

Sleep, obesity and physicians' education

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More than two thirds of the US population is obese or overweight, with worldwide obesity rates doubling since 1980. Obesity causes serious health risks including cardiovascular disease, diabetes and cancer (1). It is also associated with respiratory conditions like obesity hypoventilation syndrome, asthma and obstructive sleep apnoea (OSA). Obesity causes a 6-fold increase in OSA prevalence (2) and over the last two decades, has caused a rise in the prevalence of OSA to 10% in middle-aged male subjects (3).

Though smoking is still the leading cause of morbidity and mortality in almost every country in the world (4), it is only a matter of time until obesity will overtake this (5). The prevalence of smoking is decreasing in the western world, and is currently below 21% in United Kingdom (6). This fall was facilitated by one of the most quickly ratified worldwide health treaties in the history of the United Nations-the Framework Convention on Tobacco Control (7); and as a direct consequence of increasing, sustained and directed pressure from healthcare professionals.

In stark contrast to the measures taken against smoking, the UK government has recently rejected preventative policy to increase tax on sweetened drinks; justifying this by claiming it would raise the cost of living, and stating the causes of obesity as complex (8). This caps off already dismal progress on obesity curtailment over the last 5–10 years (9), and contrasts to the implementation of graphic health warning labels on cigarette packaging. These utilised fear and emotional response (10) to aggressively encourage smoking cessation and prevention.

The comparison between smoking and unhealthy eating is potentially more apt than public perception might suggest. Some studies have already demonstrated

the addictive properties of sugar (11,12), with many health experts dubbing sugar the “new nicotine”. Given the relationship of obesity with sleep disorders, and especially OSA, the question arises as to whether we, as physicians, are playing our maximal part in preventing obesity.

Poor sleep quality and quantity is an increasing feature of modern societies, and along with traditional causes of obesity poor sleep can contribute to weight gain through complex interactions of high cortisol levels, increasing levels of appetite and altering hormone levels, such as Ghrelin (13). Poor sleep decreases basal metabolic rate by up to 30% (14), and further contributes to the development of obesity by affecting physical activity, mood and mental health. Paradoxically, weight gain is known to independently cause reduced sleep quality and daytime sleepiness (15,16), perpetuating a vicious cycle of poor sleep and weight gain.

In fact the impact of poor sleep quality itself is frequently unacknowledged by the medical profession (17). The burden of smoking prevention and cessation clearly lay upon public health and respiratory medicine, given the established relationship with lung cancer. However, the multi-factorial aetiology of obesity means responsibility to a single professional body is not so clear-cut and this may convolute the message and focus.

Are we doing enough to actively raise awareness about the consequences of poor sleep? Are we doing our part to educate fellow colleagues about the impact that poor sleep has on obesity?

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Footnote

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References

1. Guh DP, Zhang W, Bansback N, et al. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. *BMC Public Health* 2009;9:88.
2. Peppard PE, Young T, Palta M, et al. Longitudinal study of moderate weight change and sleep-disordered breathing. *JAMA* 2000;284:3015-21.
3. Peppard PE, Young T, Barnet JH, et al. Increased prevalence of sleep-disordered breathing in adults. *Am J Epidemiol* 2013;177:1006-14.
4. Lim SS, Vos T, Flaxman AD, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012;380:2224-60.
5. Imes CC, Burke LE. The Obesity Epidemic: The United States as a Cautionary Tale for the Rest of the World. *Curr Epidemiol Rep* 2014;1:82-8.
6. Britton J. Fifty years since smoking and health. Last Accessed 11/11/2015. Available online: <http://bit.ly/1O2rdgI>
7. WHO. WHO Framework convention on tobacco control. Cited 08/06/2015. Available online: <http://www.who.int/fctc/en/>
8. Introduce a tax on sugary drinks in the UK to improve our children's health. Available online: <https://petition.parliament.uk/petitions/106651>
9. Roberto CA, Swinburn B, Hawkes C, et al. Patchy progress on obesity prevention: emerging examples, entrenched barriers, and new thinking. *Lancet* 2015;385:2400-9.
10. Ratneswaran C, Chisnall B, Drakatos P, et al. A cross-sectional survey investigating the desensitisation of graphic health warning labels and their impact on smokers, non-smokers and patients with COPD in a London cohort. *BMJ Open* 2014;4:e004782.
11. Gearhardt A, Roberts M, Ashe M. If sugar is addictive... what does it mean for the law? *J Law Med Ethics* 2013;41 Suppl 1:46-9.
12. Avena NM, Rada P, Hoebel BG. Evidence for sugar addiction: behavioral and neurochemical effects of intermittent, excessive sugar intake. *Neurosci Biobehav Rev* 2008;32:20-39.
13. Beccuti G, Pannain S. Sleep and obesity. *Curr Opin Clin Nutr Metab Care* 2011;14:402-12.
14. Knutson KL, Spiegel K, Penev P, et al. The metabolic consequences of sleep deprivation. *Sleep Med Rev* 2007;11:163-78.
15. Palm A, Janson C, Lindberg E. The impact of obesity and weight gain on development of sleep problems in a population-based sample. *Sleep Med* 2015;16:593-7.
16. Slater G, Pengo MF, Kosky C, et al. Obesity as an independent predictor of subjective excessive daytime sleepiness. *Respir Med* 2013;107:305-9.
17. Sorscher AJ. How is your sleep: a neglected topic for health care screening. *J Am Board Fam Med* 2008;21:141-8.

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