Research Findings Brief

What protects against prediabetes progressing to diabetes?

Key points

- This is the first study published to identify progression rates of prediabetes in Aotearoa New Zealand.

- The study also identified key protective factors against progression such as healthy weight, being female, older and speaking Te Reo Māori.

- This is the first study to identify Indigenous language as a protective factor against diabetes.

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Te Kōhao Health

PROJECT TIMELINE

February 2017 – August 2018

Why is this issue important?

- Some communities are affected disproportionately by high levels of non-communicable diseases: in New Zealand the incidence of type 2 diabetes amongst Indian and Pacific peoples is 24% and amongst Māori it is 16%, compared to 6% in European peoples[1].

24%
Indian + Polynesian

16%
Māori

6%
European
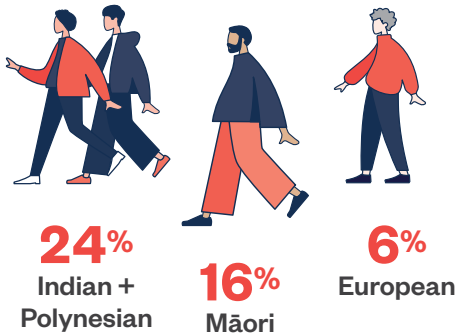
- This research will help inform the health system about prediabetes progression rates, and could lead to improved targeting of interventions for people with prediabetes.

- The findings of this study are consistent with previous overseas research, which has indicated a connection to Indigenous culture and language may improve and protect health.

What did we do?

- The study aimed to identify potential traits that could protect or progress a patient with prediabetes towards diabetes.

- The National Hauora Coalition, along with Statistics NZ, worked closely with researchers to bring anonymised primary health care data into the IDI.

- A sample of 14,000 people enrolled in the National Hauora Coalition, a primary health organisation (PHO) in the upper North Island, were observed from the time they were diagnosed with prediabetes to see if they progressed to diabetes.

- The researchers linked data on patients' measured levels of glycated haemoglobin (known as HbA1c) and body mass index (BMI) to government health, census and social datasets in the IDI.

- By linking the data, the research team was able to look at progression rates from prediabetes to diabetes using data about age, sex, ethnicity and socioeconomic position.

What did we find?

- The cumulative incidence of diabetes in the group studied was 5% after three years.

- The rate of progression from pre-diabetes to diabetes was greater amongst younger adults, men, people with higher HbA1c, and people with higher BMI.

- Māori and Pacific peoples had a greater rate of progression from prediabetes to diabetes than the rest of the population. This is largely because they had more advanced prediabetes at the time it was diagnosed, as measured by higher HbA1c levels.

- There was an association between speaking Te Reo Māori and 19 to 88 percent lower progression to diabetes, independent of age, sex, income, education, deprivation, ethnicity and HbA1c.

- Other key protective factors against progression were identified, such as healthy weight, being female, and being older.

[1]T.L. Ellison, R. Elliott, S.A. Moyes, **HbA1c screening for undiagnosed diabetes in New Zealand**, Diabetes Metab Res Rev, 21 (2005), pp. 65-70

What did we produce?

- Tables identifying progression of prediabetes to diabetes in the study cohort after three years, by age, sex, ethnicity and socioeconomic position.

Publication

What protects against prediabetes progressing to diabetes? Observational study of integrated health and social data *Diabetes Research and Clinical Practice 2019; 148:119-129. doi: 10.1016/j.diabres.2018.12.003*

Why does it matter?

'Big data' has the potential to unlock important information about some of New Zealand's greatest health challenges. This study is an example of that; it was one of the first times diabetes data from primary health care has been linked with other data held in the IDI.

This study demonstrates the value of this important data to New Zealand research for policy and clinical practice. In particular, it suggests that groups at high risk of diabetes identified by age, sex, ethnicity, HbA1c and BMI could be considered for prioritisation of prediabetes interventions.

Next steps

When targetting interventions for slowing the progression of prediabetes to diabetes, health planners and clinicians should consider the factors identified as being associated with increased risk of progressing to diabetes (being a younger adult, being male, having a higher HbA1c level or greater BMI).

Further research is needed to assess the full value of speaking Te Reo Māori for health.

Further research is needed to understand the level of linkage error and potential bias in the IDI and how it might differ by ethnicity.

