

Which ethnicities are at highest risk of developing type 2 diabetes as children?

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- We investigated risk factors for type 2 diabetes in children
- Highest rates were found in children of Asian and mixed ethnic backgrounds
- Type 2 diabetes was more prevalent in girls compared to boys

Type 2 diabetes – the kind that’s linked to lifestyle – is a hot topic. It currently costs the NHS a massive £8.8 billion per year, just under 9% of its entire budget, and the numbers are set to rise.

Plans to tackle type 2 diabetes are underway, with the rollout of the NHS Diabetes Prevention Programme (NHS DPP) this year. But how do policy makers decide on the focus for these public health initiatives? Research carried out by the CPRU can help.

The more we understand about who develops diabetes and why, the more targeted our prevention plans can be. There are many unanswered questions and CPRU research is looking into long-term health to address these.

Look to the future: long-term health in children

Research into long-term conditions is led by Professor Terence Stephenson, who is also the CPRU Co-Director. It’s a key interest for the Department of Health.

Terence explained why: “When the CPRU was established, chronic conditions was a theme that the Government were particularly anxious about, because of concerns that children with health problems in England might be faring worse than those in other countries across the world, Europe and even within the UK.”

Terence and his team are focusing on diabetes to unpick some of the possible issues: “We know which adults are most at risk of type 2 diabetes, but far less about the children affected.”

The research question: ethnicity and type 2 diabetes

Postdoctoral Research Associate Dr Amal Khanolkar set out to investigate possible risk factors for type 2 diabetes in children. Amal explained the aim of this research: “There is evidence that adults of certain ethnic backgrounds are at much higher risk of type 2 diabetes than others. Our hypothesis was that the same might be true for children.”

He used data from the National Paediatric Diabetes Audit (NPDA), an annual audit of the care received and outcomes achieved by all under-18s attending paediatric diabetes units in England and Wales.

“For a study like this, you need access to broad population data,” Amal said. “With CPRU, we’re lucky in that we have excellent access to data, putting us in an ideal position to address our research question.”

The data source was near perfect, explained Amal: “The audit reached almost 100% coverage across England in 2011, so technically the data included

almost every child aged 18 years and below, diagnosed with any type of diabetes.”

Mining the data

The bulk of the work for this project involved quantitative analysis. “Using the NPDA data, we first ran a regular prevalence study, looking at the how many children have type 2 diabetes by age, gender, and ethnic background. Ethnicity was categorized into white, Asian, black, mixed, other, or ‘not stated’.

“We stuck to children under 16, the same age grouping as the UK census, making it easier for us to express the type 2 diabetes population as a proportion of the population as a whole. Then we looked at blood sugar control in the different groups to identify whether ethnicity impacted on how well children controlled their diabetes.”

In children as in adults

First, it was clear that among children, all ethnic minority groups had an increased prevalence of type 2 diabetes compared to the white group. The highest rates were found in children of Asian and mixed ethnic backgrounds.

Maybe more surprising, there was a significant gender difference. Amal explained: “We found that type 2 diabetes is more prevalent in girls



“Children in this group [South-Asian girls] were six times more likely to have diabetes compared to white” girls.”

compared to boys, in all ethnic groups. So, South-Asian girls had the highest prevalence over all. In fact, children in this group were six times more likely to have type 2 diabetes compared to white girls. And we found that children of mixed ethnic backgrounds had worse blood glucose control.”

The research confirmed that, as in adults, type 2 diabetes is on the rise in children. Amal noted: “We found a more than ten-fold increase in cases compared to a study carried out around a decade earlier.”

This sounds pretty shocking, but of course, we need to view the statistics in context. He continued: “The earlier study found a prevalence of 0.2 per 100,000 and in our study in 2012-13, it was 2.9 per hundred thousand overall. Still very low, but definitely on the rise.”

Towards better prevention

The group’s findings were passed to the Department of Health to inform future health policy in England and to shape the direction of further research, both quantitative and qualitative.

Terence explained: “It’s known that type 2 diabetes is associated with obesity – almost every child with type 2 diabetes is obese or overweight.

“The increase in type 2 diabetes mirrors increasing obesity in the UK population. So the links between ethnicity and type 2 diabetes are quite likely to be lifestyle-oriented, although this study wasn’t designed to look at lifestyle.”

The NHS Diabetes Prevention Programme includes lifestyle and diet education, but is not aimed at children. However, the Government is beginning to tackle the childhood obesity epidemic, with the ‘Childhood obesity: plan for action’ published in August 2016.

Terence concluded: “Armed with findings from this and other research under the CPRU’s long-term conditions theme, we are better-informed to shape effective public health strategies and help to secure healthier futures for children in England.”

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More information

Khanolkar, A., Amin, R., Taylor-Robinson, D., Viner, R., Warner J., and Stephenson T. (2016). Ethnic minorities are at greater risk for childhood-onset type 2 diabetes and poorer glycemic control in England and Wales. *J Adolesc Health*, 59 (3), pp.354–361.

Ehtisham S., Hattersley A., Dunger, D., and Barrett, T., for the British Society for Paediatric Endocrinology and Diabetes Clinical Trials Group (2004). First UK survey of paediatric type 2 diabetes and MODY (maturity onset diabetes of the young). *Arch Dis Child*, 89, pp.526–529.

National Paediatric Diabetes Audit

www.rcpch.ac.uk/national-paediatric-diabetes-audit-npda

UK Government Obesity Strategy

www.gov.uk/government/publications/childhood-obesity-a-plan-for-action

Diabetes.co.uk

www.diabetes.co.uk/cost-of-diabetes.html

NHS Diabetes Prevention Programme

www.england.nhs.uk/ourwork/qual-clin-lead/diabetes-prevention/

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Our aim is to provide evidence for policy and practice for the health and well-being of children, young people and families.

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