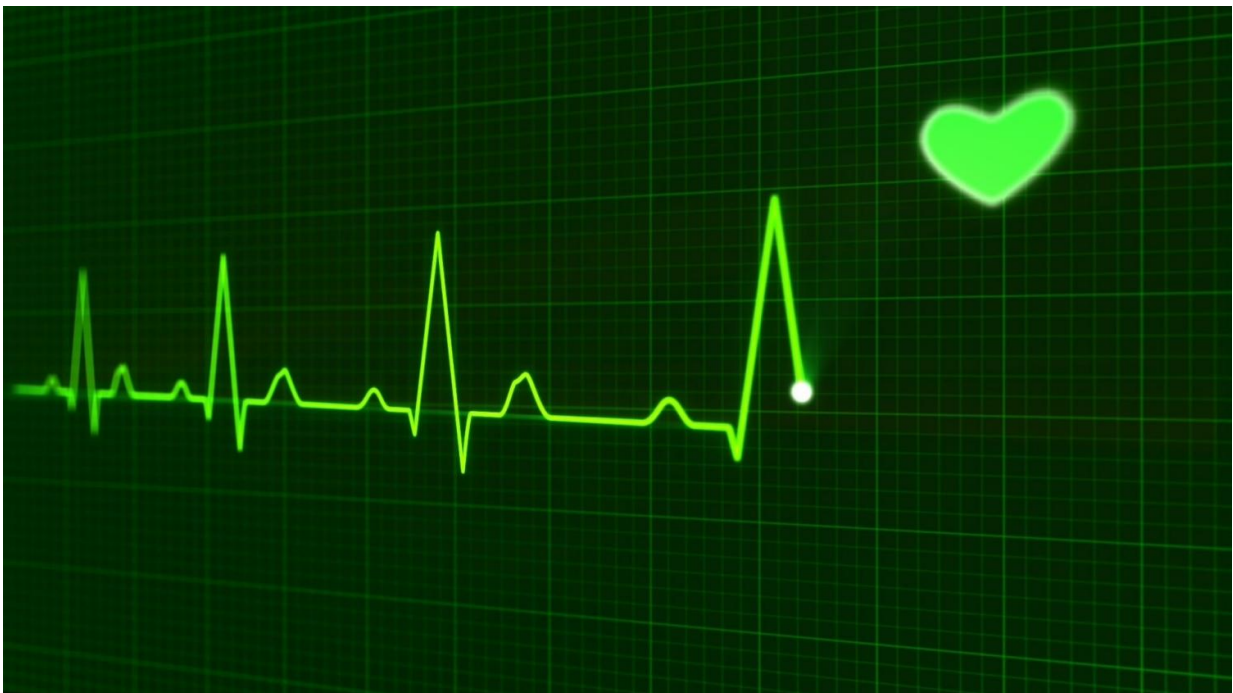


New research could help detect damage earlier and prevent the development of heart disease

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Diabetes causes subtle structural changes to the heart, according to new British Heart Foundation-funded research. One of the earliest signs of heart disease in people with diabetes may be that all four chambers of the heart become smaller.

The research, using data from UK Biobank and published in *Circulation Cardiovascular Imaging*, shows for the first time the extent to which diabetes affects the [heart](#) muscle.

These early changes in the heart muscle could be used to understand and detect [heart damage](#) related to diabetes, allowing action to be taken before the damage can lead to serious heart problems.

Around 4.7 million people are living with diabetes in the UK. Adults with diabetes are up to three times more likely to develop heart and circulatory diseases, and are nearly twice as likely to die from heart disease or stroke as those without diabetes.

Researchers at Queen Mary University of London used [magnetic resonance](#) imaging (MRI) - a type of scan that uses [strong magnetic fields](#) and [radio waves](#) to produce detailed images of the inside of the body—to study the hearts of 3,984 people. They compared the hearts of people with diabetes to those without the disease.

People with diabetes had key differences in all of the heart's four chambers. The [left ventricle](#)—responsible for pumping oxygenated blood around the body—was smaller and the walls were thicker, a change which can lead to heart failure. Surprisingly, the other three chambers of the heart were all also smaller in people with diabetes, with the volume of each chamber shrinking by roughly a teaspoon.

The researchers believe that these changes may be the heart's way of responding to early, minor damage caused by diabetes. Smaller and thicker hearts have an easier time maintaining the pumping function compared to larger hearts.

Importantly, these subtle changes could be detected before people developed more serious [heart muscle](#) damage and related heart diseases.

The researchers hope that this information could ultimately be used to detect heart damage early in people with diabetes so that they can be given appropriate medical treatment.

Steffen Petersen, professor of cardiovascular medicine at Queen Mary University of London and lead author, said, "Diabetes is one of the most overwhelming health challenges on a national and on a global level. The most common complication of diabetes is the development of heart and circulatory diseases."

"We've always thought that the damage caused by diabetes to the heart was limited to one of its four chambers. However, it's now clear that the damage is more extensive, affecting the heart in its entirety."

Professor Jeremy Pearson, associate medical director at the British Heart Foundation, said, "Those with diabetes are around two times more likely to have a heart attack or stroke, and may go on to develop other circulatory problems such as vascular dementia. Combined, these conditions cost the NHS a staggering £1.5 million every hour.

"By understanding the relationship between [diabetes](#) and heart disease we're one step closer to being able to break the link between these two deadly diseases."

Provided by British Heart Foundation

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