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Perspective

The myths of obesity

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ABSTRACT

Despite an epidemic of obesity, the availability of bariatric surgery is limited. Negative beliefs about obesity and bariatric surgery are one of the barriers to access. In this article, we address and dispel some of the common myths surrounding obesity and bariatric surgery.

1. Background

The obesity epidemic is one of the most important public health issues facing industrialised countries. In the past 25 years, the prevalence of obesity (defined as a body mass index greater than 30 kg/m^2) has more than doubled in developed countries. Currently, 40–50% of Europeans and 67% of the US population are overweight or obese [1]. It has been well established that obesity is associated with type 2 diabetes, cardiovascular disease, breast and uterine cancers, and increased mortality [2,3]. Due to its association with multiple chronic illnesses, the rising prevalence of obesity is forecast to increase the costs of healthcare substantially [4].

Despite significant investment in treating other lifestyle-related illnesses (e.g. those related to smoking and alcohol), the availability of weight-loss surgery is limited, with less than 1% of eligible patients having access to treatment [5,6]. There are many potential barriers to surgery, but there is evidence to suggest that implicit bias against obese patients may play a part, as well as concerns regarding the associated costs and risks of surgery [7,8]. In this article, we will address and dispel some of the common myths surrounding obesity and bariatric surgery.

2. The myths

2.1. "Obesity is not a disease, it is a modern phenomenon"

Contrary to the perception that obesity only arose in the last century, there is historical evidence to suggest it has been a prevalent feature of human populations for thousands of years. The earliest examples include the nude female figurines of Stone Age Europe dating back to more than 20,000 years ago, such as the Venus of Willendorf, which is a representation of what would be considered a clinically obese woman [9]. Other notable examples from more recent history include portraits of Henry VIII, the women of Rubens (deriving the adjective 'Rubenesque' for plump) and in paintings of men and women throughout the Renaissance when obesity was viewed as a sign of prosperity. What has changed in the last century has been the falling cost of food production, which has meant that more people than ever before can now reach their 'obesogenic' potential.

2.2. "Obesity is a simple disease"

At first glance, the cause of obesity seems simple – the inevitable result of calorie intake exceeding energy expenditure. Many would therefore assume that obesity is not a disease but a consequence of negative human personality traits such as self-indulgence and a lack of will power. While behaviour traits are important, however, the pathogenesis of obesity is more complex, with hormonal effects on appetite being an important subconscious regulator of intake. Obesity might, in fact, be a 'side-effect' of evolution, since humans have evolved mechanisms to conserve body fat, which is key to survival in a nutrient-deprived environment [10]. According to this theory, natural selection rewarded those with 'thrifty' genes that enabled storage and slow utilisation of fat at times of famine, which then persisted through subsequent generations. It is, therefore, not surprising to see an upward trend in obesity at a time when humans have easy access to virtually unlimited, cheap, high-calorie foods.

2.3. "Weight loss surgery is not necessary – people should follow a diet"

It seems intuitive to think that obesity, which is a state of caloric excess, can be treated by diet and exercise alone. While there is no doubt that lifestyle factors are essential to prevent the development of obesity, for patients who are already obese, the solution is not as simple. In a systematic review of intensive lifestyle interventions for patients with severe obesity (BMI > 40kg/m^2, or BMI > 35 kg/m^2 with a co-morbidity), diet and exercise alone were associated with weight loss of only 5–8% from baseline at 12 months [11]. Furthermore, a large study assessing intensive lifestyle interventions in obese patients with diabetes demonstrated only 3.5% weight loss after a median of 9.6 years, with only modest improvements in diabetes control and no reduction in the rate of cardiovascular events [12]. The trial was in fact eventually stopped due to futility. These studies demonstrate that lifestyle interventions alone cannot result in sustained, clinically-meaningful weight loss for severely obese individuals.

The reason that diet and exercise are ineffective in treating severe obesity requires an understanding of the complex physiology that acts to maintain our weight. There is growing evidence that obesity is a disorder of the energy homeostasis system, rather than simply arising

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from the passive accumulation of excess weight [10]. The hypothalamus has been shown to be critical in regulating energy homeostasis, by co-ordinating central and peripheral signals of energy storage to maintain a set weight [13]. Any deviation from this set point, such as an individual trying to lose weight, will trigger vigorous compensatory responses to maintain positive energy balance and defend the weight. This may explain the frequent weight regain seen with many types of weight loss interventions [14].

Bariatric surgery is an effective tool in assisting obese patients to change their diet and lose weight as it alters the physiological drivers that sustain their obesity. Whilst there are many theories for the metabolic improvements after bariatric surgery, including changes in vagal signalling, gut hormones, bile acids and the gut microbiome [15], fundamentally, the gastric bypass and sleeve gastrectomy work at multiple levels in the energy regulatory system to reverse the dysfunctional system, in order to promote satiety, reduce hunger and increase energy expenditure, thereby achieving a new lower set point for weight [16,17].

2.4. "Weight loss surgery is risky and has poor long-term results"

Bariatric surgery has been shown to be a safe and effective long-term treatment option for severe obesity [18]. The Swedish Obese Subjects (SOS) study compared bariatric surgery with conventional treatments for 4047 obese patients, and found that after a median of 10.9 years, surgery was associated with sustained weight loss of up to 25% and an improvement in health-related quality of life [19,20]. A recent review demonstrated that this weight loss can be sustained for 20 years [21]. Furthermore, in the case of obese patients with type 2 diabetes, the STAMPEDE trial demonstrated that bariatric surgery was more effective than medical therapy in improving glycaemic control, with many patients experiencing complete remission of their diabetes. There is even evidence that bariatric surgery has a prophylactic effect on type II diabetes [22]. Finally, a recent large UK study has also shown that bariatric surgery is strongly associated with a reduced risk of premature death [23].

Although bariatric surgery, like all operations, has risks, the 30-day mortality of bariatric surgery, even in older adults (age > 55 years), ranges from 0.1 to 0.3%, which is lower than most common gastrointestinal operations [24,25]. Given that the majority of bariatric operations are performed laparoscopically, this also carries the advantages of minimally invasive surgery such as less pain, fewer wound complications and a faster return to normal activities [26], and for selected patients, surgery can even be performed safely as a day-case procedure [27].

2.5. "Weight loss surgery is far too expensive"

While there are indeed upfront costs associated with bariatric surgery, there are also huge costs involved in treating obesity and its complications. These include the costs of inpatient treatment, as well as secondary costs to society through sick pay and unemployment benefits. By reducing the healthcare and social costs of treating the complications of obesity and diabetes, bariatric surgery has been shown to be highly cost-effective in the long-term, especially for those with severe obesity [28,29].

3. Conclusions

The negative perception of obesity is one of the major barriers patients face in accessing bariatric surgery. However, the reality is obesity has a complex aetiology, and that bariatric surgery should play an integral role in treatment. Supporting investment in bariatric surgery should not detract from prevention, just as the widespread treatment of smoking-related illnesses has not prohibited effective smoking cessation programmes. Given the evidence in favour of bariatric surgery as a cost-effective metabolic intervention, all physicians involved in the care of obese patients should leave prejudice behind and help eliminate barriers and promote access to bariatric surgery.

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Author contribution

Bibek Das: drafting article, critical revision of article, approval of article.

Omar Khan: conception and design, critical revision of article, approval of article.

Conflicts of interest

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