and is not simply a direct result of physical injury'[15]. Currently there is no universal consensus on what a disease is, but a disease could be perceived as the opposite of health[16]. The WHO definition of health is 'a state of complete physical, mental and social wellbeing', so a disease could be considered as something that prevents this state[16].

However, according to this definition, health could be seen to be unattainable as there will always be external, uncontrollable factors negatively impacting wellbeing[16]. Furthermore, what one individual may deem healthy another may not, as personal ideas of what being in good health means is influenced by beliefs, experiences and cultural factors[16, 17]. Therefore, using the WHO definition of health to identify whether something is or is not a disease means the concept of a disease is as subjective as that of health.

The idea of a disease being subjective is well documented, as the presence of a disease does not always dictate what someone's health status is. For instance, it has been reported that those with a higher BMI can experience better health than those of a 'healthy' weight[18]. On the other hand, people can experience ill-health in the absence of a disease, such as having the common cold[19]. Therefore, a disease could be viewed as a condition that has the capacity to negatively impact health, but this is not an absolute requirement.

Though there is a lack of consensus on what a disease is there are some criteria that are widely agreed upon by medical professionals. These are: a disease should be identifiable and clearly diagnosable, it deviates from normal structure or function of a body or its parts, it has a biomedical cause as opposed to being caused by an individual, and it should also have a treatment available[16, 17, 18, 20]. However, some diseases are untreatable, which does not make them any less of a disease, demonstrating further the complexity of defining a disease.

In light of these considerations, a disease should be a condition that is well researched to ascertain what all causes are and to determine the most effective treatment options, if applicable, before it is officially recognised as such. Obesity is often listed as a risk factor for non-communicable diseases (NCDs), but the purpose of this evidence review is to consider obesity in reference to the disease criteria outlined here.

What are the reasons for recognising obesity as a disease?

The main arguments for recognising obesity as a disease are summarised here.

Key reasons:

- Alter perceptions of who is to blame – obesity is not due to a lack of willpower, but is driven by many factors beyond an individual's control
- Increase funding allocated to treatment and weight management services
- Improve training on obesity for healthcare professionals
- Eliminate weight stigma, bias and discrimination

Recognising obesity as a disease in the UK could mean many things – it could apply in a clinical context, or it could mean that obesity should be considered and talked about as a disease in public discourse, and politically. What is not clear is what type of disease obesity would be recognised as – an NCD, or an infectious disease, given the fact that obesity is driven by social factors including the influence of family and friends[5]. As the call from the RCP was for the Government and health sector to recognise obesity as a disease, it appears that the intention is to change medical, political, and subsequently public notions.

Alter perceptions of who is to blame

BMI is used to classify obesity, yet studies have found that up to 90% of BMI may be genetically determined, acting via diet and physical activity [21, 22]. As a result, the argument has been made that obesity is a disease, as there is a biological driver behind it that cannot be controlled by an individual. Some people with obesity may have impaired metabolic pathways and disordered hormonal signalling for hunger and fullness, an issue rooted in genetics[23, 24]. Over 50 genes associated with obesity have been identified[25] including some related to appetite regulation[26] and fat distribution[27]. Many healthcare professionals (HCPs) argue these biological drivers of obesity meet the criteria for recognising obesity as a disease, and as such would shift the perception that obesity is caused by the individual.

It is widely recognised by those working in public health that the obesogenic environment provides a far better explanation of rising obesity rates than any appeal to lapses in 'individual responsibility'. Some proponents of recognition have argued that, far from distracting from these wider factors, by viewing obesity as a disease we make the influence of the environment even clearer, alongside genetic and metabolic causes. Other conditions caused by environmental influences on behaviour, such as asthma, are considered diseases. An analogy with air pollution can be drawn here – air pollution is an environmental factor that is beyond an individual's control, and for many, cannot be avoided – for instance, someone might have to walk down a polluted road in order to get to work. It causes diseases such as asthma, and the public and politicians have no problem identifying the environment as a causal factor. The environment is largely beyond individual control, and has a direct impact on weight and obesity, so following this deduction obesity could be considered a disease in the same way as asthma is, without ignoring the environmental causes.

RSPH, along with many public health professionals, describes Western society as

'obesogenic'[28] – promoting weight gain and inhibiting weight loss[29]. In England there are over 50,000 fast food and takeaway outlets, with a greater concentration of these in more deprived areas[30]. A quarter of the UK population feel healthy food is unaffordable, especially for those on lower incomes[31]. In the UK, 2.6 million people live more than a ten-minute walk from a green space[32] and employees spend an average of six hours and 45 minutes sitting at work each day[33]. These factors are mostly beyond an individual's control and contribute to obesity, and when considered alongside the genetic determinants of body mass, support the argument for disease recognition[34] – if obesity was recognised as a disease people may be more willing to accept that factors beyond individual control cause obesity.

It must be acknowledged that regardless of whether obesity is recognised as a disease, HCPs and society more generally can play a role to some degree in improving access to healthier diets and physical activity. For instance, in the workplace exercise breaks and healthy food provision can be instigated, and employers should be encouraged to do this to look after the health of their employees, whether they work in an office, a hospital, or at home. Obesity does not need to be recognised as a disease for this to happen.

Increase funding

The RCP stated that disease recognition could escalate efforts to tackle obesity[14]. In the UK it is thought disease recognition could make it easier to implement policies that improve care and preventative measures, as more funding would be allocated to obesity and weight management services[12]. It is posited disease recognition would encourage governments to change food and built environments[34] and remove barriers to accessing healthcare[14, 35]. However, if more money goes into treating a disease this does not guarantee that more money would go into prevention, although the post- Covid-19 world may be more open to prevention.

The public health grant has been repeatedly cut, and in 2019 it was £850 million lower in real terms than initial allocations in 2015/16[36]. Freedom of Information requests of Local Authority Weight Management commissioning found that spending on Tier 2 Weight Management Services decreased by just over £1.5 million between 2016/17 and 2017/18 due to public health budget cuts[37]. As obesity is a risk factor for Covid-19, this may impact funding for weight management services, but disease recognition could also be a way to secure a bigger budget for obesity treatment and prevention strategies.

