

Advances in medical care have led to type 1 diabetes boom

May 5 2016, by David Ellis

Researchers from the University of Adelaide say the global increase in cases of type 1 diabetes is directly linked to advances in medical care, with the underlying genetics of the disease more likely to be passed from one generation to the next.

In a paper published in *BMJ Open Diabetes Research & Care*, researchers looked at the prevalence of type 1 [diabetes](#) in 118 countries and changes in [life expectancy](#) from 1950 to 2010.

After applying a measure known as the Biological State Index to the data, they found that the rapid increase in type 1 diabetes over the last few decades was directly linked with increases in human life expectancy, especially in Western countries – and therefore a reduction in [natural selection](#).

"Up to the early 20th century, type 1 diabetes was a horrible and dangerous disease, usually leading to people's death during their teens or early 20s," says lead author Wenpeng You, PhD student in the University of Adelaide's Biological and Comparative Anatomy Research Unit, School of Medicine.

"This meant there was limited opportunity for people with the disease to have children and to pass their genetic material onto future generations. In evolutionary terms, this is what we call 'natural selection'.

"However, with the widespread introduction of insulin from the 1920s

onwards, and improvements in modern medicine, life expectancy for people with type 1 diabetes has now increased to about 69 years.

"That is a remarkable achievement, but it also means that with reduced natural selection, the [genetic](#) material leading to the development of type 1 diabetes may be accumulating at a rapid rate within the world's population," Mr You says.

The researchers decided to investigate the link because although cases of type 1 diabetes have been increasing globally, its prevalence is uneven in different parts of the world.

"Not every country has access to good health care, or freely available insulin. In a number of poor countries, such as in Africa, the life expectancy for people with type 1 diabetes is much lower than in the Western world. This means more people are dying prematurely, with less opportunity to produce offspring who will carry those genes from generation to [generation](#)," Mr You says.

Supervisor and co-author Professor Maciej Henneberg says: "Natural selection is one of the major evolutionary forces that inform changes in our genes, across populations and over generations.

"This is the first major [disease](#) we have shown that is accumulating due to a relaxation of natural selection over time. It's unlikely this situation will ever be reversed, meaning that in order to overcome the problems associated with type 1 diabetes for our population, some form of gene therapy to repair the faulty genes may need to be considered," he says.

This study involved data for type 1 diabetes only and has no relevance for type 2 diabetes in the population.

More information: Wen-Peng You et al. Type 1 diabetes prevalence

increasing globally and regionally: the role of natural selection and life expectancy at birth, *BMJ Open Diabetes Research & Care* (2016). [DOI: 10.1136/bmjdr-2015-000161](https://doi.org/10.1136/bmjdr-2015-000161)

Provided by University of Adelaide

Citation: Advances in medical care have led to type 1 diabetes boom (2016, May 5) retrieved 25 April 2024 from <https://medicalxpress.com/news/2016-05-advances-medical-diabetes-boom.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.