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Increased sleep duration, chronic short sleep duration linked to increased diabetes risk in middle-aged and older women

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Chronic short sleep duration of 6 hours or less or increasing average sleeping time by 2 hours or more over a period of several years increases the risk of developing type 2 diabetes in middle-aged and older women, reports new research published in *Diabetologia*, the journal of the European Association for the Study of Diabetes (EASD).

Increasing sleep duration by 2 hours or more increased the risk of developing type 2 diabetes by 15% even factoring in variations in diet, physical activity, snoring, sleep apnoea, depression and body-mass index, conclude the researchers led by Dr Elizabeth Cespedes, Harvard T.H. Chan School of Public Health, Boston, MA, and Kaiser Permanente Division of Research, Oakland, CA, USA, and colleagues.

Previous research has shown that too much or too little sleep increases the risk of diabetes, with the lowest risk shown for those who sleep between seven and eight hours per day. However, there is a lack of research examining long-term changes in sleep duration and related changes in diet, physical activity, weight and subsequent diabetes risk.

This new study included 59,031 women aged 55-83 years in the Nurses' Health Study (a well-known long term epidemiological study of current and former nurses from the USA) without diabetes in 2000. Change in sleep duration was recorded as the difference between self-reported 24 hour sleep duration in 1986 and 2000. Diet, physical activity and

covariates were updated every 2-4 years. Self-reported diabetes was confirmed via validated questionnaires. Computer modelling was then used to evaluate the changes in relative risk of diabetes related to increases and decreases in sleep.

The researchers found that chronically sleeping six hours or less per day as well as increases in sleep duration of more than two hours per day were associated with modest increased risk of developing type 2 diabetes. However, after adjustment for body-mass index, associations of chronic short sleep duration with diabetes became non-significant, while associations of increases in sleep duration with diabetes persisted. Notably, women who increased their sleep duration were more likely to have been short sleepers to begin with, suggesting that the adverse influence of short sleep duration in mid- life may not be compensated for by later increases in sleep duration.

A number of potential causes for the authors' findings are discussed in the paper, including that increases in sleep duration can both result from or induce an inflammatory state. For example, proinflammatory cytokines in the blood—abundant in obesity—can induce sleepiness, and a recent experiment extending time in bed increased inflammation and worsened mood among healthy volunteers.

The authors conclude: "Chronic short sleep duration and increases in sleep duration are associated with increased risk of diabetes. Decreases in sleep duration have modest, adverse associations with diet quality and physical activity, while increases in sleep duration have modest, adverse associations with weight gain. Ongoing trials will provide further insight as to whether changes in sleep duration influence energy balance."

Provided by Diabetologia