Improve training

It has been suggested that disease recognition would result in mandatory training for HCPs on obesity, which is necessary to help people living with obesity reduce excess body weight, and would demonstrate how to do this in a caring and compassionate way[38]. Training all HCPs in supporting people with obesity and being able to sign-post them to available services is relatively inexpensive, and presents an opportunity to make HCPs aware of the wide range of services available and what they can offer people with obesity. With a current lack of funding, this type of training should be utilised, until greater funding, possibly brought in because of disease recognition, permits more extensive education. Improved training may also drive the development of a better classification tool as an alternative to BMI.

Eliminate weight stigma, bias and discrimination

Stigmatisation is a major barrier to accessing healthcare services. Almost all people living with obesity (88%) have experienced stigma[39], the social rejection and humiliation because their weight exceeds what society deems acceptable [40, 41]. The misconception that obesity is caused by unhealthy lifestyle choices and poor personal characteristics drives stigma and weight-related discrimination[50]. Obesity stigma significantly threatens health[40, 42, 43] and can exacerbate weight gain by reinforcing poor eating patterns and eating disorders[42, 44]. Those with obesity are two and a half times more likely to experience mood and anxiety disorders[40] and are at increased risk of body dissatisfaction, extreme psychological stress and poor quality of life[41, 42, 44, 45].

Obesity stigma and discrimination is highly prevalent in healthcare settings, creating barriers to accessing care and reducing the quality of care received[12, 40, 41, 42, 44]. Research into obesity stigma and weight discrimination has found that:

- Those with obesity are perceived as dishonest, lacking in self-control, exaggerating symptoms and wasting HCPs' time[42, 45].
- HCPs are either ambivalent towards a patient's weight and fail to provide advice[40, 41] or make it the sole focus of the consultation[42].
- The fear of being criticised, made to feel embarrassed or having their health concerns dismissed deters those with obesity from accessing healthcare services[40, 42, 45].
- Patients with obesity are more likely to report being refused medical services, a reluctance by doctors to examine them, receiving little health education and shorter appointments than those without obesity[40].

Disease recognition could encourage HCPs and society to better understand and develop empathy towards those with obesity, reducing obesity stigma[34, 43, 46]. The risk Coid-19 presents to those with obesity may also encourage this. However, some diseases are still stigmatised, which will be discussed later. Research has shown that stigma is reinforced early in a medical student's education, and it is at this stage that interventions to reduce stigma have been found to be successful[45]. However, the evidence base is lacking longitudinal research on the long term effects of stigma training on the improvement of treatment.

Fundamentally, it is difficult to predict whether any of these reasons for recognising obesity as a disease would actually come to fruition.

Sarah Le Brocq, Obesity UK

"Recognising obesity as a disease will make people realise the complexities of obesity. Currently the message is too simple… there are over one hundred different reasons why someone lives with obesity. [By] recognising it as a disease… hopefully people would have more empathy… and not just see it as a choice, because it's absolutely not a choice."

What are the reasons against recognising obesity as a disease?

The main arguments against recognising obesity as a disease are summarised here.

Key reasons:

- Medicalisation removes agency and risks people feeling helpless
- Focus could shift to treatment rather than prevention
- The NHS could be overwhelmed by an influx of patients who may not be in need of help
- 'Diagnosing' obesity using BMI is problematic
- The potential exacerbation of weight stigma and weight discrimination

Medicalisation and preference for treatment over prevention

There is a concern that disease recognition could reduce autonomy, meaning individuals fail to adjust any factors that contribute to obesity and are within their control, encouraging the view that health is pre-determined by genes[47]. There are also apprehensions that disease recognition could shift emphasis towards treatment such as surgery and medication, and away from prevention such as environmental change[18]. Additionally, more people may engage in risky behaviours associated with ill-health and obesity, as disease treatment and reduction could be perceived as the healthcare sector's responsibility rather than across sectors, and obesity may become normalised[48].

The argument has been made that in most cases, obesity has a social origin and therefore so should the solution[49]. In the UK, these social factors include, but are not limited to, the higher cost of healthy food and the prevalence of unhealthy food advertising[50, 51]. In 2014 the UK food industry spent £256 million on advertising[52] and more than 50% of supermarket promotions were for less healthy foods, such as foods high in fat, salt and sugar (HFSS)[53]. These factors need changing to make the environment conducive to maintaining a healthy weight[54], yet they may be side-lined if obesity is recognised as a disease, instead with focus placed on treatment from the pharmaceutical industry[18, 37] or surgery. While such drugs should not necessarily be taken off the table, and may be helpful for some, RSPH is clear that this should be considered far from a priority among the many approaches we should be taking to address the obesity epidemic.

Overwhelming the NHS

Recognising obesity as a disease would result in over 16 million UK adults being instantly labelled as 'diseased'. This could impact mental health and place the NHS under further strain if patients present who are not in need of help[14, 55, 56]. However, if patients presented who are currently being missed, this would be a positive result, and the NHS would have to adapt to the increased demand, which given the current climate would prove difficult.

Disease recognition could see the treatment of individuals who, apart from clinically having obesity are healthy, potentially meaning the wider determinants of obesity are ignored in favour of diet and physical activity advice. Obesity can be the result of many different factors, and failing to recognise this could see an individual with obesity put onto an inappropriate patient pathway to deal with something that is not driving their obesity, such as mental health or mobility issues[57]. Again, it is

very difficult to predict whether this would actually happen in reality, as the specifics of disease recognition have not been detailed.

Clinical diagnosis

'Diagnosing' obesity if it was recognised as a disease using BMI has limitations[58]. BMI can place muscular individuals into the obese category despite them often being healthy[59] and does not adequately assess overall health in an individual. A study reported that an 'overweight' BMI of 27 was associated with the lowest mortality[60]. Furthermore, there is evidence that those with a higher BMI fair better after surgery than healthy-weight patients[61]. However, BMI is still used because it strongly links to health risks at the population level.

The American Medical Association (AMA) Council on Science and Public Health stated it was unclear whether recognising obesity as a disease would improve health due to the limitations of BMI[62]. Alternatively, if obesity was 'diagnosed' not solely according to BMI, but rather alongside other comorbidities and individual drivers, a holistic whole-systems approach may be more likely.

Lisa Beasley, My Body Positive

"Obesity is a medicalised word. My BMI would be in the obese range… but I know I'm a healthy individual. To be told that I have a disease is absolutely not true."

