

EDITORIALS

Quitting smoking and gaining weight: the odd couple

We need observational data to settle this question

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Smoking and obesity or overweight are risk factors for many diseases, making them among the world's greatest health problems. Tobacco is the main cause of premature death worldwide, being responsible for 5.1 million deaths each year.¹ Obesity, together with overweight, causes 2.8 million deaths.¹ Smoking and obesity are moving in opposite directions, with the prevalence of smoking declining and that of obesity increasing in lower middle income countries and deprived population groups in high income countries.² It has long been known that smokers weigh less than former smokers or people who have never smoked.² Weight gain is a widely anticipated consequence of quitting, and many smokers—particularly women³—avoid quitting for fear of gaining weight.⁴ A common question that many smokers ask is not, “Will I gain weight after quitting?” but “How much will I gain after stopping?”

In the linked paper (doi:10.1136/bmj.e4439), Aubin and colleagues present a meta-analysis of 62 clinical trials that measured weight gain after smoking cessation.⁵ Independent of the type of treatment used (including unassisted cessation), average weight was 4–5 kg higher one year after quitting, with 13% of people gaining more than 10 kg and 16% losing some weight. These data are an important contribution to the evidence base on weight gain and smoking cessation and will probably be translated into headlines shouting that the jury is now in: quitting smoking causes weight gain. This could result in many people delaying cessation, perhaps indefinitely.

It may be unwise to incorporate this message into clinical or public health practice. The data were extracted from clinical trials, not from “real world” population based studies of cessation. Those who enrol in trials are known to differ in important respects from non-participants.⁶ Smokers who take part in trials and attend cessation clinics are a self selecting minority of smokers who may differ in important respects from those who quit without professional assistance.⁷ Those who decide they need help to stop smoking tend to lack self efficacy. They might have similar problems with the dietary and physical activity behaviours important in weight control. So these results may not be generalisable to all smokers who quit because two thirds to three quarters of ex-smokers stop smoking without professional help or interventions.⁸

Cohort studies have shown that many smokers gain weight after quitting in the short term but not in the long term.⁹ Smokers who quit tend to gain weight as they grow older at a similar rate to those who have never smoked. The size of the gain may depend on the years of follow-up after quitting and other personal characteristics, such as sex, age, ethnicity and, importantly, baseline body mass index at the time they quit.¹⁰ A meta-analysis of prospective population based cohort studies of weight changes after cessation is needed. One that could analyse the data by specific subgroups and control for potential confounders such as baseline weight, glycaemic index, and comorbidities would provide useful data to complete the overall picture on quitting smoking and weight gain.

Finally, the relative long term health effects of weight gain and smoking cessation also need to be considered with respect to the ultimate public health message that we should derive from this and future studies. Although obesity is positively associated with an increased risk of all cause mortality,¹¹ cohort studies indicate that modest weight gain does not increase the risk of death¹²; smoking does.

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- 1 WHO. Global health risks: mortality and burden of disease attributable to selected major risks. 2009. www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf.
- 2 Molarius A, Seidell JC, Kuulasmaa K, Dobson AJ, Sans S. Smoking and relative body weight: an international perspective from the WHO MONICA Project. *J Epidemiol Community Health* 1997;51:252-60.
- 3 Clark MM, Hurt RD, Croghan IT, Patten CA, Novotny P, Sloan JA, et al. The prevalence of weight concerns in a smoking abstinence clinical trial. *Addict Behav* 2006;31:1144-52.
- 4 White MA, McKee SA, O'Malley SS. Smoke and mirrors: magnified beliefs that cigarette smoking suppresses weight. *Addict Behav* 2007;32:2200-10.
- 5 Aubin H-J, Farley A, Lycett D, Lahmek P, Aveyard P. Weight gain in smokers after quitting cigarettes: meta-analysis. *BMJ* 2012;345:e4439.

- 6 Le Strat Y, Rehm J, Le Foll B. How generalisable to community samples are clinical trial results for treatment of nicotine dependence: a comparison of common eligibility criteria with respondents of a large representative general population survey. *Tob Control* 2011;20:338-43.
- 7 Chapman S. Tar wars over smoking cessation. *BMJ* 2011;343:d5008.
- 8 Chapman S, MacKenzie R. The global research neglect of unassisted smoking cessation: causes and consequences. *PLoS Med* 2010;7:e1000216.
- 9 Flegal KM. The conundrum of smoking cessation and weight gain. *Prev Med* 2012;193-4.
- 10 Lycett D, Munafó M, Johnstone E, Murphy M, Aveyard P. Associations between weight change over 8 years and baseline body mass index in a cohort of continuing and quitting smokers. *Addiction* 2011;106:188-96.
- 11 Pi-Sunyer X. The medical risks of obesity. *Postgrad Med* 2009;121:21-33.
- 12 Drøyvold WB, Lund Nilsen TI, Lydersen S, Midtjell K, Nilsson PM, Nilsson JA, et al. Weight change and mortality: the Nord-Trøndelag Health Study. *J Intern Med* 2005;257:338-45.

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