

High sugar and fat diet 'may increase cell damage during sleep'

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(Medical Xpress) -- Continuing sleepless nights can increase the risk of heart disease, stroke and even death for sufferers of Obstructive Sleep Apnoea (OSA) who regularly stop breathing during the night for brief periods of time.

A new research study by scientists at the University of Birmingham is seeking to establish the effects of a high sugar and fat intake on OSA and its consequences. The researchers will test the theory that [high blood sugar](#) and [fat levels](#) increase the cell damage that the low [oxygen](#) conditions of [sleep](#) apnoea can cause.

Lead researcher, Harry Griffin from the School of Sport and Exercise Sciences at the University of Birmingham explained:

“Obstructive sleep apnoea is a condition in which the airway closes for brief periods following heavy snoring. This causes a drop in [blood](#) oxygen levels, which is associated with the accumulation of toxic substances called reactive oxygen species. Despite antioxidants acting as a defense against these toxic substances, damage to cellular structures, in a process called oxidative stress, can still occur. This may, over many years, cause cardiovascular disease.”

Many obstructive sleep apnoea patients also suffer from obesity and Type-2 diabetes, characterised by high blood sugar and fat levels, which may make them more at risk of the long term damage of sleepless nights. The research study will investigate whether consumption of a

meal high in sugar and fat can alter how the body copes under low oxygen conditions and is calling for volunteers to take part.

Mr Griffin added: “Type-2 diabetes is now a common health disorder with an expected prevalence worldwide of 366 million by 2030 and recent research has shown that fifty per cent of these patients may also suffer from OSA.

“We aim to investigate whether high blood glucose and fat levels, as often occurs in these patients, could increase oxidative stress during the low oxygen conditions seen in obstructive [sleep apnoea](#). If this theory is correct, we hope that our results will increase awareness of the risk to health due to the combinations of these conditions and possibly initiate the development of future treatments.”

The researchers are looking to recruit male participants aged between 40 and 65 to take part in three laboratory visits to the University. During each visit, which will last no more than eight hours and can be carried out on weekdays and/or weekends, volunteers will be given a high calorie meal and then will watch television for six hours, during which blood samples will be taken at regular intervals.

Whilst relaxing watching television, participants will breathe lower than normal oxygen levels through a comfortable facemask, reducing the amount of oxygen in the blood. Breathing at this low oxygen level is not uncomfortable and is often unnoticeable to participants. Analysis of blood samples will enable assessment of oxidative stress on the body during this process to establish the correlation between high sugar and fat intake and blood [oxygen levels](#).

Provided by University of Birmingham

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