Exacerbation of stigma and discrimination

There is the potential for weight stigma and discrimination to be exacerbated if obesity were to be recognised as a disease, as being labelled as diseased has historically been viewed negatively, as we have seen for those living with a sexually transmitted disease. Obesity stigma could increase following disease recognition as people have negative connotations of the term 'disease'[42].

From the research reviewed to this point, there is no clear evidence to inform whether or not obesity should be recognised as a disease. Therefore, we sought the views of professional and the public and looked at what happened in countries when obesity was declared a disease. The research phase took place before the coronavirus pandemic, and it should be acknowledged that the pandemic will have long term implications for public health, including on matters related to obesity.

What does the current evidence show?

We looked at the data from three countries that have recognised obesity as a disease, the US, Canada, and Portugal, and compared these with the UK. We assessed outcomes themed by some of the key reasons identified for and against recognising obesity as a disease, along with rates of obesity.

United States	Canada	Portugal	United Kingdom
Obesity recognised as a disease in 2013 by the American Medical Association (medical recognition)	*Obesity recognised as a disease in 2015 by the Canadian Medical Association (medical recognition)*	*The health service (Serviço Nacional de Saúde) recognised obesity as a disease in 2003 (medical recognition)*	*Not yet recognised obesity as a disease (health service and government called to do so)*

Perception of obesity

Attitudes may have changed but the outcome is mixed: *Public* • There is low public awareness of disease recognition, but just over half (51%) of the public support the decision[63]. • Prior to disease recognition (2012), 88% of American adults stated that individuals have responsibility for solving the obesity problem[64]. *HCP* • Post disease recognition (2014), 97% of non-physician HCPs attributed individual factors as causes of obesity[65].	**Obesity is viewed as a medical condition but there is still an element of personal responsibility:** *Public* • In 2017, 60% of people with obesity stated obesity is a chronic medical condition[66]. • One in five (21%) people with obesity say that they and their HCP share responsibility for their weight management[66]. *HCP* • In 2017, 94% of HCPs stated obesity is a chronic medical condition[66].	**Obesity is not perceived as a health problem despite disease recognition:** *HCP* • HCPs view obesity as a behavioural problem, and therefore view people with obesity negatively; reportedly they describe patients as unmotivated and non-compliant[67]. • Doctors resort to 'eat less and move more', and have been provided with more information by the European Association for the Study of Obesity to embed the message amongst professionals that obesity is a disease[68].	**Obesity is seen as a serious health problem but stigma is still rife:** *HCP* • The All-Party Parliamentary Group (APPG) on Obesity found that 73% of HCPs think that obesity is a disease[39]. *Public* • The APPG reported that 88% of people with obesity have felt stigmatised, criticised or abused as a result of their obesity[39].

Funding

Funding for obesity has improved:	Exact figures are not available, but evidence suggests funding has improved:	Exact figures are not available, but evidence suggests funding has not improved:	Funding is mixed:
• The Centre for Disease Control and Prevention put $8.2 million behind the High Obesity Program from 2014 to 2018[69, 70]. • A further $56 million has been pledged from 2018 over five years[71].	• Prior to disease recognition, 6,525 bariatric surgeries were performed in 2013/14. This increased to 10,365 in 2017/18, suggesting funding increased for these services[72].	• GPs have criticised the government for its lack of efficient health policies[67]. • Dietitians report long waiting lists, suggesting services don't meet demand[73].	• The Government put £1.5m behind local projects on obesity prevention[74]. • Only 3.6% of the Public Health Grant was spent on weight management services in 2015/16[75].

Training for HCPs

Education on obesity for HCPs has improved:	The training offer and uptake has increased:	Training was proposed but without the desired results:	Training is inconsistent:
• The number of physicians taking the examination of the American Board of Obesity Medicine increased by 27% in 2015[76]. • Following disease recognition, the ENRICH Act was introduced, proving grants for medical schools to incorporate obesity into the curriculum[77].	• The Certified Bariatric Educator program launched in April 2017, and 80 professionals are now qualified[72]. • There are now 67 American Board of Obesity Medicine (ABOM) certified physicians in Canada, up from 7 in 2014[72]. • Training raised awareness of weight bias[78].	• The National Programme Against Obesity was launched in 2005, with proposals for training initiatives for HCPs[79]. • Despite this, GPs are reportedly inconsistent and ambivalent with how to approach weight management[73].	• Although resources on obesity are available for HCPs, training has not been mandated into undergraduate education and Continuing Professional Development.

Patient Agency

There is little data available about agency:	Patients still have agency:	HCPs report low patient agency, but this may be influenced by bias and stigma:	Agency may be inhibited by stigma:
• The public is shifting towards the view that obesity is a community problem of bad food and inactivity[63].	• Almost three-quarters (74%) of people with obesity said that weight loss was their own personal responsibility[66].	• Physicians report that patients use passive coping, and want doctors to be in control and responsible for their weight and treatment[67].	• Over a third of people with obesity have not accessed any lifestyle or prevention services; of those who did, 39% found it incredibly or moderately difficult to do so[39].

Treatment or Prevention

The focus is firmly on treatment:	Prevention and treatment are both seen as important:	Prevention is valued more highly than treatment:	Prevention and treatment are fairly equal:
• Treatment options for obesity have reportedly expanded significantly, including the introduction of four new drugs and three new devices[80].	• Some local governments prioritise prevention and promote healthy living initiatives, but this is not the case in every territory[72]. • In March 2018, Health Canada approved extended-release tablets for use as an adjunct to a reduced-calorie diet and increased physical activity for chronic weight management in adults[72].	• GPs view lifestyle change as more important, and are sceptical of the available treatments[67]. • The National Programme Against Obesity introduced secondary prevention strategies, focusing on diagnoses, treatment and recovery[79]. • A sugar tax was introduced, and Portugal is seen as a success in tackling childhood obesity[81].	• The Prevention Green Paper includes the next edition of the Childhood Obesity Plan[10]. • Weight management services cover four levels, including bariatric surgery at Tier 4.

