



Understanding Obesity

Informing a compassionate response to individuals and changing society

By Mark Daly

Obesity represents one of the most pervasive health issues for society as well as for individuals. It undermines the health, self-respect and confidence of many individuals and imposes a significant burden on health services. It also has a potential environmental impact, often unrecognised, due to increased food consumption and increased costs of transport.

Yet despite the enormous cost of obesity, individuals and society appear powerless to effect sustained change. Pressure to lose weight, self-imposed or from others, is rarely helpful and often adds a sense of guilt and failure to existing feelings of low self-esteem. Pursuing weight loss goals unsuccessfully is frustrating and discouraging. The time and effort consumed can represent a lost opportunity to pursue something more important.

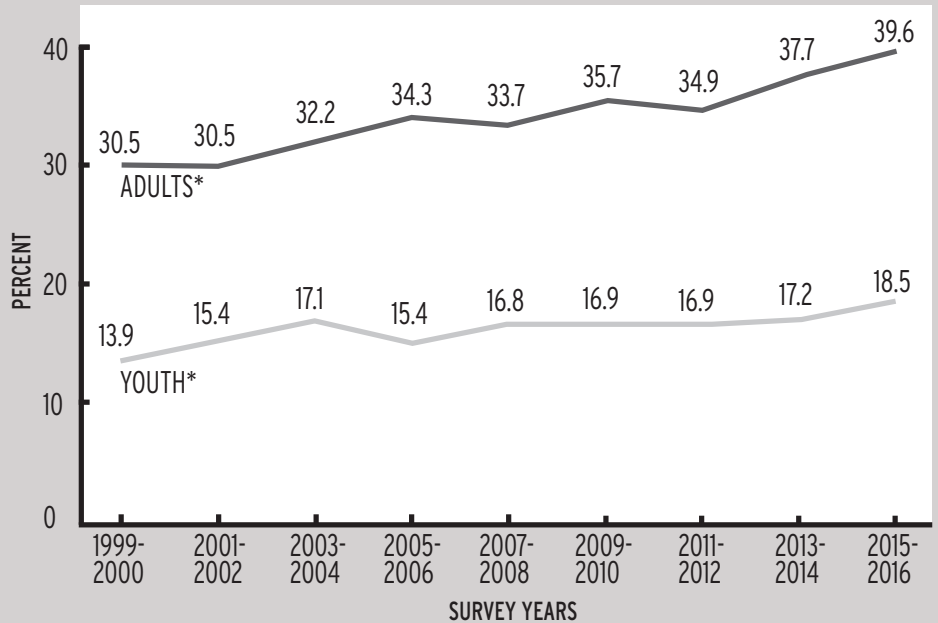
Whilst so much of society suffers from (or is at risk of) the health effects of obesity, a smaller proportion obsesses with perfecting an unachievable (for most) body image.

It is important to recognise that obesity, both in adults and children is associated with deprivation, and therefore represents an aspect of social inequality and injustice.

Our response to individuals who struggle with obesity must be compassionate, insightful and constructive, and must not exacerbate guilt and low self-esteem. Our response to society should be to challenge the social inequalities associated with deprivation, the lack of an effective national strategy and the narcissistic obsession with the 'perfect' body.

This File is intended to give an overview of current thinking around obesity from a health and societal perspective and will include a brief overview of treatments available. It will also offer encouragement to care for obese patients in a more compassionate way and to consider how we might challenge society to deal with associated inequities.

Trends in obesity prevalence among adults aged 20 or over (age adjusted) and youth aged 2-19 years: United States, 1999-2000 through 2015-2016



* Significant increasing linear trend from 1999-2000 through 2015-2016.
 NOTES: All estimates for adults are age adjusted by the direct method to the 2000 US census population using the age groups 20-39, 40-59, and 60 and over. Access data table for figure 5 at: bit.ly/2HLv6tn
 SOURCE: NCHS, National Health and Nutrition Examination Survey, 1999-2016.

Understanding obesity

1. Prevalence

In the UK, most people are overweight or obese.¹ Weight in general has been increasing steadily for many years though there is some evidence in the US that the growth in obesity may have reached a plateau.² Central obesity, defined by waist circumference, is associated with a higher metabolic risk than is simple excess weight.

