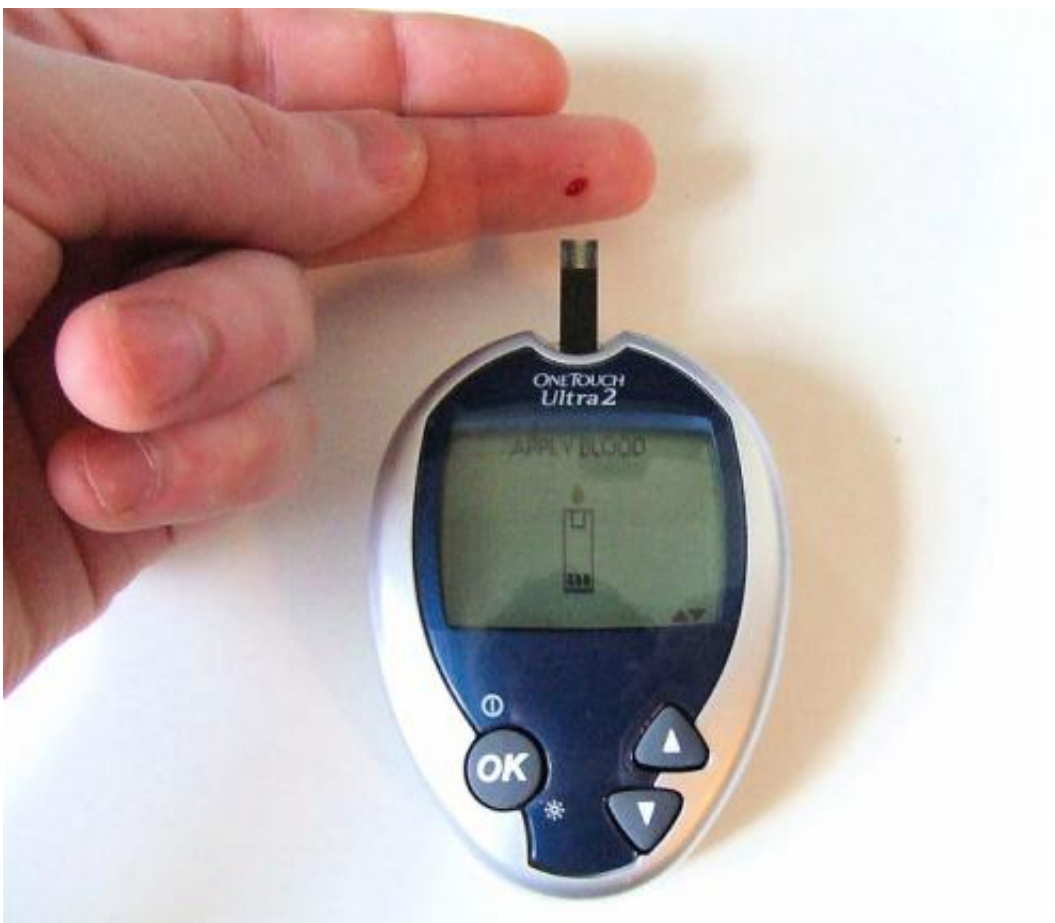


Black women working night shifts have an increased risk of developing diabetes

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Blood glucose monitoring. Credit: Wikipedia

Data from a large ongoing study into the health of African-American women show that those who work night shifts are significantly more

likely to develop diabetes than those who have never worked night shifts, with more years working the night shift resulting in a higher risk.

Furthermore, the increased risk of diabetes seen in shift workers was more pronounced in younger women than older women. The study is published in *Diabetologia* (the journal of the European Association for the Study of Diabetes) and is by Dr Varsha Vimalananda, Center for Health Organization and Implementation Research (CHOIR), Edith Nourse Rogers Memorial Veterans Affairs Medical Center, Bedford, MA, USA, and colleagues at Slone Epidemiology Center at Boston University, MA, USA.

Some previous studies have investigated the link between night shift work and [diabetes](#), with the Nurses' Health Study (NHS) (of mostly white nurses in the USA), showing a link, and another study in Sweden showing a link. However, body-mass index (BMI) accounted for most of this association in the NHS, and all of that found in the Swedish study. However, given the increased prevalence of diabetes in black [women](#) in the USA (12.6%) versus white women (4.5%), the authors decided that this potential association should be further investigated in a population of black women.

In the Black Women's Health Study (BWHS), 28,041 participants free of diabetes provided information in 2005 about having worked the night shift. The women were followed for incident diabetes during the next 8 years. Thirty-seven percent of the women reported having worked the night shift, with 5% having worked that shift for at least 10 years. During the 8 years of follow-up, there were 1,786 incident diabetes cases.

Relative to never having worked the night shift, the increased risk of developing diabetes was 17% for 1-2 years night shift work; 23% for 3-9 years, and 42% for 10 or more years. After adjustment for BMI and lifestyle factors such as diet and smoking status, the association between

increasing years of night shift work and increasing [diabetes risk](#) remained statistically significant, with a 23% increase in those who had worked [night shifts](#) for 10 years or more versus those who never had worked the night shift.

When black women having ever worked the night shift (any duration) were compared to those who had never worked it, they were found to be at a 22% increased risk of developing diabetes. After adjustment for BMI and lifestyle factors, this increased risk became 12%.

The authors also found that the association was stronger in [younger women](#) than in [older women](#). Working night shifts for 10 or more years relative to never working the night shift was associated with a 39% higher risk of diabetes among women aged less than 50 years compared with 17% higher risk in women aged 50 years or over.

The authors explain: "Even though lifestyle factors and BMI explained a major part of the association of shift work with incident diabetes, women with a long duration of shift work had an increased risk of diabetes after control for those factors, suggesting the presence of additional causal pathways. Shift work is associated with disrupted circadian rhythms and reduced total duration of sleep. Similar to the effects of jet lag, which are short term, shift workers experience fatigue, sleepiness during scheduled awake periods and poor sleep during scheduled sleep periods. These alterations in the normal sleep-wake cycle have profound effects on metabolism... Even after many years of night-shift work, circadian rhythms do not fully adjust to the shifted sleep-wake cycle. The metabolic effects of long-term shift work likely underlie a part of the association with diabetes that we and others describe and that strengthens with years of exposure to sleep disruption."

They add: "The precise mechanisms by which these changes occur are still unclear. In animal models, circadian disruption in susceptible rats

led to more rapid loss of beta cell function and increased beta cell death, resulting in decreased beta cell mass, decreased glucose-stimulated insulin secretion and accelerated development of diabetes."

They conclude: "In summary, we found that African-American women undergoing long-duration night-shift work had a higher risk of incident diabetes. The fact that the association remained, though reduced, after adjustment for lifestyle factors and BMI suggests that additional pathways such as disruption of the circadian system may be playing a role. In view of the high prevalence of shift work among workers in the USA - 35% among non-Hispanic blacks and 28% in non-Hispanic whites - an increased diabetes risk among this group has important public health implications. There is a need for continued research into facilitating circadian adaptation to shift work and consideration of avoiding [shift work](#) in favour of other work arrangements when possible."

Provided by Diabetologia

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