Patients in the Health Service

More patients are passing through the health service to have bariatric surgery:	More patients are having bariatric surgery (see 'Funding' above), but it is not clear if the health service can cope with demand:	The number of patients going through the health service is not clear, but demand places a strain on services:	There are many hospital admissions related to obesity:
• In 2011, 158,000 bariatric surgeries were done. This increased to 252,000 in 2018[82].	• Waiting times for bariatric surgery in Canada are the longest of any surgically treatable condition[72].	• Dietitians report long waiting lists due to a lack of human resources[73].	• In 2017/18 there were 10,660 hospital admissions directly attributed to obesity. In the same period there were 711,000 admissions related to obesity[3].

Obesity rates

Obesity rates have increased:	Obesity rates have increased slightly:	Obesity rates have increased:	Obesity rates have increased:
• In 2013/14, 37.7% of adults were obese[83]. This rose to 39.8% in 2015/16[84].	• In 2014, 26.4% of adults were obese. This rose to 26.9% in 2017[85].	• In 2003/5, 14.2% of adults were obese[86]. This rose to 22.3% in 2015/16[87].	• In 2017, the proportion of adults who were obese was 29%, higher than in recent years[3].

The data presented here does not clearly show that recognising obesity as a disease gives consistently better effects. This could be because although some countries have recognised obesity as a disease, they have not treated it as such, which is another consideration for the UK to take account of.

What do professionals think?

Given the current evidence reviewed here on whether obesity should be recognised as a disease in the UK, we sought to fill the gaps in this picture. We investigated further both professional and public views on disease recognition and obesity more generally.

According to 2018 polling of RSPH members, mainly comprised of public health professionals, there is a mixed response with a 50:50 split as to whether disease recognition would be a beneficial development.

To add to our evidence base further we interviewed eight stakeholders with expertise in obesity including HCPs, the third sector, and politicians, to hear their views on whether obesity should be officially recognised as a disease in the UK. Four supported disease recognition, two were against, and two were unable to answer.

Views on disease recognition

Recurring themes that were brought up in favour of disease recognition included: empowerment, the removal of barriers to accessing treatment, equal treatment opportunities, and making it easier to discuss obesity.

Recurring themes that were discussed against disease recognition included: individual blame, the need to change the healthcare system to accommodate, the existence of multiple obesities, and the view that if a high weight is regarded as a disease then a low weight should also be.

Drivers of obesity

Multiple causes of obesity were brought up, such as genetic, biological and environmental factors. In terms of the environment, the high availability and low cost of unhealthy, calorie dense foods and the significant portion of income required to follow government diet guidelines was discussed. Feedback was that current societal and economic factors make it easier to develop obesity.

Addressing obesity

Besides disease recognition, we explored other methods to tackle obesity. These included placing greater emphasis on and developing strategies for obesity prevention, improving treatment availability, creating effective policies and adopting a holistic approach to obesity. Individuals need to take responsibility for their health as far as situational factors permit them to, but monetary investment into healthcare services is required to tackle obesity.

Stigma

There was a divide about whether disease recognition could reduce stigma. Although it was discussed that public health messaging could be a way to reduce stigma, it was acknowledged this would likely take a generation to happen.

These responses follow the trend we have seen with research amongst professionals, that there are conflicting views about whether obesity should be recognised as a disease.

What do the public think?

An independent survey carried out by RSPH suggested that:

- Just over one third (38%) of the public agree with recognising obesity as a disease, while almost the same amount (36%) disagree.
- Nearly half (46%) of the public stated recognising obesity as disease would encourage people to lose weight, while almost the same amount (44%) said that disease recognition would not decrease obesity rates.
- Two out of five (41%) said everyone should definitely be responsible for their own weight.

RSPH surveyed a representative sample of 2,096 UK adults in August 2019. Almost half of respondents (47%) described themselves as a healthy weight and almost as many (41%) described themselves as overweight, based on their individual perception. Therefore, we have not weighted the results according to respondent's weight.

Additionally, although we know that income and deprivation contributes to obesity, and therefore may bias individual's perceptions of what causes obesity, the demographics of the survey respondents cover all levels of income and socioeconomic group. We note these limitations of the data and view the results with caution.

There is no clear preference by the public to recognise obesity as a disease. Just over a third (38%) of respondents agreed with recognising obesity as a disease, a similar number (36%) disagreed. This split amongst the public demonstrates further the complexity of this debate, and the difficulty declaring a stance on whether obesity should be recognised as a disease.

Like the professionals, the public are split on whether obesity should be recognised as a disease and the possible consequences this could have. In fact, some of their views are contradictory, which in itself is a surprising result. Respondents agreed with the following statements (the percentages show the proportion of respondents who agreed with the statement):

There should be more public health campaigns to combat obesity stigma	51%
Current factors in society including housing, welfare, work, education and the environment make it challenging for individuals to have a healthy weight and lifestyle	50%
Recognising obesity as a disease would encourage individuals to look after their own weight more	49%
Disease recognition would encourage people to lose weight	46%
Disease recognition would medicalise a condition which is environmental in nature	45%
Disease recognition would not decrease obesity rates	44%
Recognising obesity as a disease would reduce obesity stigma	37%
Disease recognition would disempower individuals to take control of their health	36%

These results demonstrate that public opinion is divided on whether obesity should be officially recognised as a disease in the UK, and more generally highlights wider attitudes and beliefs held about obesity, and that misconceptions are still rife.