A recent (2015) OECD report showed the proportion of UK citizens who are obese to be 26.9%, with an additional 36.1% being overweight. Japan has the lowest prevalence of obesity at just 3.7%.³

America has had the highest prevalence of obesity (though was recently overtaken by Mexico) and the chart above from the US National Health and Nutrition Examination Survey shows the rise over a 15-year period for adults and youth.²

In many countries there is an association between social class/wealth and obesity that in part contributes to the inequities in life

expectancy between rich and poor.^{4,5} In the UK, this relationship is less clear but women in lower social classes are more likely to be obese. The association is much more obvious among children.⁶

2. Pathogenesis

When considering the causes of obesity, we should separate individual cases from society in general.

An individual patient may look at their family and say – 'it's in my genes, I can't help it'. Whilst a shared environment will contribute, science suggests there is indeed a strong genetic component to weight gain. Several decades ago, twin-adoption surveys showed a marked difference in adult weight between identical and non-identical twins, with stronger concordance in the identical twins even when raised in different families.⁷ More recent studies have identified a number of genes that influence variation in weight, that exert a cumulative effect when several of them co-exist in the same person.

The pathogenic mechanisms of these genes are not yet fully understood – whilst some may be related to the efficiency of metabolism, it is possible that others are related to appetite regulation.

It is likely that the ‘appetate’ that regulates hunger is very different in some individuals from others, and that many people who struggle with their weight may simply feel hungrier for a given energy intake than their skinnier peers. This is important for clinicians to remember when tempted to rush to judgment. Titles such as a paper⁸ published 20 years ago about the cause of obesity – ‘Gluttony or sloth?’ – would hopefully not be seen today (although the original article’s tone was not as pejorative as might be suggested by its title).

However, the gene pool of the population cannot have drifted sufficiently to account fully for the growing prevalence of obesity. Environmental factors must also be relevant. Physical activity has fallen generally because of rising car ownership, longer hours are spent watching TV and other screens and jobs are generally more sedentary. On the dietary side, generally increased energy density in food, especially in takeaway food, make weight regulation a challenge.

3. Why is losing weight so hard?

In theory, losing weight can be likened to running down a bank account – simply by spending more than we put in. From a weight-stable base, anyone will lose weight if denied a sufficient energy intake or if they increase activity levels without increasing food intake.

Yet in reality, losing weight, and especially maintaining a lower weight, is harder than giving up addictions such as gambling, drugs and smoking. Why is this? Is it simply a matter of willpower?

Physiological regulation of weight is complex, probably far more so than is currently understood, and involves the interplay of multiple endocrine and neuro-endocrine factors. One of those factors is leptin – a hormone, produced by fat cells, that inhibits hunger – and its discovery initially led to high hopes of a breakthrough in weight reduction. However, in practice its therapeutic application is confined to rare genetic deficiencies of leptin production.

The hormonal milieu stretches well beyond the hypothalamus with increasing recognition of the gut as a complex

endocrine organ – ghrelin produced in the stomach signals hunger and PYY-36 produced in the small intestine signals satiety. The latter offers a potential explanation why processed food may be a problem, as rapidly digestible carbohydrate may be fully absorbed before it can trigger PYY-36 production by the small intestine.

The more severe the obesity and the younger the age of onset, the more likely that obesity is related to disordered eating.

In short, our bodies have multiple mechanisms for weight regulation, with both shorter and longer term effects. We appear to be highly tuned for weight maintenance. Intentional, rapid weight loss may upset the integration of these mechanisms. Anyone who has themselves lost weight rapidly, or supported patients to do the same, will know that, at the end of a period of rapid weight loss, it is common to experience a marked increase in appetite, and the duration of this effect may vary.

Understanding disordered eating

The more severe the obesity and the younger the age of onset, the more likely that obesity is related to disordered eating. Most obesity clinics will have simple tools to screen for abnormal eating patterns although they don’t replace a full history taken by a skilled dietician.

