

Living in a high-deprivation neighborhood has long term health effects, according to unique refugee relocation study

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Living in a high-deprivation neighbourhood may lead to an increased risk of type 2 diabetes, according to a unique study looking at the health of refugee immigrants in Sweden, published today in *The Lancet Diabetes & Endocrinology*.

The study followed the long-term health of over 60000 refugee immigrants who arrived in Sweden in 1987-1991 and were dispersed in housing throughout the country - allowing for a natural experiment studying the effect of neighbourhood deprivation on health. Although previous studies have shown an association between deprivation and health, these findings suggest a more direct link, especially in vulnerable populations such as refugees.

"We found that living in a high-deprivation neighbourhood led to an increased risk of type 2 diabetes, compared to living in the least deprived areas. Although the increased risk was small, we found that the effect accumulated over time," said study author Dr Justin White from the University of California, San Francisco, CA, USA. "The increased risk didn't develop immediately, which is consistent with the way neighbourhoods are thought to affect health, and chronic diseases in particular. There are likely to be a number of factors explaining the link, such as increased exposure to chronic stress from living in a high-crime or segregated area, the limited income and employment opportunities that affect a person's ability to afford healthy food, the lack of

availability of healthy food in the neighbourhood or its low levels of walkability."

Studies have consistently shown that living in a high-deprivation neighbourhood is associated with increased risk of chronic diseases like type 2 diabetes and heart disease. However, because of the lack of randomised trials, most studies have been unable to show more than a statistical association and were unable to account for limitations such as selection bias (e.g. that less healthy individuals might move to more disadvantaged neighbourhoods). The only randomised trial that has looked at neighbourhood effects was in the USA in the 1990s, where 4600 low-income families were randomly assigned to receive a housing voucher to move out of high-deprivation neighbourhoods.

In this new study, researchers analysed data from 61386 refugee immigrants aged 25 to 50 who arrived in Sweden between 1987 and 1991. This period saw a large influx of refugees to Sweden, largely from the Middle East and North Africa, and policy at the time aimed to actively distribute refugees across Sweden to improve integration and to avoid a large influx of recently arrived, unemployed people arriving in major cities, putting strain on local job markets.

Refugees were placed into housing by local municipal officials who had limited information about their backgrounds, meaning that location assignment was as good as random. Because of Sweden's extensive data registers, the researchers were able to follow refugees for decades, including their housing, medical records and diagnoses.

The researchers analysed the proportion of people who had developed type 2 diabetes between January 2002 and December 2010. They excluded people with type 1 diabetes and people who had a diagnosis of type 2 diabetes within 5 years of arriving in Sweden to avoid including people with pre-existing disease. Overall, 7.4% (4553/61386) had

developed diabetes; by comparison, national diabetes prevalence in Sweden was estimated to be 4-6% during the same time period. Of the 28785 refugees assigned to high-deprivation neighbourhoods, 7.9% (2278) developed type 2 diabetes, compared to 7.2% in moderate-deprivation neighbourhoods (1994/27786) and 5.8% (281/4815) in low-deprivation neighbourhoods.

When the researchers took into account information such as age, sex, educational attainment, marital status, region of initial placement, family size, region of origin, year of arrival, and assigned municipality, they found that the initial percentage point difference between high and low deprivation neighbourhoods was reduced from 1.7% to 0.8%. Although small, the author say the finding is still important and corresponds to a 15% increase in the risk of diabetes for refugees initially assigned to a high-deprivation versus low-deprivation. The study also found that diabetes risk is cumulative, with the risk of diabetes increasing year by year.

The authors add that half of the initial sample of people moved away from their initial assigned location in the 10 years following their arrival in Sweden. However, even in the presence of high relocation rates, in a country renowned for its strong social support, the findings show a long-term effect of initial neighbourhood assignment on refugee health, suggesting that, if anything, this study likely underestimates the true effects of neighborhoods.

Dr White adds: "Our study has direct relevance to the ongoing period of immigration to Europe. Because of the historically high numbers of incoming refugees, combined with already high unemployment rates, the new entrants are encountering less hospitable political and social environments. Our data suggest that decisions affecting the settlement and integration of immigrants can have long-term consequences for the health of the new arrivals, and that these societies may end up paying the

price decades later if refugees do not receive adequate support up front. Refugees are among the most vulnerable populations in any society, and as such deserve special attention from governments in creating policies that protect and promote their health. Future studies should also consider the effects of dispersal policies and neighbourhood deprivation on other factors such as mental health or child health."

Writing in a linked Comment, Dr Nigel Urwin, Chronic Disease Research Centre, the University of the West Indies, Barbados, and the MRC Epidemiology Unit, University of Cambridge, Cambridge, UK, says: "The findings from this study suggest that where people live affects their risk of developing type 2 [diabetes](#), and that by extension this affects the development of related chronic diseases. These results are consistent with those from the Move to Opportunity⁴ study done in the USA, which included people from a different population using a different welfare system. These two studies were both done in adults; the long-term effects of neighbourhood deprivation in children might be even greater.⁸ Although White and colleagues' study clarifies little about the mechanisms of the increased risk associated with moving to a deprived area, it emphasises the need to understand them to inform preventive interventions. The findings also support the notion that the most effective approaches to prevention will entail addressing both neighbourhood and individual level factors."

More information: *The Lancet Diabetes & Endocrinology*, [www.thelancet.com/journals/lan ... \(16\)30009-2/abstract](http://www.thelancet.com/journals/lan... (16)30009-2/abstract)

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