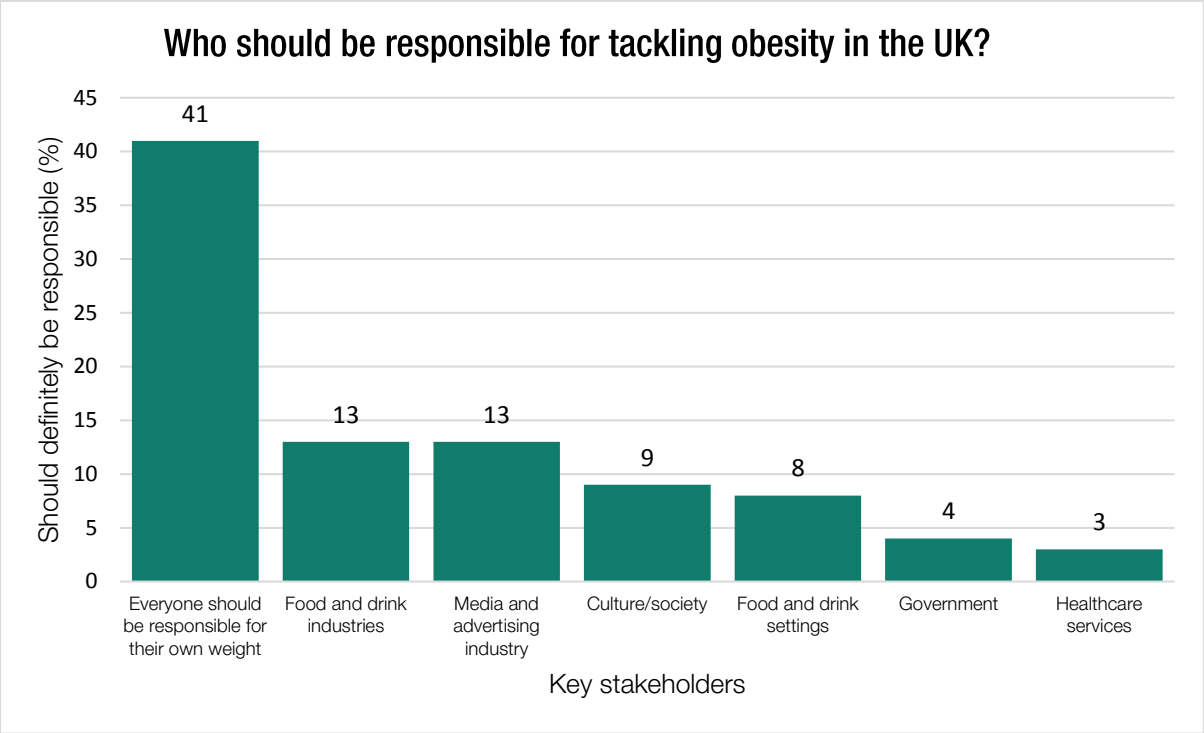
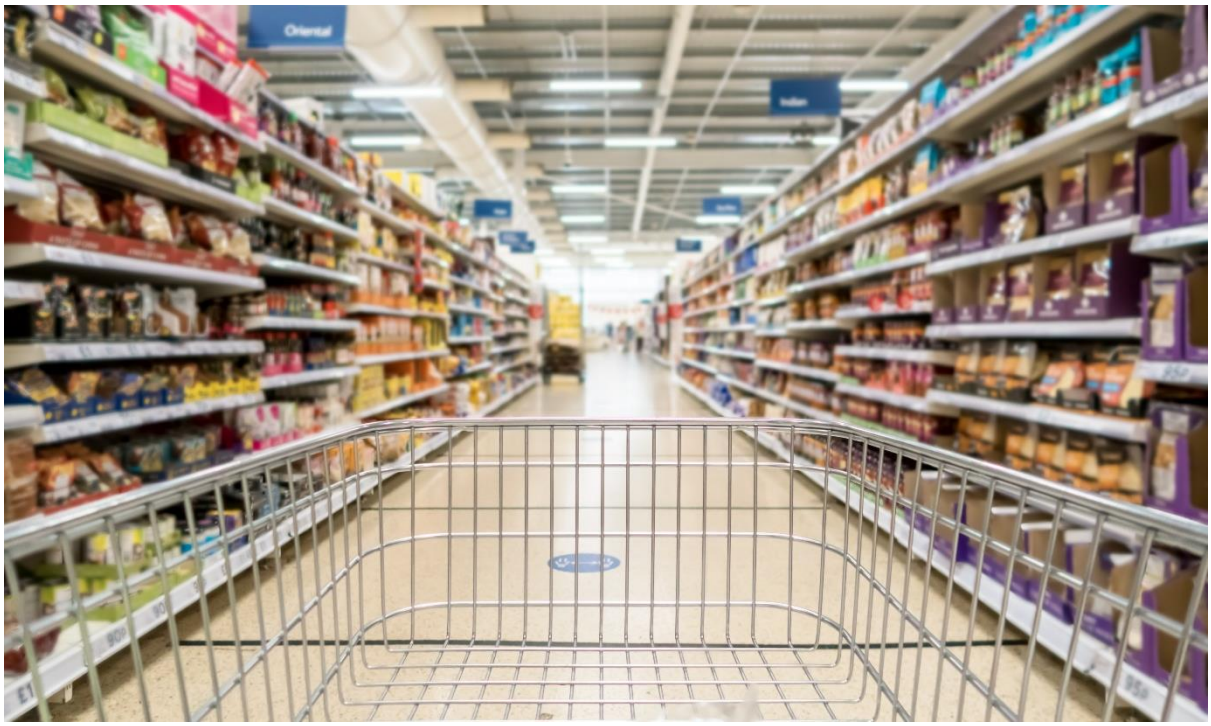


Figure 5: Responses to the question 'Who should be responsible for tackling obesity in the UK?' A much greater emphasis is placed on individual responsibility, regardless of the fact that 50% of survey respondents stated that current societal factors make it hard to maintain a healthy weight and lifestyle, indicating that other groups should also take responsibility for reducing obesity. .



Conclusion

There is no obvious answer in the debate of whether or not obesity should be recognised as a disease. Other countries that have recognised obesity as a disease have had mixed outcomes, but fundamentally obesity rates have continued to increase. This suggests that although disease recognition may have some benefits, along with some risks, it is not the whole answer.

There is no silver bullet for solving obesity, emphasising the need for a whole systems approach, which targets the much wider drivers of obesity. Obesity is a multifaceted issue, and it is the summation of lots of initiatives that will start to turn the tide. Disease recognition may well be beneficial, or it may not be, but if it comes to fruition, this should not be at the expense of ignoring the obesogenic environment and other policy levers that could be utilised to prevent overweight and obesity.

Professionals and the public also have very mixed views, and we do not know what the population of people living with obesity think. Given disease recognition would be intended to have the greatest impact on patients and professionals, the ambiguity amongst professionals suggests that more research is needed before we proceed, and particularly in consultation with those living with obesity. The link between Covid-19 and obesity may have also changed views; not only on whether obesity should be recognised as a disease, but more generally on how we approach obesity as a population health issue.

