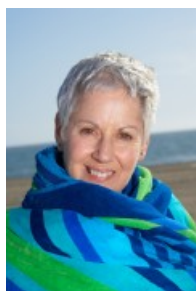


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INDEPENDENT, OBJECTIVE AND EVIDENCE-BASED

Hypertension: Does losing weight reduce high blood pressure?



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Hypertension is the medical name for high blood pressure: it means that the blood vessels are literally under too high a pressure. Long-term (chronic) hypertension is a condition that can cause health problems, although high blood pressure itself does not usually cause noticeable symptoms. That means you will only know if your blood pressure is chronically too high if you get your blood pressure checked several times on different days. Exerting yourself or being under a lot of stress will temporarily raise your blood pressure, so it should only be measured when you are relaxed.

Even though hypertension alone causes no symptoms, in the long term constant high blood pressure can damage blood vessels like the arteries, and organs such as the heart and kidneys. This means that hypertension is an important risk factor for cardiovascular diseases like atherosclerosis (blocked or hardened arteries), heart attack and stroke.

Hypertension can also be caused by other diseases or conditions. When it has no particular known cause, it is called "essential hypertension". This is the most common form of high blood pressure. About half of all adults in Germany have hypertension, and it is a little more common in men than in women.

Measuring blood pressure

The heart is a muscle and it works like a pump. It pushes the blood around the body through the blood vessels by squeezing and then relaxing. The pressure on the blood vessels is much higher when the heart is squeezing than when it is relaxing. So to take people's blood pressure, both of these are measured, and blood pressure readings have an upper and a lower measurement.

These two different measurements are called systolic and diastolic blood pressure. Your systolic blood pressure is the higher pressure on your vessels when your heart muscle squeezes to pump blood around your body. The diastolic blood pressure is the lower pressure in your circulation when your heart is relaxing and filling up with blood again.

Blood pressure measurements are called BP measurements for short and always contain both measurements. A blood pressure measurement or reading is recorded like this: BP =

176 / 98 mm Hg (millimeters of mercury). In this reading, the person has a systolic blood pressure of 176 mm Hg, and a diastolic blood pressure of 98 mm Hg.

A systolic blood pressure of more than 140 is high, and a diastolic blood pressure of over 90 is also high. So, for example, a blood pressure reading of 204 / 116 mm Hg is very high.

Evaluating non-drug methods for reducing hypertension

Hypertension is affected by several factors such as fatty and salty foods, smoking and alcohol. Many people who have hypertension are overweight. The first step in trying to reduce hypertension is to try to lose weight and cut out the habits that might be causing hypertension. If this does not work, blood-pressure-lowering (antihypertensive) drugs are also a treatment option.

Researchers at the German Institute for Quality and Efficiency in Health Care (IQWiG) worked with researchers from the University Hospital in Graz, Austria, and looked for trials to see what effects weight loss alone has on chronic hypertension. They were not considering other health effects that weight loss could have, for example on diabetes. The goal of the research was not to find out what methods of weight loss are most effective, either.

The researchers only looked at trials of weight loss strategies that measured the effect on blood pressure of losing weight by dieting (with or without exercise), taking weight-loss drugs and having surgery to reduce weight (like gastric banding). IQWiG will be studying other possible non-drug ways of reducing hypertension in the future. Those studies will include things like exercise, stress reduction and quitting smoking.

To answer the question about the effects of weight loss alone on hypertension, the researchers looked for randomized controlled trials of weight-loss interventions that measured blood pressure before and after the intervention (diet, weight-loss drugs or weight-loss surgery). The people in the trials had to be over 18 years of age, they had to have chronic hypertension, and the trial had to follow the people up for at least another 24 weeks (around 6 months).

A randomized controlled trial is the surest way to find out whether weight loss by itself has an impact on hypertension. Volunteers with hypertension who join the

trial do not choose which treatment they get: they agree to be randomly chosen to have one treatment or the other. So this means that the people on the diets are not more motivated or healthier than the people who are using another weight-loss method, for example. That makes it possible to be reasonably certain that any differences between the dieters and non-dieters are just because of the diet.

The trials that the researchers found

The researchers searched electronic databases and asked manufacturers of weight-loss drugs about what trials they had done. They found 17 trials altogether, which included over 5,300 people. Ten of the trials studied the effect of weight-loss diets (sometimes together with exercise) on blood pressure. These included over 1,900 people altogether.

The researchers also found 7 trials on the effect of weight-loss drugs (sometimes together with a low-calorie diet, a lifestyle change and/or exercise) on blood pressure. There were over 3,400 people in these trials, and they took either orlistat or sibutramine. Orlistat is a so-called "lipase inhibitor" or "fat blocker". It aims to block an enzyme (lipase) that breaks down fats so that less fat is absorbed by your body. In May 2010 the American regulatory agency (FDA) had all medication containing orlistat, also available in low dosage over-the-counter, include a warning about serious liver injury as part of its package insert in the United States. There had been individual cases of this in people who had taken, among other drugs, orlistat. Yellowish skin, itchiness, noticeably darker urine, light-colored stool and upper-abdominal symptoms are all outward signs of damage to the liver. The FDA recommends suspending the use of medication and consulting a doctor if these symptoms occur.