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Such screening tools usually consist of standardised questionnaires. These begin with questions that explore simple emotional responses to food – ‘do you use food to cheer you up, or as a reward?’ – before progressing to more searching

questions, such as ‘do you ever lose control of your eating and can’t stop?’ or ‘do you ever make yourself sick after eating?’ Interpretation of such questionnaires is a specialist area but all clinicians seeking to help obese patients need to be mindful of possible abnormal eating patterns. Uncontrolled bulimic tendencies and/or binge eating will require sustained psychological intervention.

Perhaps one of the less recognised associations of obesity is with abuse.⁹ Sensitive exploring adverse childhood events, recognising the psychopathology that can follow, and arranging appropriate support are essential, if sometimes distressing, elements of good care.

Physical effects and risks of obesity

The spectrum of pathological features experienced by obese patients depends in part on the life-stage onset. The earlier in life the obesity becomes severe, the more complex and considered the medical approach must be.

The range of distress and disability associated with obesity is as wide as the range of weight measurement itself. The public is increasingly aware of the relationship between weight and metabolic/vascular risk/disease – whether that is diabetes, hypertension or coronary heart disease. Musculoskeletal problems are frequent, and markedly obese patients are often wheelchair bound.

The population risk of developing type 2 diabetes may start from a very modest BMI, particularly in South Asian populations where the risk can start at BMI levels of 23.¹⁰ Yet other patients with BMIs over 50 do not develop diabetes. This may seem counter-intuitive but it results from the interplay between genetics, BMI and age in different populations. Recognising this is important for clinicians because it helps them to empathise with those who develop diabetes. There are many clinicians who refer to diabetes as a lifestyle disease, but it is more sympathetically considered a population risk. The risk of diabetes across a whole population undoubtedly increases as a result of obesity but within that population there will be individuals who will develop type 2 diabetes at much more modest BMIs. Derogatory comments by colleagues should be courteously

challenged, along with the attitudes that underlie them.

Whilst the association of obesity with conditions such as heart disease, orthopaedic problems, hypertension and stroke is generally known, fewer patients have heard of obstructive sleep apnoea, even though it is a diagnosis being made in most obesity clinics every week. Patients with morbid obesity will have a high prevalence of undiagnosed obstructive sleep apnoea and, despite the intrusive nature of the treatment (CPAP), many will report a dramatic improvement in their quality of life as soon as it is commenced.

Fewer still are aware of the association between obesity and many forms of cancer.¹¹ For many years it has been known that obesity is associated with an increased risk of specific cancers, including cancers of the breast (in women after the menopause), bowel, womb, oesophagus, pancreas, kidney, liver, upper stomach (gastric cardia), gall bladder, ovary, thyroid, blood (myeloma) and meninges (meningioma). Mechanisms are, as yet, not fully understood, but inflammation and endocrine changes are among the more plausible mechanisms.

Treating obesity

Treating the individual

Understanding a person's energy requirements is a key part of achieving weight loss. Whilst many people assume that obese people have lower energy metabolic rates, science shows that morbidly obese patients have high not low metabolic rates. This is because metabolic rate generally correlates with age, gender, muscle mass and weight.

For example, a younger person with morbid obesity will have a very high energy need – even when they are weight stable and no longer gaining. Yet in clinical settings, many will report intakes well below that required to maintain their weight.¹² It is recognised that many of the tools used to estimate food intake are associated with an underestimation of calories consumed compared with their accuracy in other elements of the nutritional assessment.

The relationship between weight and metabolic rate is really important when planning substantial weight loss. This is because as you lose weight, the number of calories you need declines and therefore

it becomes harder as you must restrict your food intake or increase your activity more. Many people find therefore that rate of weight loss declines as they continue to diet and some of this effect is due to the reduced metabolic rate with a reduced weight amongst other factors such as compliance with the lifestyle change. Commercial weight loss groups understand this well and adjust downwards the dietary points allowed as a person loses weight.

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Another important consideration is the link between age and metabolic rate. An older person with musculoskeletal problems and reduced mobility will have lost muscle mass as they lose weight, and will have a lower total energy expenditure for the same body mass; therefore they will lose weight more slowly, or have to achieve a lower energy intake, in order to achieve the same weight loss as a younger person. Many patients will comment on how much easier it was to lose weight when they were younger and indeed this is a factor in the 'middle-aged spread'.