Therefore, the RSPH position is neither for nor against recognising obesity as a disease until there is more evidence that fully explores the implications of this on our society. We should also focus on what we do know from this review and research; prevention must be at the forefront of policymaking. Stigmatisation and discrimination are highly prevalent and must be tackled if we want to prevent obesity and provide effective and accessible weight management services to reduce overweight and obesity. HCPs and public health professionals are well placed to prevent and reduce obesity, and must be supported to do this in an effective and appropriate way. A step in the right direction was the release of the APPG on Obesity's guidelines for parliamentarians on how to communicate about obesity in a positive way[88]. Clinicians, policymakers and the public can all change the obesity narrative around prevention and reduction strategies, which may make a decision on disease recognition clearer in the future as we look to rebuild the health of the nation after Covid-19.

Recommendations

- Further research to explore in greater depth the full implications of recognising obesity as a disease, along with patient, public and professional views on doing so, and how this might have been altered by Covid-19.
- The UK and devolved governments to push forward the prevention agenda alongside adequately providing weight management services. Given the principle 'prevention is better than cure', we must alter the obesogenic environment to make it easier to be a healthy weight, while helping those who are overweight or obese take action if appropriate.
- Training for healthcare professionals on overweight, obesity, reducing and preventing excess weight, stigma and weight bias to be mandatory in undergraduate studies and Continuing Professional Development. Training should include how to communicate appropriately, building on the guidelines developed for policymakers on positive communication about obesity[83].
- Raise public awareness of the causes of obesity to limit judgement, stigma and discrimination. The effect of weight on mental health is not just experienced by people who have been stigmatised, and greater understanding and acceptance may benefit many, particularly following the stressor of the coronavirus pandemic.

References

1. NHS. Overview: Obesity [Internet]. [cited 2019 Sep 22]. Available from: https://www.nhs.uk/conditions/obesity/

2. Baker C. Obesity Statistics. 2019.

3. NHS D. Statistics on Obesity, Physical Activity and Diet, England, 2019 [Internet]. [cited 2019 Sep 22]. Available from: https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-obesity-physical-activity-and-diet/statistics-on-obesity-physical-activity-and-diet-england-2019

4. McPherson K, Marsh T, Brown M. Foresight: Tackling Obesities: Future Choices – Modelling Future Trends in Obesity and the Impact on Health Title [Internet]. UK: Department of Innovation Universities and Skills. 2007 [cited 2019 Sep 22]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/295149/07-1662-obesity-modelling-trends.pdf

5. Gov.UK. Reducing obesity: future choices. Research and Analysis. 2007. p. 164.

6. Department of Health. Healthy Weight, Healthy Lives A Cross Government Strategy for England [Internet]. The National Archives. 2008. p. 56. Available from: https://webarchive.nationalarchives.gov.uk/20100407220245/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082378

7. Gov.UK. Healthy Lives, Healthy People: A Call to Action on Obesity in England [Internet]. Policy Paper. 2011. p. 54. Available from: https://www.gov.uk/government/publications/healthy-lives-healthy-people-a-call-to-action-on-obesity-in-england

8. Gov.UK. Childhood obesity: a plan for action [Internet]. Guidance. 2016. p. 13. Available from: https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action

9. Gov.UK. Childhood obesity: a plan for action, chapter 2 [Internet]. Guidance. 2018. p. 33. Available from: https://www.gov.uk/government/publications/childhood-obesity-a-plan-for-action-chapter-2

10. Gov.UK. Advancing our health: prevention in the 2020's - consultation document [Internet]. Closed Consultation. 2019. Available from: https://www.gov.uk/government/consultations/advancing-our-health-prevention-in-the-2020s/advancing-our-health-prevention-in-the-2020s-consultation-document

11. Marteau T. The art of medicine: Changing minds about changing behaviour. The Lancet. 2018; 391. Available from: https://www.repository.cam.ac.uk/bitstream/handle/1810/275367/accepted%20version.pdf?sequence=1

12. Kmietowicz Z. Recognise obesity as a disease to reduce prevalence, says RCP. Br Med J. 2019;364(145).

13. World Health Organisation W. Obesity: preventing and managing the global epidemic. 2000.

14. Royal College of Physicians R. Obesity should be recognised as a disease [Internet]. [cited 2019 Sep 22]. Available from: https://www.rcplondon.ac.uk/file/11920/download?token=1a8cODvw

15. Lexico. Definition of disease in English [Internet]. [cited 2019 Sep 22]. Available from: https://www.lexico.com/en/definition/disease

16. Sully J. What is a disease? Eur Mol Biol Organ. 2004;5(7):650–3.

17. Tikkinen K, Leionen J, Guyatt G, Ebrahim S, Jarvinen T. What is a disease? Perspectives of the

public, health professionals and legislators. BMJ Open. 2012;2(e001632).

18. Rosen H. Is Obesity A Disease or A Behavior Abnormality? Did the AMA Get It Right? J Missouri State Med Assoc. 2014;111(2):104–8.

19. Sturmberg J, Picard M, Aron D, Bennett J, Bircher J, DeHaven M, et al. Health and Disease - Emergent States Resulting From Adaptive Social and Biological Network Interactiosn. Front Med. 2019;

20. Wikman A, Markland S, Alexanderson K. Illness, disease, and sickness absence: an empirical test of differences between concepts of ill health. J Epidemiol Community Heal. 2005;59(6):450–4.

21. Elks CE, Hoed MD, Zhao JH, Sharp SJ, Wareham NJ, Loos RJF. Variability in the heritability of body mass index: a systematic review and meta-regression. Front Endocrinol (Lausanne). 2012;3(29):1–16.

22. Min J, Chiu DT, Wang Y. Variation in the heritability of body mass index based on diverse twin studies: a systematic review. Obes Rev [Internet]. 2013;14:871–82. Available from: 10.1111/obr.12065.

23. Obesity Medicine Association O. Obesity Algorithm 2016-2017.

24. MacLean PS, Blundell JE, Mennella JA, Batterham RL. Biological Control of Appetite. Front Endocrinol (Lausanne) [Internet]. 2012;3(29):1–16. Available from: doi:10.1002/oby.21771.

