



ANALYSIS

Challenging assumptions in obesity research

Focusing exclusively on weight loss ignores the other benefits of lifestyle interventions for obesity and may contribute to society's obsession with body image and weight, argue **Elizabeth Sturgiss and colleagues**

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We have a problem in obesity research—clinical trials continue to prioritise weight loss as a primary outcome and rarely consider patients' experience, quality of life, or adverse events.¹⁻³ Weight loss in people with obesity can be positive,⁴ but interventions that strive for weight reduction at any cost and without regard to the patient's personal, social, and environmental context,⁵ are not in anyone's best interest.

In clinical practice and research, patients are our best teachers. During a recent feasibility trial of an Australian obesity intervention in primary care,⁶ a patient made us question our understanding of weight management: "I've got a friend with stomach cancer; she's had all her stomach removed—you know, she's thin as thin. People with cancer, thin as thin; they're sick. Or their husbands have left—fantastic, you get really thin. You have a bit of trauma and illness and you'll lose weight like it's going out of style."

It is inaccurate to assume that weight loss always means an improvement in health, even for someone with obesity.

Choice of research outcomes has a ripple effect on how obesity is viewed in the general population. Trial results trickle down into guidelines and on into clinical practice, thereby influencing what clinicians suggest to their patients and the way patients regard obesity. Social scientists work with the principle of double hermeneutics whereby, unlike in natural sciences, the act of research involving humans and human behaviour can itself influence the group that is studied. If we apply the principle of double hermeneutics to obesity research, when weight loss is given central importance it contributes to how clinicians think about obesity and fuels society's obsession with body image and weight. It is a cycle that we see repeating through obesity academic discourse, clinical practice, and patient stories.⁷ Below, we analyse the incorrect assumptions underlying the use of weight loss as a sole primary outcome.

Assumption 1: Weight loss is always consistent with better health outcomes

As highlighted by our patient, weight loss can indicate serious physical illness or psychological distress. Interestingly, there is no research on when weight loss should be a "red flag" in people with obesity, despite the known increased risk of some cancers. At best, weight loss is a surrogate marker for improved health outcomes. Trials in patients with diabetes show that weight loss is associated with improved cardiovascular risk factors, but it is less clear if this is from the weight loss itself or associated lifestyle changes.⁸ We continue to measure weight in obesity research not because it accurately reflects an individual's health but because it is simple to measure.

The Edmonton obesity staging system (EOSS) provides a more accurate prediction of health outcomes than weight alone.⁹ As well as anthropometric measures the EOSS includes symptoms associated with obesity and comorbidities and can be used to stratify risk of death whereas body mass index (BMI) cannot.¹⁰ It is more useful than BMI for measuring health risks in an individual patient, but it may not be suitable for assessing obesity interventions because many of the included measures, such as comorbidities, are not readily modifiable.

An alternative would be to use the cardiometabolic disease staging system (CMDS), a validated framework for predicting a person's risk of diabetes as well as cardiovascular and all cause mortality.¹¹ The CMDS score is independent of a person's BMI and includes waist measurement and serum metabolic markers. In contrast to the EOSS, the factors that are included are potentially modifiable at the individual level. This provides a framework for health risk that is independent of BMI and weight.

Assumption 2: All people with obesity can lose weight

Obesity results from a complex web of psycho-socio-biological factors that can promote weight gain. Once weight is gained, neuroendocrine mechanisms serve to defend the body against weight loss, which makes it difficult to maintain weight loss long term. Longitudinal studies of people who are obese show that weight loss and maintenance are not the normal experience, and that they rarely return to a lower weight range.¹²

With the multitude of factors that affect obesity, each person might have a weight range that is possible and healthy for them, and this range may not be in line with the recommendations for the population. Although not everyone might be able to achieve a weight within a specific range, they can improve their health and wellbeing with lifestyle intervention.

Assumption 3: Weight reduction is prerequisite for better health

Many factors influence a person's health, and body weight is only a small part of the picture. Not all body weight is equal, with adiposity in the central trunk more harmful for health than fat distributed elsewhere on the body. Epidemiological studies examining the cardiovascular risk conferred by excess body weight show that obesity increases relative risk by only about 20% when known risk factors are controlled for. This compares with a roughly 100% increase in relative risk with smoking.^{13 14} A person with obesity who reduced their weight but continued to smoke would achieve only a minimal reduction in absolute risk of a cardiovascular event. An overemphasis on reducing body weight misses the point of minimising overall morbidity for the individual.

Furthermore, health and wellbeing can improve even without weight reduction. For example, cardiorespiratory fitness, mental health, and blood glucose control can all be improved with physical activity, even if the person's weight does not change.¹⁵ By using only the surrogate marker of weight loss, we don't recognise the health benefits of a change in lifestyle behaviours. People are labelled as "unsuccessful" because their health gains are unnoticed. With this sense of failure, individuals are likely to lose motivation and cease the changed lifestyle behaviour and in doing so lose the health benefits.

Assumption 4: Every person with obesity wants to lose weight

Most obesity interventions were developed and tested in the United States, where there is a strong culture, promoted through the media and film industry, that values a lean physique.¹⁶ The promotion of lean body types in Western media is associated with increasing body dissatisfaction.¹⁶ However, the value placed on body shape and size differs across cultures,¹⁷ and in less socioeconomically developed settings heavier body shapes are more attractive.¹⁶ In obesity research we cannot assume that all patients value lean physiques, and research should not add to the harms of media in fat shaming and increasing levels of body dissatisfaction. Research that promotes weight loss as the only successful outcome is at risk of doing harm.