Very few obese patients will be comfortable with their physical state and most will be desperate to be thinner. Most will have tried a range of diets and/or exercise programmes before they seek help. They feel frustrated with themselves and judged by society, their peers and even by the medical profession. Already low in self-esteem, an added sense of failure and guilt may produce intense levels of distress.

It is a natural and understandable response that they deny their responsibility in getting to this point. Blaming it on a low metabolic rate, genes (there is a lot of truth here) serves to mitigate a sense of failure and guilt. Tragically it also robs the patient of any sense of hope that change is possible.

To insist such patients accept that their

obesity is simply related to over-eating may only add to their distress, and run the risk of destroying their complex coping mechanism. Yet a patient must gain insight if treatment is to be successful.

Treatment options

Dietary changes and drugs

The current NICE guidance for 'best dietetic practice' is very patient-centred and encourages an individual approach with goal setting by mutual agreement with the patient. Either a low-fat diet (with an expected reduction in calorie intake) or a diet which achieves a 600kcal deficit is supported. An important distinction is drawn between the weight loss phase (typically a maximum of nine months is achievable, at best) and weight maintenance thereafter.

In terms of drugs – only orlistat is supported by NICE. Naltrexone-buprion is not supported, based on uncertain cost-effectiveness.

The following broad estimates are worth remembering:

- Diet and exercise produces less than 5kg of weight loss over one year¹³
- Orlistat offers a further weight loss of 3kg at best¹⁴
- But, in theory, full compliance with a 600kcal deficit would achieve an annual weight loss of 25kg or more.

Therefore, it could be argued that supporting individuals to be more compliant with lifestyle change might be more profitable. However, the evidence suggests that in general people lack the motivation or self-discipline to persist with lifestyle changes. This has led to greater reliance on surgical treatment options.

The role of bariatric surgery

For many clinicians, investing in an expensive procedure for individuals with high anaesthetic risk seems inappropriate, and a waste of precious resources. For those who have worked closely with morbidly obese patients before and after such surgery, it's a different story.

Patients report substantial improvements in quality of life and all markers of physical disease, including diabetes, improve. Coming off insulin and normalising HbA1c is commonplace but not universal. Indeed,

such is the speed of metabolic improvement that physicians routinely stop all medication post-anaesthetic. There are no other treatments for obese people that improve their quality of life, physical and psychological, to anything like the same extent as bariatric surgery.

Surgical options include gastric banding (adjustable band with a subcutaneous device to inflate or deflate a band placed high external to the stomach, creating a small pouch which can only contain small amounts of food), roux-en-y gastric bypass (reduced stomach size and bypassed gut leading in theory to a malabsorption component) or sleeve gastrectomy (reduced stomach size).

Those operations which involve reducing stomach size result in a reduced appetite as well as a decreased ability to eat anything more than small meals. The reasons for this are not fully understood but are likely to be related to neuro-endocrine changes from a reduced stomach mass.

Gastric banding, although a less invasive operation, requires frequent follow-up and adjustment of the band – a simple outpatient procedure that involves a subcutaneous injection/aspiration into the port followed by an assessment of ability to drink fluids before returning home.

Weight loss is most rapid in the first few months after surgery, especially for the more invasive procedures, and plateaus thereafter. Patients should be supported and counselled as the stomach remnant will stretch/grow in response to increased meal size and the effect of surgery can be lost 12-18 months post-operation if a degree of restriction is not maintained. Nevertheless, the weight loss during that initial period is so significant that most patients and physicians consider the effort worthwhile – an impact that very few patients achieve by any other means.

Given the significant abnormal eating patterns and associated psychological problems that many of these patients face, counselling before surgery and support post-operatively are considered by most to be essential. Indeed, a gastric band placement in patients who have had binge eating problems is a real problem if not addressed pre-operatively, as distension and perforation can occur.

Best practice for the support of these patients requires a specialist

multidisciplinary team (MDT) with dietetic, psychological/ psychiatric input, nurse, physio and physician – but the availability and funding for such management is variable despite its efficacy and the reduced future health burden.

Patients with morbid obesity are loved by God every bit as much as everyone else. To meet their needs, provision of the right services in terms of both access and quality must be pursued, instead of settling for the status quo.

