

Benefits of weight loss on serious health problems depends upon initial BMI, suggests UK study in over 400,000 adults

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For people with obesity, the impact of losing or gaining weight on serious health problems depends on their starting body mass index

(BMI), according to a study in over 400,000 adults with obesity in primary care across the UK, being presented at this year's European Congress on Obesity (ECO) in Maastricht, Netherlands (4-7 May).

Professor Kamlesh Khunti from the Diabetes Research Center at the University of Leicester, UK led the study together with Camilla S Morgen and colleagues from Novo Nordisk, Denmark, a manufacturer of diabetes and obesity medications and sponsor of the study.

Importantly, the findings stress the benefits of early intervention, with people with a lower initial BMI deriving greater benefits from [weight loss](#) and greater harm from [weight gain](#).

"If intentional weight loss in people with obesity with a lower BMI of around 30 is particularly beneficial to health, and weight gain potentially harmful, we should focus on treating obesity earlier in the course of the disease", says Professor Khunti.

In people living with obesity ([body mass index](#) [BMI] of 30 kg/m² or above), modest amounts of weight loss (5% to 10%) have been shown to give a clinically significant reduction in the risk of developing, and reversing, some obesity-related complications, such as type 2 diabetes, sleep apnoea and asthma, and conversely, weight gain can increase this risk.

However, little is known about how the BMI before weight change (loss or gain) influences the risk of obesity-related complications in real-world clinical practice.

To explore this further, researchers analyzed anonymised data from the UK Clinical Practice Research Datalink (CPRD) database—which holds information on over 11 million patients from 674 general practice surgeries in the UK, dating from 1987 to the present—and hospital

Episodes Statistics. They extracted data on 422,642 adults (average age of 51 years) with obesity (BMI of 30 kg/m² or over) between 2001 and 2010. At the start of the study, participants had an average BMI of 33.6.

The researchers compared how the risk of developing 13 obesity-related complications (sleep apnoea, hip/knee osteoarthritis, [high blood pressure](#), dyslipidaemia, unstable angina/[myocardial infarction](#), venous thromboembolism [dangerous blood clots], atrial fibrillation [[irregular heart rhythm](#)], [heart failure](#), chronic kidney disease, asthma, polycystic ovary syndrome [PCOS], and depression) was affected by their weight change pattern during a 4-year period after the first BMI measurement was taken. The results were adjusted for factors that might affect the findings including sex, smoking and existing obesity-related complications, and starting BMI.

During an average 7-year follow up, the researchers found that at any level of initial BMI, there was a benefit to weight loss, and harm from weight gain, for all 13 obesity-related complications.

However, the trends differed by the initial BMI. A lower initial BMI was associated with a greater risk reduction for PCOS, sleep apnoea, and type 2 diabetes in those who achieved clinically relevant weight loss of 10% and 20%. Weight gain increased the risks. For example, a 20% weight loss in people starting from a BMI of 30 was associated with a 56% lower relative risk of developing type 2 diabetes; starting from a BMI of 50, a similar weight loss only reduced the risk of 39% (see table 1 in notes to editors).

Similarly, the study found that for dyslipidaemia (abnormal blood fats), high blood pressure, and [chronic kidney disease](#), the risk increase or decrease associated with weight change was greater for individuals with a lower BMI than those with a higher BMI. For example, an average weight gain of 20% in people with an initial BMI of 30 was associated

with a 30% increase in the relative risk of developing high blood pressure, while those with class III obesity (BMI 50), it was linked to a 11% higher risk (see tables in notes to editors).

These findings were not the same for all obesity-related complications. For [heart attack](#), irregular heart rhythm and heart failure, those with the highest initial BMI got the greatest benefit from weight loss. For example, an average weight loss of 20% in people with a starting BMI of 30 was associated with a 3% lower relative risk of developing heart failure; while those with a BMI of 50 or above lowered their risk by 29%. Conversely, a 20% weight gain in those with a BMI of 50 increased the risk of heart failure by 93%, and by 43% in those with a BMI of 30 (see table 1 in notes to editors).

A second analysis of the same study population, looking at how different degrees of weight loss can influence the risk of developing individual complications, found different health benefits come from losing different amounts of body weight. The authors found that among 260,617 adults with weight gain or a stable weight included in the analysis, only modest amounts of weight loss (average 6% to 12%) may be needed to prevent type 2 diabetes and osteoarthritis, and more weight loss (average 18%) is associated with a larger risk reduction for high blood pressure, dyslipidaemia (abnormal blood fats), and asthma (see table 2 in notes to editors).

"We know that people with obesity often struggle to lose and maintain weight loss and this study shows how important for health weight loss or gain can be", says Camilla S Morgen. "Our findings suggest that a different starting BMI can markedly influence the risk of developing specific obesity-related complications, when [weight](#) is lost or gained. Our focus now should be to encourage earlier support and treatment for people with [obesity](#)."

The authors note that this is an observational study and can only show that there is an association between initial BMI and reduced non-cardiovascular risk factors, and not that BMI causes that reduction in risk. In addition, the researchers cannot rule out the possibility that other unmeasured factors may have affected the results.

Provided by European Association for the Study of Obesity

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