25. Centre for Disease Control C. Genes and Obesity [Internet]. [cited 2019 Sep 23]. Available from: https://www.cdc.gov/genomics/resources/diseases/obesity/obesedit.htm

26. Farooqi SI. Genetic, molecular and physiological mechanisms involved in human obesity: Society for Endocrinology Medal Lecture 2012. Clin Endocrinol (Oxf). 2015;82(1):23–8.

27. Loos RJF. The genetics of adiposity. Curr Opin Genet Dev. 2018;50:86–95.

28. Albuquerque D, Nobrega C, Manco L, Padez C. The contribution of genetics and environment to obesity. Br Med Bull [Internet]. 2017;123(1):159–73. Available from: doi:10.1093/bmb/ldx022.

29. Swinburn B, Eggar G, Raza F. Dissecting obesogenic environments; the development and application of a framework for identifying and prioritizing environmental interventions for obesoty. Prev Med (Baltim). 1999;29(9):563–70.

30. Fenton K. Health Matters: Obesity and the food environment [Internet]. Public Health Matters. Available from: https://publichealthmatters.blog.gov.uk/2017/03/31/health-matters-obesity-and-the-food-environment/

31. Corfe S. What are the barriers to eating healthily in the UK? [Internet]. Social Market Foundation. 2018 [cited 2019 Sep 24]. Available from: http://www.smf.co.uk/wp-content/uploads/2018/10/What-are-the-barriers-to-eating-healthy-in-the-UK.pdf

32. Fields in Trust F. Green Space Index [Internet]. [cited 2019 Sep 24]. Available from: http://www.fieldsintrust.org/green-space-index

33. Kazi A, Duncan M, Clemes S, Haslam C. A survey of sitting time among UK employees. Occup Med (Chic Ill). 2014;64(7):497–502.

34. Should we officially recognise obesity as a disease? The Lancet Diabetes & Endocrinolgy. 2017;5(7):483.

35. Blackburn M, Stathi A, Keogh E, Eccleston C. Raising the topic of weight in general practice: Perspectives of GPs and primary care nurses. BMJ Open [Internet]. 2015;5:e008546. Available from: doi:10.1136/bmjopen-2015-008546.

36. The King's Fund, 2019. Available from: https://www.kingsfund.org.uk/press/press-releases/reverse-cuts-public-health-funding

37. WA Communications. Slimming World: Local Authority Commissioning of Weight Management Services: Market Research Report. November 2018

38. Royal College of Physicians R. RCP Report concludes that all health professionals need obesity training [Internet]. 2010. Available from: https://www.rcplondon.ac.uk/news/rcp-report-concludes-all-health-professionals-need-obesity-training

39. All-Party Parliamentary Group On Obesity A. The current landscape of obesity services: a report from the All-Party Parliamentary Group on Obesity. 2018.

40. Tomiyama AJ, Carr D, Granberg EM, Major B, Robinson E, Sutin AR, et al. How and why weight stigma drives the obesity "epidemic" and harms health. BMC Med. 2018;16(123).

41. Salas XR, Jeswell J, Breda J, Nihlen A, Yordi I. Weight bias and obesity stigma: considerations for the WHO European Region. 2017.

42. Puhl RM, Heuer CA. Obesity Stigma: Important Considerations for Public Health. J Public Health (Bangkok). 2010;100(6):1019–28.

43. Day EO. Policymakers [Internet]. European Obesity Day 2019. 2019 [cited 2019 Apr 29]. Available from: https://www.europeanobesityday.eu/tackling-obesity-together/policymakers/

44. Brewis A, SturtzSreetharan C, Wutich A. Obesity stigma as a globalizing health challenge. Global Health. 2018;14(20).

45. Flint S. Obesity stigma: Prevalence and impact in healthcare. Br J Obes. 2015;1(1):1–40.

46. Royal College of Physicians R. RCP calls for obesity to be recognised as a disease. 2019.

47. Wilding JP. 'You wouldn't tell someone with asthma to work harder with their breathing': why obesity should be recognised as a disease.

48. Stoner L, Cornwall J. Did the American Medical Association make the correct decision classifying obesity as a disease? Australas Med J. 2014;7(11):462–4.

49. Wilding JPH, Mooney V, Pile R. Should obesity be recognised as a disease? BMJ. 2019;336(l4258).

50. Jones NR V, Conklin AI, Suhrcke M, Monsivais P. The Growing Price Gap between More and Less Healthy Foods: Analysis of a Novel Longitudinal UK Dataset. PLoS One. 2014;9(10):e109343.

51. Morris MA, Hulme C, Clrke GP, Edwards KL, Cade JE. What is the cost of a healthy diet? Using diet data from the UK Women's Cohort Study. J Epidemiol Community Heal. 2014;68:1043–9.

52. Tedstone A, Targett V, Allen R. Sugar Reduction: The evidence for action. Public Health England. 2015.

53. Smithers R. Supermarket price promotions targeting less healthy food, survey finds [Internet]. The Guardian. 2016 [cited 2019 Oct 27]. Available from: https://www.theguardian.com/money/2016/aug/04/supermarket-price-promotions-targeting-less-healthy-food-survey-finds

54. Dobbs R, Sawers C, Thompson F, Manyika J, Woetzel J, Child P. Overcoming obesity: An initial economic analysis [Internet]. McKinsey Global Institute. 2014 [cited 2019 Oct 27]. Available from: https://www.mckinsey.com/~/media/McKinsey/Business Functions/Economic Studies TEMP/Our Insights/How the world could better fight obesity/MGI_Overcoming_obesity_Full_report.ashx

55. Buck D. As someone who's overweight, I know that calling obesity a disease is not the way to help. The Telegraph.

56. Oliver D. An arguement against more NHS funding? I don't buy it. Br Med J [Internet]. 2017;359:j4800. Available from: doi:10.1136/bmj.j4800

57. ProCon.org. Is Obesity a Disease? [Internet]. [cited 2019 Oct 27]. Available from: https://obesity.procon.org/

58. Body Mass Index [Internet]. Wikipedia. [cited 2019 Oct 27]. Available from: https://en.wikipedia.org/wiki/Body_mass_index#Limitations

59. NHS. BMI categories may need adjusting, argue researchers [Internet]. NHS News. [cited 2019 Oct 27]. Available from: https://www.nhs.uk/news/obesity/bmi-categories-may-need-adjusting-argue-researchers/

60. Afzal S, Tybjaerg-Hansen A, Jensen GB, Nordestgaard BG. Change in Body Mass Index Associated With Lowest Mortality in Denmark, 1976-2013. JAMA. 2016;315(18):1989–96.

