

# Scientists warn of concerning weight loss in heart disease patients as global warming sees temperatures soar

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A nationwide study in France has reported that during the 2019 heatwave, hot temperatures were closely linked with weight loss in heart failure patients, indicating worsening of their condition. The study is published today in *ESC Heart Failure*.

"This study is the first to show a strict relationship between ambient temperature and body weight in [heart failure patients](#)," said study author Professor François Roubille of Montpellier University Hospital, France. "The finding is timely given the [heatwaves](#) again this year. The weight loss we observed in people with heart failure may lead to low blood pressure, especially when standing up, and renal failure, and is potentially life-threatening. With rising temperatures forecast for the future, clinicians and patients should be ready to reduce the dose of [diuretics](#) when weight loss occurs."

In patients with heart failure, the heart does not pump blood around the body as well as it should. Waste products accumulate, causing shortness of

breath and fluid buildup in the lungs, legs and abdomen. Weight is the cornerstone of monitoring because weight gain is related to congestion, the main reason for hospital admission. Diuretics, also called water pills, are used to increase urine output and reduce breathlessness and swelling. ESC guidelines recommend educating patients to increase their diuretic dose or alert their healthcare team if they experience an increase in breathlessness or swelling or a sudden unexpected weight gain of more than 2 kg in three days. Weight loss has received less attention.

The authors of the current study hypothesized that the body weight of patients with heart failure could change during a heatwave. Professor Roubille explained, "When healthy people drink more fluids during hot weather, the body automatically regulates urine output. This does not apply to patients with heart failure because they take diuretics."

The study examined the relationship between body weight and air temperature between 1 June and 20 September 2019, which covered the two heatwaves at the end of June and end of July. The analysis included 1,420 patients with chronic heart failure. The median age was 73 years, 28% were women, and the average weight was 78 kg. A national telemonitoring system was used to remotely obtain information on weight and symptoms. Patients weighed themselves every day using a connected weighing scale that automatically sent measurements to the clinic. Patients reported daily symptoms such as edema, fatigue, breathlessness and cough by answering questions on a personal device (e.g. smartphone, tablet), with answers sent automatically to the clinic. Daily temperatures (at noon) were obtained using data from the closest weather station to each patient's home.

The researchers analyzed the association between patient weight, ambient temperature on the same day, and temperature two days prior to the weight measurement. The relationship between temperature and weight was very strong, with weight dropping as temperature rose. The strongest relationship was found with temperatures two days prior to the weight measurement.

Professor Roubille said, "The weight loss we observed during the heatwave was clinically relevant. Patients weighing 78 kg lost 1.5 kg in a short period of time. We were surprised to see that weight dropped with hot temperatures, as we had expected the opposite. For this reason, the telemonitoring system was programmed to alert clinicians when patients gained weight."

He concluded, "Given the expectation of more heatwaves, telemonitoring systems also need to alert clinicians of [weight loss](#) in heart failure patients. In addition, systems could notify patients losing weight that it may be due to the heat and they should contact their healthcare provider about reducing the dose of diuretics. For heart failure patients not monitored remotely, a good rule of thumb would be to contact a healthcare professional if weight drops by 2 kg during a heatwave for advice on adjusting diuretic medication. Reacting early should help us to prevent complications."

**More information:** Impact of global warming on weight in patients with heart failure during the 2019 heatwave in France, *ESC Heart Failure* (2022).  
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