Sibutramine is an appetite suppressant. The authorization for this drug was suspended by the European Medicines Agency (EMA) in January 2010. EMA had determined that the potential benefits of sibutramine did not outweigh the possible harmful effects, particularly cardiovascular disease.

The researchers also looked for trials on the effects of having surgical treatment for weight loss, like a gastric (stomach) band or balloon, but they did not find any that specifically looked at the effects on hypertension.

IQWiG not only wanted to know whether losing weight had an effect on blood pressure itself but, above all,

whether it had an effect on the potential consequences of hypertension. So they wanted to know if the people who lost weight had fewer heart attacks or strokes, whether their death rate was affected, as well as whether their quality of life and satisfaction with treatment improved. They also wanted to see to what extent blood pressure was reduced, and for how long. However, the trials had generally only looked at the effect on blood pressure.

The research results

Over the course of 1 year, the people in the trials lost 4.14 kg (9.1 pounds) on average.

If they had lost weight using a diet, their systolic blood pressure was lowered by between about 3 and 10 mm Hg, and their diastolic blood pressure by between about 1 and 6 mm Hg. It was not possible to say what effect dieting had on the potential consequences of high blood pressure or on quality of life, because that was not studied enough.

People who took weight-loss drug orlistat lost an average of about 4 kg (8.8 pounds), while those who took the weight-loss drug sibutramine lost about 3 kg (6.6 pounds) on average. In the various trials, the lipase inhibitor orlistat reduced systolic blood pressure by between about 0 and 4 mm Hg, and diastolic blood pressure by between 1 and 3 mm Hg over a treatment period of 1 to 4 years.

Although sibutramine helped people to lose weight, it did not lower their blood pressure. It can even cause an increase in blood pressure in some people.

Between 1 and 10 out of every 100 people (1 to 10%) experienced adverse effects when taking medication. The adverse effects of orlistat mainly affected the digestive system, whereas sibutramine was mostly associated with a dry mouth and headaches.

What IQWiG concluded

According to current research, losing weight by going on a diet or taking the lipase inhibitor orlistat can lower high blood pressure. However, there is not enough evidence to say whether losing weight has an effect on the potential consequences of chronic hypertension, such as cardiovascular diseases or even death. IQWiG therefore concluded that, due to a lack of data, it is not possible at this stage to say for sure whether losing weight alone has an effect on the consequences of high blood pressure, but

it is an effective way of lowering blood pressure.

You can read more about other research into long-term weight loss, dieting and exercise here (URL: <http://www.gesundheitsinformation.de/weight-loss.398.56.en.html>) , including information about what other benefits losing weight can have.

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(The latest update of this information includes new information from the FDA from May 2010. Research on the advantages and disadvantages of orlistat and sibutramine has not been updated.)

Note

This health information is a summary of a scientific report published by IQWiG. It is not an assessment of the right to have health care services reimbursed by statutory health insurance funds in Germany. By law, decisions about the reimbursement of diagnostic and therapeutic procedures can only be made by the German Federal Joint Committee (G-BA). The Federal Joint Committee takes IQWiG reports into consideration in its decision-making process. You can find information about the decisions of the German Federal Joint Committee on its English-language website, www.english.g-ba.de (URL: <http://www.english.g-ba.de/>) .

Glossary

evidence

Evidence is what we call scientific proof from well-conducted, good-quality scientific trials that have been carefully designed to answer specific questions. Depending on the types of questions, different scientific research methods (types of study) are most appropriate to find reliable answers to these questions. Randomized controlled trials (RCTs), for example, are the best way to get reliable evidence on the effectiveness of medical treatments (interventions). This type of study, however, is not the best form of evidence for all possible questions, and does not provide the best answers to all kinds of questions, either. Epidemiological studies, for example, are very suitable for establishing well-founded proof for the spreading of a disease in the population.

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The German Institute for Quality and Efficiency in Health Care (IQWiG)

The German Institute for Quality and Efficiency in Health Care (IQWiG) was established by legislation to provide evaluations of the effectiveness, quality and efficiency of healthcare services. This includes the assessment of medicines as well as the publication of health information for consumers and patients.

Evidence basis of our health information

Our information is based primarily on systematic reviews of the effects of health care. Systematic reviews are necessary to gain an objective picture of health care. In order to do this, a clear question is formulated. Researchers then find all the relevant studies that could answer this question. They then evaluate those studies.

You can find a list of the evidence and other scientific literature on which this information is based at [**www.informedhealthonline.org**](http://www.informedhealthonline.org)

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