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Poor sleep may undermine people's attempts to keep weight off

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New research being presented at this year's European Congress on Obesity (ECO) in Maastricht, Netherlands (4-7 May), finds that not getting enough good quality sleep undermines people's attempts to keep

weight off after dieting, and suggests that around two hours of vigorous physical activity per week can help maintain better sleep.

The study is by medical student Adrian F. Bogh, Professor Signe S. Torekov and Ph.D. student Simon B. K. Jensen from the University of Copenhagen, Denmark and colleagues.

"It was surprising to see how losing weight in adults with obesity improved sleep duration and quality in such a short time, and how exercising while attempting to keep the weight off preserved improvements in sleep quality", says Bogh. "Also, it was intriguing that adults who aren't sleeping enough or getting poor quality sleep after weight loss appear less successful at maintaining weight loss than those with sufficient sleep."

More than a third of adults in the UK and the U.S. don't get enough sleep on a regular basis (defined as less than 6 or 7 hours per night, respectively), due to host of aspects of modern life including stress, computers, smart devices, and the blurring of work life boundaries.

Not getting enough sleep or getting poor quality sleep increases risks for high blood pressure, high cholesterol and atherosclerosis (fatty deposits building up in arteries). Not getting enough sleep is linked to obesity, diabetes and inflammation, all of which can worsen cardiovascular disease. Sleeping too much or too little also has been shown to increase the risk of stroke, heart attack and death. It has been suggested that sleep habits may be a contributing factor in weight regain after a weight loss.

For this study, researchers analyzed data from the S-LiTE randomized placebo-controlled trial to investigate changes in sleep duration and quality during diet-induced weight loss. In total, 195 adults (age 18 to 65 years) with obesity (body mass index [BMI] 32 to 43 kg/m^2) followed a very low-calorie diet (800 kcal/day) for eight weeks and lost an average

of 12% of their body weight (figure 2 in poster).

Participants were then randomly assigned to one year of weight loss maintenance with either: daily injection of placebo (49 participants), daily 3mg injection of the weight-loss drug liraglutide (49), four exercise sessions per week (48), or a combination of both treatments (49). Everyone in the exercise groups were encouraged to participate in supervised 45-minute sessions, twice a week, doing spinning and circuit training, and two unsupervised sessions of 30 minutes.

Sleep duration was measured using data from accelerometers worn by study participants before and after the low-calorie diet and after 13, 26 and 52 weeks of weight maintenance. Sleep quality was subjectively measured with the Pittsburgh Sleep Quality Index (PSQI), a self-rated questionnaire. Lower scores on the PSQI indicate better quality sleep, ranging from 0 for the best sleep to 21 as the worst possible sleep. Scores greater than five are considered poor quality sleep.

To examine the association between sleep and weight gain, participants were grouped according to their average sleep duration (below/above 6 hrs/night) or sleep quality (below/above a PSQI score of 5) at randomisation (after low-calorie diet).

The researchers found that following the 8-week low-calorie diet, sleep quality and sleep duration improved in all participants. Notably, after one year of weight maintenance, participants in the exercise groups maintained self-reported sleep quality improvements achieved from the low-calorie diet, while non-exercise groups relapsed (average between group difference 1 PSQI score point).

Liraglutide treatment had no significant effect on any sleep quality or duration compared to placebo.

The analyses also showed that participants who slept on average less than 6 hours per night at the start of the study increased their BMI by 1.3 kg/m^2 during the 1-year weight maintenance phase compared to longer sleepers (over 6 hours per night).

Similarly, poor sleepers (PSQI score 5 or higher) at the start of the study increased their BMI by 1.2 kg/m^2 during the weight maintenance phase, compared to good sleepers (PSQI score less than 5).

"The fact that sleep health was so strongly related to weight loss maintenance is important since many of us don't get the recommended amount of sleep needed for optimal health and functioning," says Professor Torekov. "Future research examining possible ways of improving sleep in adults with obesity will be an important next step to limit weight regain. Weight loss maintained with exercise seems promising in improving sleep"

Despite the important findings, the authors note that the study is observational and cannot prove that poor sleep causes weight changes, but suggests that it is likely to contribute.

Provided by European Association for the Study of Obesity

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