

Study examines shift work and genetic risk factors for type 2 diabetes

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A new study takes a deep look at the connection between shift work and type 2 diabetes. Investigators at Brigham and Women's Hospital leveraged data on hundreds of thousands of people in the UK Biobank to better understand how shift work - especially frequent night work - contributes to the likelihood of type 2 diabetes. The team also developed a genetic risk score for type 2 diabetes, examining genetic data for tens of thousands of workers in the database. They found that more frequent night work increased the odds of type 2 diabetes, regardless of genetic type 2 diabetes risk, among the population studied. Their results are published this week in *Diabetes Care*.

"We see a dose-response relationship between frequency of night shift work and type 2 diabetes, where the more often people do shift work, the greater their likelihood of having the disease, regardless of genetic predisposition," said co-first author Céline Vetter, PhD who conducted this work while at the Channing Division of Network Medicine at BWH, along with co-first author Hassan S. Dashti, PhD, RD. Vetter is now an assistant professor at the University of Colorado, Boulder. "This helps us understand one piece of the puzzle: frequency of night shift work seems to be an important factor."

The team examined data from more than 270,000 people, including 70,000 who provided in-depth lifetime employment information and a subgroup of more than 44,000 for whom [genetic data](#) were available. More than 6,000 people in the sample population had type 2 diabetes.

Using information on more than 100 genetic variants that are associated with type 2 diabetes, the research team developed a genetic risk score that they used to assign a value to each participant. As expected, those with the highest genetic risk scores were almost four times as likely to develop type 2 diabetes compared to individuals who had lower genetic risk scores. Shift work did not change this probability, suggesting similar effects of night shift [work](#) regardless of an individual's genetic predisposition to type 2 diabetes.

The team found that, compared to day workers, all shift workers were more likely to have type 2 diabetes, except for permanent [night shift](#) workers. Those who reported working irregular or rotating shifts with usual night shifts were 44 percent more likely to have type 2 diabetes, after taking into account other established [risk factors](#).

"Our results suggest that these two risk factors both play a role in type 2 diabetes likelihood," said corresponding co-senior author Frank A.J.L. Scheer, PhD, Director of the Medical Chronobiology Program and neuroscientist in the Division of Sleep and Circadian Disorders in the Departments of Medicine and Neurology at BWH. "Our finding that there does not seem to be an interaction between those two type 2 [diabetes](#) risk factors is novel, and requires replication in future studies, especially in other populations of non-European ancestry."

More information: Vetter, C et al. "Night Shift Work, Genetic Risk, and Type 2 Diabetes in the UK Biobank" *Diabetes Care*, 2018.

Provided by Brigham and Women's Hospital

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