Prevention of obesity

Our modern world has the worst combination of factors in the causation and impact of obesity.

Preventing weight gain is much easier than losing weight. At a population level this remains a challenge. For hypertension, stroke and ischaemic heart disease there have been reductions in morbidity and mortality associated with the reduction in salt intake, in part due to the food industry's readiness to cooperate. More could be done by industry, not least to reduce the sugar content of fizzy drinks and processed foods. Many processed foods have a high energy density and foods marketed as lower calorie often come with a price premium. There has been some movement by the industry in terms of portion sizes, although 'supersize' meal options remain at some outlets.

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Efforts to increase activity have been partially successful, such as 'cycle to work' schemes and running networks, but uptake varies with social class, and tax benefit schemes disproportionately benefit the better paid. As clinicians, we could be more active in encouraging government (local and central) to promote initiatives that:

- a) encourage further changes by the food industry;
- b) facilitate increased physical activity; and
- c) address social inequalities in these areas.

A Christian response

Obesity in the Bible

The Bible was written in times of hard physical work, to people who ate a 'Mediterranean diet'. However, there are still striking examples of people who were well overweight and whose weight undoubtedly contributed to their deaths.

Eli the priest, hearing the news of his sons' deaths fell backwards and suffered a fatal fracture of the cervical spine 'for he was an old man, and he was heavy'.¹⁵ Eglon, king of Moab, died from a penetrating injury after being stabbed by Ehud the Israelite judge. We are told he was 'a very fat man'.¹⁶

The Bible also recognises the behavioural element in overeating. The book of Proverbs gives wise advice to those given to gluttony: 'Do not join those who drink too much wine or gorge themselves on meat, for drunkards and gluttons become poor, and drowsiness clothes them in rags.'¹⁷ It also warns those with a sweet tooth to 'eat just enough'¹⁸ and states that 'a companion of gluttons disgraces his father'.¹⁹

The apostle Paul emphasises that our bodies are gifts from God and temples of the Holy Spirit²⁰ saying that this should lead us to treat them with respect, look after them carefully and use them in ways that are 'holy and honourable'.²¹

He also remarks on the propensity of the inhabitants of Crete to be 'liars, evil brutes, lazy gluttons' and exhorts Titus to rebuke them and urge them to 'be sound in the faith'.²² He similarly warns the Philippians: 'Many live as enemies of the cross of Christ. Their destiny is destruction, their god is their stomach, and their glory is in their shame.'²³

But while teaching that physical exercise is of some value²⁴ Paul underlines that spiritual fitness is far more important. Knowing God's love and forgiveness is infinitely more important than good health in this life and our ultimate destiny as Christians is not to live on in these current bodies, but to receive bodies like that of Jesus after the resurrection to live in a 'New Jerusalem' where there will be 'no more death or mourning or crying or pain'²⁵ and where 'eternal glory' will put our current comparatively 'light and momentary troubles' into true perspective.²⁶

Scripture also helps us to recognise, that whilst obesity has a significant behavioural element, the Fall has affected us at all levels

including our genes and environment. We all need God's grace, both directly and through others to change. Medicine and surgery are gifts of a good Creator that we have a duty to steward appropriately and wisely. Christian doctors should model the compassion of Jesus, whilst both seeking to help our patients gain insight into what role they can play in becoming healthier and providing the very best evidence-based care.

A proportionate response for Christian clinicians

We have a duty to look after our bodies as gifts from God but not to be pre-occupied with them. There is a balance that will be different for each one of us according to our health needs. For most people this will mean making informed choices about what to eat and drink and about levels of physical activity to achieve and maintain fitness.

But these choices should not be made at the expense of our greater priorities – to love the Lord our God with all our heart, soul, mind and strength and to love others as ourselves.

Food is a precious gift from God, and hospitality and sharing meals is a way of showing love to others. Equally, many forms of physical activity bring us closer to others, whether that is with our family, friends, church or the wider community.

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There are pitfalls to avoid on all sides. We are surrounded by a culture that worships at the altar of physical perfection, creating unrealistic expectations. At the same time, we are beset by adverts that encourage us to indulge our appetites, and be good to ourselves 'because we're worth it'.

