

Rising indoor winter temperatures linked to obesity?

January 25 2011

Increases in winter indoor temperatures in the United Kingdom, United States and other developed countries may be contributing to rises in obesity in those populations, according to UCL research published today.

The review paper, published in the journal *Obesity Reviews*, examines evidence of a potential causal link between reduced exposure to seasonal cold and increases in obesity in the UK and US.

Reduced exposure to cold may have two effects on the ability to maintain a healthy weight: minimising the need for [energy expenditure](#) to stay warm and reducing the body's capacity to produce heat. The review summarises the evidence for increases in winter indoor temperatures in the UK and US and also examines the biological plausibility of the idea that exposure to seasonal cold could help to regulate energy balance and body weight on a population level.

The paper brings together existing evidence showing that winter indoor temperatures have increased over the last few decades and that there has also been an increase in homogenisation of temperatures in domestic settings. Increasing expectations of thermal comfort mean that seasonal cold exposure is decreasing and we are spending more time exposed to milder temperatures.

The authors also discuss the role of brown adipose tissue (brown fat) in human [heat production](#). Brown fat differs from white fat in that it has the capacity to burn energy to create heat, and its development in the

body is thought to be triggered by exposure to cold temperatures. Recent studies suggest that increased time spent in warm conditions may lead to a loss of [brown fat](#), and therefore reduced capacity to burn energy.

Lead author Dr Fiona Johnson, UCL Epidemiology & Public Health, said: "Increased time spent indoors, widespread access to central heating and air conditioning, and increased expectations of thermal comfort all contribute to restricting the range of temperatures we experience in daily life and reduce the time our bodies spend under mild thermal stress - meaning we're burning less energy. This could have an impact on energy balance and ultimately have an impact on body weight and obesity.

"Research into the environmental drivers behind obesity, rather than the genetic ones, has tended to focus on diet and exercise – which are undoubtedly the major contributors. However, it is possible that other environmental factors, such as winter indoor temperatures, may also have a contributing role. This research therefore raises the possibility for new public health strategies to address the obesity epidemic."

Co-author, Marcella Ucci, UCL Bartlett School of Graduate Studies, said: "The findings suggest that lower winter temperatures in buildings might contribute to tackling [obesity](#) as well reducing carbon emissions."

More information: The paper Johnson F, Mavrogianni A, Vidal-Puig A, Ucci M, Wardle J. 'Could increased time spent in a thermal comfort zone contribute to population increases in obesity?' will be published in *Obesity Reviews* 25 January 2011.

Provided by University College London

Citation: Rising indoor winter temperatures linked to obesity? (2011, January 25) retrieved 19

April 2024 from

<https://medicalxpress.com/news/2011-01-indoor-winter-temperatures-linked-obesity.html>

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