Assumption 5: Focusing solely on weight loss is not harmful

Lifestyle interventions aimed only at weight can increase the psychological burden of people with obesity, adding to the

stigma experienced in everyday life and healthcare settings.^{5 18} Stigma can lead people to avoid medical visits and opportunities to exercise. An increased psychological burden reduces ability to lose weight and, even more worryingly, increases the trajectory of weight gain.¹⁹ Obesity programmes must tackle stigma and work to reduce the psychological burden on their participants.

Defining weight loss as a success without exploring the behaviours that led to the loss is also harmful. For example, purging behaviour, laxative use, or severe starvation are not healthy behaviours that should be encouraged to reduce weight. Similarly, rapid weight loss in a person with obesity, even as part of a lifestyle intervention, should be seen as a red flag. Cancers are often diagnosed later in patients with obesity, and the effect of misdiagnosis of weight loss has not been explored. Finally, for elderly people, especially those with a BMI in the lower end of the obesity range, weight reduction may not result in better overall health outcomes.²⁰ Weight loss for every patient at any cost does not reflect the ethical principle of "first do no harm."

Assumption 6: Population health benefits supersede individual experience

Most patients with obesity will be cared for in the primary healthcare system and so we need interventions that will work in primary care. People consult primary healthcare for various reasons and, importantly, primary healthcare helps them to prioritise what matters most. This is especially relevant for people with chronic conditions such as obesity. As in all trials of clinical interventions, the reported weight loss outcome is an average of the results—some participants will have lost more, some will have gained. Often studies of obesity lifestyle interventions find a small weight loss but report that there would be a larger benefit at the population level.² Ethically this is a challenging proposition, and any intervention targeted at individuals should also provide them with benefit.²¹ In primary healthcare, interventions that do not affect what is bothering a patient most and have an undue emphasis on weight loss may backfire by adding to the stigma of obesity and negative self perception. Reducing the outcomes of an obesity programme to the kilograms on the scale does not fit with person centred care and may hinder efforts to determine best practices for care of patients with obesity.

Focus on health

Obesity research would be improved by broadening the focus from weight loss alone to outcomes that reflect a person's health and wellbeing. Firstly, patients recruited for clinical trials of behavioural interventions should have impaired health—for example, as measured by the EOSS. Limited health resources should be focused on those at actual risk of increased morbidity, including people with metabolic risk factors but a BMI of less than 25.

The experience of participants in trials of lifestyle interventions must be a core part of the research outcomes. This could be captured in mixed methods data that seek to understand what it was like to participate in the trial. Adverse event monitoring should be a standard part of any research intervention, regardless of the researchers' perception of the risk of the intervention.

Patient reported outcome measures (PROMs) have become standard practice in trials of chronic disease, and obesity researchers urgently need to partner with patients to develop appropriate PROMs. The core outcome measures in

effectiveness trials (COMET) initiative provides a tested framework for developing meaningful and standardised outcomes that incorporate the wisdom of patients, researchers, and clinicians.²²

Methods for assessing the health benefits of an intervention could include measures of behaviour change (eg, physical activity tracking with accelerometers or inclinometers, self reported dietary change or food photo diaries, goal attainment scaling score, and smoking cessation rates), metabolic risk factors (eg, blood pressure or lipid and fasting blood sugar levels), quality of life measures (eg, impact of weight on quality of life), and ultimately longer term follow-up to assess effects on morbidity and mortality. The outcomes measured in obesity research need to reflect overall health and wellbeing of participants.

Conclusion

The goal of any health intervention is to extend life while also increasing wellbeing. Weight loss does not always equate with an improvement in quality of life and physical health. Lifestyle interventions for managing obesity have lost this perspective and have often settled on weight loss as the ultimate goal without considering overall wellbeing. We need a new approach to outcomes in obesity research that reflect person centred care by truly measuring the health of the individual and not a surrogate marker that is measured for ease.

Contributors and sources: ES and CvW first discussed the concept for this article. ES, CvW, DC-S, and MJ established the outline for the article and argument. ES wrote the initial draft and all authors contributed to the revisions of the manuscript. All authors agreed with the final manuscript. ES, CvW, and DC-S are family doctors, MJ is an internist. All authors are researchers in obesity management with emphasis on primary care management.

Patient involvement: The concept for this article was triggered after the patient interview that included the quote that begins this article. The patient has given consent for the use of the quote and supports the content of this article.

Competing interests: The authors have read and understood BMJ policy on declaration of interests and declare the following interests: ES has received research grants from the Royal Australian College of General Practitioners and the Australian Primary Healthcare Research Institute to support research work on obesity; she was a paid expert reviewer of online educational materials for the Australian National Prescribing Service for unrelated educational material; she is coauthor of a weight management programme for general practice but receives no financial benefit. DC-S received an unrestricted educational grant from Novo Nordisk for work unrelated to this manuscript. MJ has received research grants from the US National Institutes of Health, Department of Veterans Affairs, and Patient-Centered Outcomes Research Institute. CvW received until 2012, as head of department of primary and community care, unrestricted research grants from Novo Nordisk, Glaxo, Boehringer

Ingelheim, and Novartis for various research projects, all unrelated to the current publication.

Provenance and peer review: Not commissioned; externally peer reviewed.

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Key messages

The health of people with obesity can benefit from lifestyle interventions even if weight remains stable

Persisting with weight loss as the primary outcome in obesity research does a disservice to patients

Obesity researchers need to widen the outcomes to include true wellbeing and health