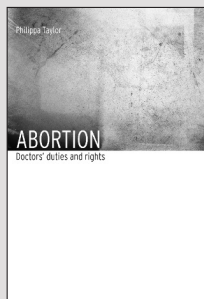
Self-denial and self-discipline are outmoded concepts in the have-it-now world. We also have a responsibility to care for the earth and to steward resources, natural and financial.

There is a phrase occasionally used in management circles – 'opportunity cost'. It is a term that originated with economics but can be applied in other contexts. It is defined as 'the loss of potential gain from other alternatives when one alternative is chosen'. What we prioritise, and how we spend our time, can represent opportunity costs against things that are more important.

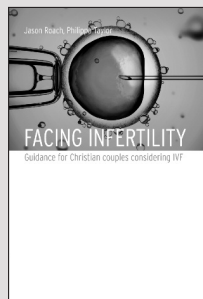
For each person this will fall differently. A young university student's commitment to triathlon training may represent an opportunity to spend time with others and reach a level of fitness which will benefit their health for the longer term. But for a middle-aged father with young children and heavy work responsibilities, the same time spent in pursuing such an individual sport with high training requirements may take him away from his family. Each of us must

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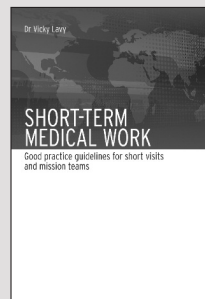
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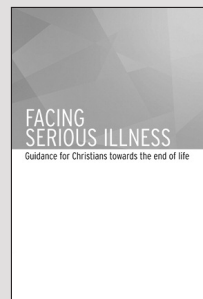
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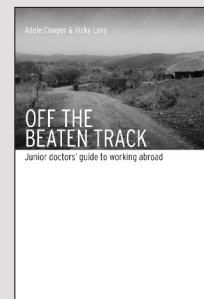
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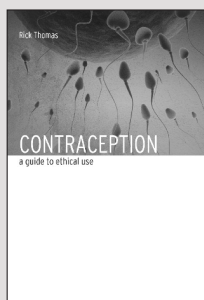
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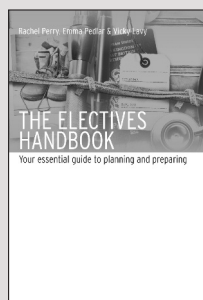
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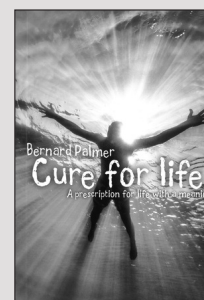
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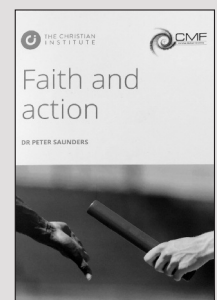
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examine our own lives and priorities in the context of our service to God and to others.

Our response to our patients

Most doctors involved in direct patient care will deal with obese patients. These patients need compassionate care – many report feeling judged by doctors and leave clinics feeling even more of a failure than when they came in. Treating them as individuals, valuing their challenges, respecting their distress – all this is an expression of God's love. A judgmental attitude can exacerbate feelings of guilt and failure in our patients, but by demonstrating understanding and compassion, the clinician helps move their patient to the next stage, that of believing that lifestyle changes can be part of the solution.

Challenging society

Our society is unequal and the physical and mental suffering associated with obesity is very real. Part of being salt and light within our communities is to set a good example. For most of us this will mean moderating our intake and choosing more active (and often less expensive) transport options where feasible.

We can facilitate change more widely by calling for increased effort and commitment within our churches and medical communities and, for some, by challenging commissioning priorities. Commissioners are often vexed by the differences in life expectancy within their wards yet challenges from the public in this area are infrequent. Both providers and commissioners have public boards and these represent opportunities for clinicians to feed back to their healthcare systems and champion the needs of these patients.

Conclusion

Obesity causes pain and suffering; both individuals and society struggle as a result. Understanding the causes, effects and treatments of obesity is necessary for us to respond appropriately. Caring for ourselves, our patients and our society in this area can be an expression of God's love, one that is increasingly needed.

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