

Study links diabetic foot ulcers with higher risk of death, heart attack and stroke

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(Medical Xpress)—People with diabetes who develop foot ulcers are at more risk of dying prematurely than those without the complication, finds a new large-scale study. The researchers say the findings highlight the potential need for improved detection and management of those with diabetes and foot ulcers.

The study, which is the largest analysis of diabetes into the link between foot ulcers and the condition, is published in this month's (November) edition of the journal [Diabetologia](#).

There are 3.7million people diagnosed with diabetes in the UK, including an estimated 850,000 people who have the condition but do not know it. Diabetes can damage a person's [blood vessels](#) and nerves, especially if their blood sugar is poorly controlled. [Poor circulation](#) and [nerve damage](#) in the feet makes people vulnerable to unnoticed cuts or other injuries and progress into poorly healing ulcers, or sores. In severe cases, this can lead to foot or leg amputation.

In a study of 17,830 patients with diabetes – 3,095 diagnosed with foot ulceration and 14,735 without – researchers from St George's, University of London investigated how diabetic foot ulcers affected a person's risk of dying earlier. They found that those with a history of foot ulceration had a higher death rate than those without. There were an extra 58 deaths per 1,000 people each year with [diabetic foot ulcers](#).

The investigators analysed [patient records](#) from eight studies, conducted

in Europe, America, Australasia and South-East Asia, published between 2006 and 2011. The length of time the health of participants was followed for varied between an average of two and 10 years for each of the studies.

People with foot ulcers and diabetes showed more [cardiovascular risk factors](#), such as [high blood pressure](#), and were more likely to die from cardiovascular causes. Approximately half of the additional mortalities were due to cardiovascular disease, such as [heart attack](#) or stroke.

The cause of non-cardiovascular deaths was not studied as part of this investigation but the researchers say this is potentially linked to infections and complications of foot ulceration, such as blood poisoning.

Robert Hinchliffe from St George's, University of London, who co-led the study, said: "Our research, which is the largest and therefore most reliable study to date, shows that people with diabetes who have foot ulcers are at considerably higher risk of an earlier death compared to those patients without. We suspect that this may be due in part to the effect of infections among those with foot ulcers and the greater co-existence of cardiovascular disease and foot ulcers with diabetes although the reasons are not entirely clear."

The researchers say these results underline the importance of a two-pronged approach for people with diabetes: enhanced foot ulceration screening as early detection and treatment may help reduce some of the complications; and more intensive control of blood pressure and cholesterol among those diagnosed with foot ulcers as they are at higher cardiovascular risk.

Currently, experts already recommend that people with diabetes undertake a number of precautions to prevent foot ulcers including blood

sugar control, wearing socks to prevent cuts, self-checking for abrasions and getting a complete foot examination at least once a year.

Existing guidelines to prevent [cardiovascular disease](#) include healthy diet choices, regular exercise, a medical check-up at least once a year and, often, medically prescribed drug treatment.

Professor Kausik Ray, who also co-led the study, said: "Our results warrant further investigation as to whether even greater control of risk factors such as blood pressure, blood glucose and early preventative screening can further reduce mortality among those with foot ulcers. There is likely an unmet potential to reduce deaths in this group."

More information: Diabetologia, Volume 55, Number 11 (2012), 2906-2912, [DOI: 10.1007/s00125-012-2673-3](https://doi.org/10.1007/s00125-012-2673-3), 'The association of ulceration of the foot with cardiovascular and all-cause mortality in patients with diabetes: a meta-analysis', J. R. W. Brownrigg, J. Davey, P. J. Holt, W. A. Davis, M. M. Thompson, K. K. Ray and R. J. Hinchliffe. www.springerlink.com/content/m773660227386615/

Provided by St. George's University of London

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