

Avoid clinical inertia: Importance of asking and advising patients with diabetes who smoke about quitting

The goal of diabetes care is to prevent complications and maximize the quality of life of patients. Evidence-based glycaemic control is the centerpiece for achieving that goal. At the same time, more emphasis should also be placed on managing other risk factors. A recent study published in *The Lancet Diabetes & Endocrinology* confirmed that we should ask all patients with diabetes whether they smoke, and if so, we should advise them to stop smoking immediately¹. The study found that quitting smoking was related to the reduction of their elevated risk of dying from any-cause and developing cardiovascular diseases (CVD) to the levels that were much lower than continuing smokers.

The authors analyzed data from people with type 2 diabetes from two prospective cohorts in the USA: The Nurses' Health Study (1976–2014, women) and the Health Professional Follow-up Study (1986–2014, men). They assessed CVD incidence, and all-cause and cause-specific mortality among recent (≤ 6 years) and long-term (> 6 years) quitters in relation to weight change within 6 years of smoking cessation (Figure 1). It was the largest study of diabetes patients that examined the effect of smoking cessation on subsequent CVD incidence and all-cause mortality (2,580 CVD and 3,287 deaths). As patients with diabetes who died soon after quitting were likely to have a severe disease that resulted in both smoking cessation and weight loss (reverse-causation bias or sick quitter

effect), mortality analysis was carried out only for long-term quitters (i.e., those who had survived the first 6 years after smoking cessation). Furthermore, they defined the baseline weight as that obtained just before the diagnosis of type 2 diabetes, considering that poor glycaemic control or its pharmacological control can alter bodyweight.

The authors focused on weight change within 6 years after quitting, which has been reported to be the period most relevant to weight change after smoking cessation. The median weight gain among quitters after smoking cessation within 6 years in the study was 3.2 kg. It was reported that recent quitters without weight gain within the first 6 years of quitting had a significant 23% lower risk of CVD than people who continued to smoke. Although the reduction in the incident CVD risk was attenuated by weight gain after smoking cessation (hazard ratio 0.94, not significant), smoking cessation with or without weight gain within 6 years after cessation was associated with approximately half the risk of all-cause mortality compared with continuing smokers (hazard ratios 0.57 and 0.51, respectively). As the authors stated, "these findings confirm the overall health benefits of quitting smoking among people with type 2 diabetes, but also emphasize the importance of weight management after smoking cessation to maximize its health benefits."

Now, facing the confirmatory evidence of the benefit of smoking cessation in patients with type 2 diabetes, we must search even harder for ways to utilize it for better patient care.

First, it is known that type 2 diabetes patients smoke at a similar rate to the general population, despite the

accumulating evidence of the harm of smoking on various diabetes complications. Smoking is also related to poor glycaemic control in diabetes patients². A qualitative study of type 2 diabetes patients who smoked showed that willingness to change smoking behaviors was related to personal self-image, and meaningful engagement in life and social relationships³, implying a possible lack of these factors in type 2 diabetes patients who continue to smoke. As tobacco smoking is the most popular form of substance use disorders, or an addiction, the patients should be referred to evidence-based smoking cessation therapies before it is too late. Clinicians should also understand that there exist socioeconomic inequalities in the prevalence of smoking⁴, which suggests that communicating accurate information and obtaining a good understanding about the harm of smoking can be difficult, and the attempt could easily be denied. Furthermore, previous studies have shown that smoking and other health-related behaviors, such as alcohol drinking, physical inactivity and poor diet, tend to cluster within individuals⁵. Interventions targeting multiple aspects of one's behaviors might be more effective.

The second issue regards the way to avoid weight gain. Smoking cessation often occurs in middle-age, when others (i.e., non-smokers) also gain weight. However, quitters might gain weight more rapidly after the cessation. The average weight gain is reportedly nearly 5 kg at 1 year after cessation⁶. However, there is significant variation in the gained weight: $> 10\%$ of those who quit gain ≥ 10 kg weight⁶. Greater weight gain was associated with a lower pre-cessation body mass index and post-cessation

*Corresponding author. Hiroshi Yatsuya

Tel: +81-52-744-2128

Fax: +81-52-744-2131

E-mail addresses: yatsuya@gmail.com;