61. Amundson DE, Djurkovic S, Matwiyoff GN. The obesity paradox. Crit Care Clin. 2010;26(4):583–96.

62. Health C on S and P. Report of the Council on Science and Public Health [Internet]. 2013 [cited 2019 Oct 30]. p. 3-A-13. Available from: file:///C:/Users/msxom1.AD.000/Downloads/Should Europe follow the US.pdf

63. Puhl R, Liu S. A national survey of public views about the classification of obesity as a disease. Obesity. 2015;23(6):1288–95.

64. Tompson T, Benz J, Agiesta J, Brewer KH, Bye L, Reimer R. Obesity in the United States: Public Perceptions.

65. Bleich SN, Bandara S, Bennett WL, Cooper A, Gudzune KA. U.S. Health Professionals' views on Obesity Care, Training, and Self-Efficacy. Am J Prev Med. 2015;48(4):411–8.

66. Sharma A, Belanger A, Carson V, Krah J, Langlois M-F, Lawlor D. Perceptions of barriers to effective obesity management in Canada: Results from the ACTION study. Clin Obes. 2019;9(5):e12329.

67. Teixeira FV, Pais-Ribeiro JL, Maia A. A qualitative study of GPs' views towards obesity: are they fighting or giving up?. *Public Health.* 2015;129(3): 218-225. Available from: doi:10.1016/j.puhe.2015.01.004.

68. European Association for the Study of Obesity. Obesity: A Disease of the Brain? 2020. Available from: https://cdn.easo.org/wp-content/uploads/2020/04/15171209/EASO_IG_vFinal.pdf

69. Centers for Disease Control and Prevention C. High Obesity Program (2014-2018) [Internet]. [cited 2020 Jan 29]. Available from: https://www.cdc.gov/nccdphp/dnpao/state-local-programs/hop-1809/high-obesity-program-1809.html

70. Centers for Disease Control and Prevention C. The CDC's High Obesity Program: Tackling the Obesity Crisis.

71. CDC-RFA-DP18-1809. High Obesity Program Department of Health and Human Services Centres for Disease Control - NCCDPHP [Internet]. Grants.gov. [cited 2020 Jan 29]. Available from: https://www.grants.gov/web/grants/view-opportunity.html?oppId=303770

72. Canada O. Report Card on Access to Obesity Treatment for Adults in Canada 2019. Edmonton. 2019.

73. Teixeira F V, Pais-Ribeiro JL, Maia A. Different settings, different approaches: a qualitative comparison of Portuguese dietitians' beliefs, attitudes and practices about obesity in public and private settings. Public Health Nutr. 2017;21(2):435–46.

74. GOV.UK. Tackling childhood obesity: £1.5 million funding for local projects [Internet]. News Story. 2019. Available from: https://www.gov.uk/government/news/tackling-childhood-obesity-15-million-funding-for-local-projects

75. Whole Systems Obesity Project. Lack of funding for weight management services [Internet]. Blog. 2018. Available from: https://www.leedsbeckett.ac.uk/blogs/expert-opinion/2018/01/lack-of-funding-for-weight-management-services/

76. American Board of Obesity Medicine. Record number of physicians to sit for 2015 ABOM exam [Internet]. Available from: https://www.abom.org/record-number-of-physicians-to-sit-for-2015-abom-exam/

77. Glickman D, Shalala DE. The ENRICH Act will provide better tools to fight obesity epidemic [Internet]. [cited 2020 Jan 30]. Available from: https://thehill.com/blogs/congress-blog/healthcare/236479-the-enrich-act-will-provide-better-tools-to-fight-obesity

78. McVey GL, Walker KS, Beyers J, Harrison HL, Simkins SW, Russell-Mayhew S. Integrating weight bias awareness and mental health promotion into obesity prevention delivery: a public health pilot study [Internet]. Available from: https://europepmc.org/article/PMC/3617990

79. Directorate-General of Health, Division of Genetic C and GD. National Programme Against Obesity [Internet]. Lisbon: Directorate-General of Health. 2005 [cited 2020 Jan 31]. Available from: http://pns.dgs.pt/files/2015/08/In-english-National-Programme-against-Obesity.pdf

80. Kyle TK, Dhurandhar EJ, Allison DB. Regarding Obesity as a Disease: Evolving Policies and Their Implications. Endocrinol Metab Clin North Am. 2016;45(3):511–20.

81. World Health Organisation. Portugal brings down obesity by taxing sugary drinks. March 2020. Available from: http://www.euro.who.int/en/health-topics/noncommunicable-diseases/obesity/news/news/2020/3/portugal-brings-down-obesity-by-taxing-sugary-drinks

82. Estimate of Bariatric Surgery Numbers, 2011-2018. American Society for Metabolic and Bariatric Surgery. 2018.

83. Flegal KM, Kruszon-Moran D, Carroll MD, Fryar CD, Ogden CL. Trends in Obesity Among Adults in the United States 2005-2014. JAMA. 2016;315(21):2284–91.

84. Centres for Disease Control and Prevention C. Adult Obesity Facts [Internet]. [cited 2020 Jan 29]. Available from: https://www.cdc.gov/obesity/data/adult.html

85. Statistics Canada. Table 13-10-0373-01 Overweight and obesity based on measured body mass index, by age group and sex.

86. Carmo ID, Santos OD, Camolas J, Vieira J, Carreira M, Medina L. Overweight and obesity in Portugal: national prevelance in 2003-2005. Obes Rev. 2007;9(1):11–9.

87. Oliveira A, Araujo J, Severo M, Correia D, Ramos E, Torres D. Prevalence of general and adominal obesity in Portugal: comprehensive results from the National Food, nutrition and physical activity survey 2015-2016. BMC Public Health. 2018;18(614).

88. All-Party Parliamentary Group On Obesity A. Positive Communication About Obesity [Internet]. Available from: https://static1.squarespace.com/static/5975e650be6594496c79e2fb/t/5e5c1158bd974c78734258de/1583092058005/Positive+Communication+About+Obesity.pdf

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