## How the Integrated Data Infrastructure (IDI) works

1

Data collected from multiple sources

2

Process and link the data

3

De-identified data available for research
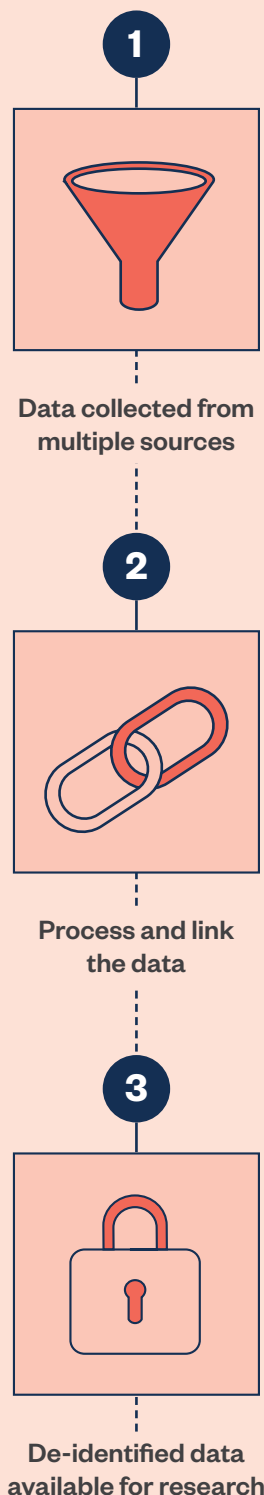
Stats NZ
Tatauranga Aotearoa

Using big data

'Big data' was used in this study to investigate the progression of prediabetes to type 2 diabetes. Health data from 14,000 people was linked, anonymously, with government heath, social and census data.
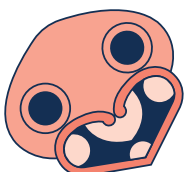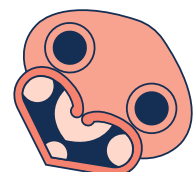

Government Health Sources - - - - - - - - - - - - - **Social Data** - - - - - - - - - - - - - **Census Data**
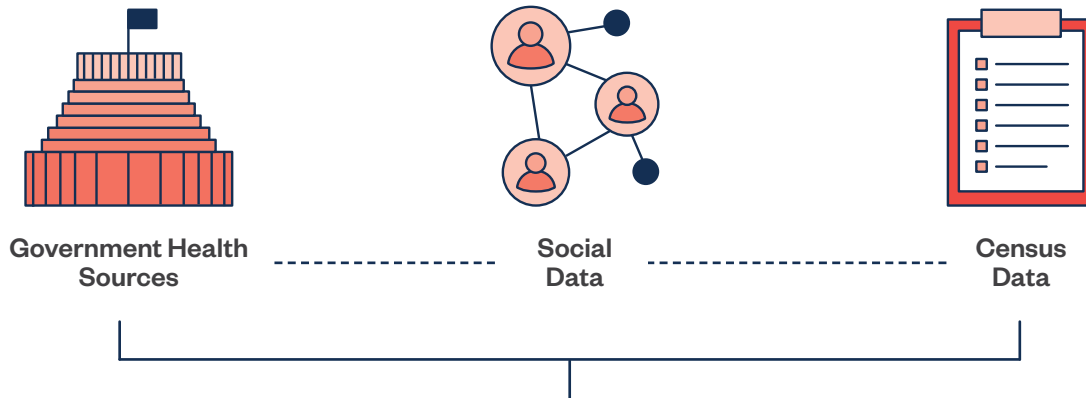
14,000
participants

The study found some people had greater rates of progression from prediabetes to diabetes:

The study found some things protected people with prediabetes from progressing to diabetes:

Kei te pehea koe?

This is the first time Indigenous language has been identified as something that can protect against prediabetes progression.

Acknowledgements

Disclaimer

About Healthier Lives

National SCIENCE Challenges

HEALTHIER LIVES

He Oranga Hauora

Our vision is of Aotearoa New Zealand with equitable health outcomes and a substantially reduced burden of non-communicable diseases.

Tō mātou kitenga kia noho a Aotearoa New Zealand hei whenua he ōrite ngā putanga hua hauora mō te tangata, kia iti iho hoki ngā pīkauranga o ngā māuiui kāore e taea te tuku ki te tangata kē.

The **Healthier Lives – He Oranga Hauora National Science Challenge** is a national collaborative research programme, investigating innovative approaches to the prevention and treatment of four major non-communicable diseases (NCDs) – cancer, cardiovascular disease, diabetes and obesity.

Healthier Lives is hosted by the University of Otago, funded by the Ministry of Business, Innovation and Employment and supported by ten Challenge partners.