h828@med.nagoya-u.ac.jp

Received 10 September 2020; revised 22

September 2020; accepted 23 September 2020

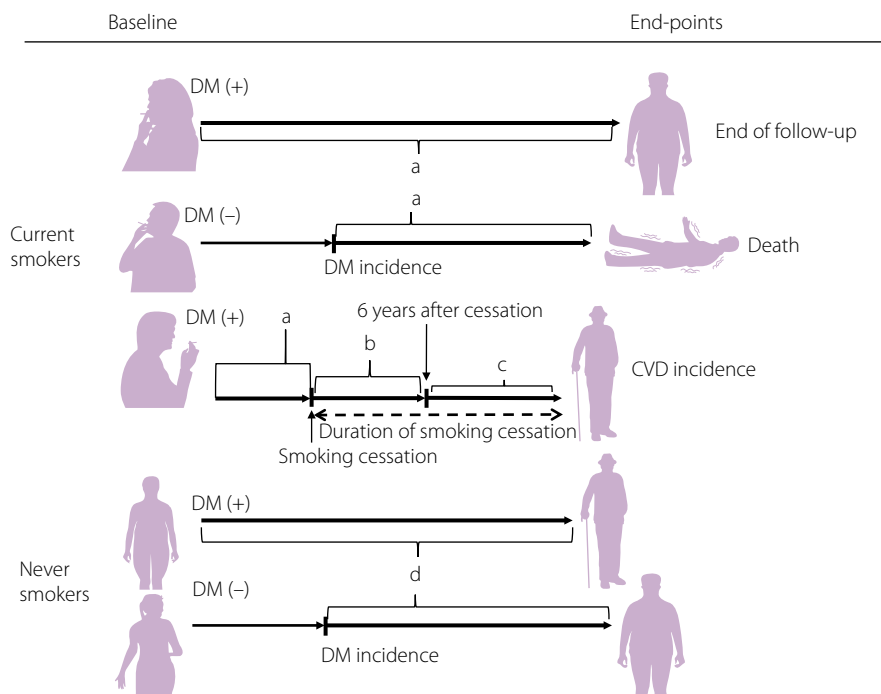


Figure 1 | Schematic illustration of the study method to define continuous smokers, and short- and long-term quitters to relate mortality and cardiovascular disease (CVD) incidence. Follow up as a continuous smoker is shown as “a”. Follow up as a short-term quitter is shown as “b”. Follow up as a long-term quitter is shown as “c”. Follow up as a never smoker is shown as “d”. The dashed line represents the duration of smoking cessation (years). Individuals who were past smokers already at baseline were excluded from the present study. Weight changes during the first 6 years of smoking cessation were monitored, and were related to mortalities and CVD incidence. DM indicates type 2 diabetes.

higher appetite ratings⁷. A study using the Nurses’ Health Study and the Nurses’ Health Study II reported that smoking cessation resulted in an average post-cessation weight gain between 3.4 and 7.9 kg over a period of 10 years compared with continued smoking, and it was estimated that a large proportion of this average weight gain could be prevented by sustaining a post-cessation intervention on diet and exercise⁸. The results suggested a weight management program after smoking cessation is necessary in clinical practice to prevent post-cessation weight gain, which is related to the worsening of cardiometabolic risk factors.

Third, pathophysiological pathways of how smoking cessation leads to rapid weight gain are poorly understood. It is well known that current smoking is a risk factor for the development of type 2 diabetes⁹, and a previous report indicated that the association was mediated by concomitant decrease of blood

adiponectin, a presumed marker of adipocyte dysfunction⁹. Although it is highly speculative, post-cessation recovery of adipocyte function could somehow lead to a state of increased appetite (i.e., perception of negative energy balance). Smoking cessation is undoubtedly important, but cessation of the habit possibly leads to disturbance of “homeostasis,” at least for a certain period of time after the cessation. Such understanding might be useful for the development of behavioral and pharmacological therapies to avoid post-cessation weight gain.

Finally, there emerged another reason to avoid the dangerous combination. Diabetes patients with a history of smoking are reported to be at especially increased risk of the incidence and poor outcome of severe acute respiratory syndrome coronavirus 2¹⁰.

The concept of clinical inertia indicates the importance of regular reassessment and modification of provided therapies.

Asking, advising and counseling diabetes patients about their smoking habit must always be remembered.

DISCLOSURE

The author declares no conflict of interest.

Hiroshi Yatsuya^{1,2*} 

¹Department of Public Health and Health Systems, Nagoya University Graduate School of Medicine, Nagoya, Japan,

²Department of Public Health, Fujita Health University School of Medicine, Toyoake, Japan

REFERENCES

1. Liu G, Hu Y, Zong G, *et al*. Smoking cessation and weight change in relation to cardiovascular disease incidence and mortality in people with type 2 diabetes: a population-based cohort study. *Lancet Diabetes Endocrinol* 2020; 8: 125–133.

2. Peng K, Chen G, Liu C, *et al.* Association between smoking and glycemic control in diabetic patients: results from the risk evaluation of cAncers in Chinese diabeTic Individuals: A lONgitudinal (REACTION) study. *J Diabetes* 2018; 10: 408–418.
3. Georges A, Galbiati L, Clair C. Smoking in men and women with type 2 diabetes: a qualitative gender-sensitive exploration of barriers to smoking cessation among people with type 2 diabetes. *PLoS One* 2019; 14: e0221783.
4. Tanaka H, Mackenbach JP, Kobayashi Y. Widening socioeconomic inequalities in smoking in Japan, 2001–2016. *J Epidemiol* 2020. <https://doi.org/10.2188/jea.JE20200025>.
5. Mawditt C, Sasayama K, Katanoda K, *et al.* The clustering of health-related behaviours in the adult Japanese population. *J Epidemiol* 2020. <https://doi.org/10.2188/jea.JE20200120>.
6. Aubin HJ, Farley A, Lycett D, *et al.* Weight gain in smokers after quitting cigarettes: meta-analysis. *BMJ* 2012; 345: e4439.
7. Pankova A, Kralikova E, Zvolaska K, *et al.* Early weight gain after stopping smoking: a predictor of overall large weight gain? A single-site retrospective cohort study. *BMJ Open* 2018; 8: e023987.
8. Jain P, Danaei G, Manson JE, *et al.* Weight gain after smoking cessation and lifestyle strategies to reduce it. *Epidemiology* 2020; 31: 7–14.
9. Hilawe EH, Yatsuya H, Li Y, *et al.* Smoking and diabetes: is the association mediated by adiponectin, leptin, or C-reactive protein? *J Epidemiol* 2015; 25: 99–109.
10. Del Sole F, Farcomeni A, Loffredo L, *et al.* Features of severe COVID-19: a systematic review and meta-analysis. *Eur J Clin Invest* 2020; 50: e13378.

Doi: 10.1111/jdi.13421