A brief, tailored smoking cessation intervention for smokers with diabetes mellitus in Hong Kong

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KEY MESSAGE

A brief, tailored intervention was not effective in promoting quitting or reducing smoking in smokers with diabetes mellitus. The intervention also did not improve glycaemic control of these patients at 12 months.

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Introduction

Diabetes mellitus (DM) is an epidemic, chronic, non-communicable disease. The number of patients with DM worldwide is expected to reach nearly 552 million by 2030. In Hong Kong, >90% of these patients are diagnosed as having type 2 DM, and 10.4% of them smoke.[1] Continuous smoking increases the risk of cardiovascular disease, diabetic nephropathy, stroke, and amputation. In 2014, the American Diabetes Association strongly recommended to include interventions for smoking cessation as standard medical care for patients with type 2 DM to minimise health risks and control glycaemic levels. The best moment for initiating smoking cessation is at the medical appointment in the DM outpatient clinic. Health care professionals can use this opportunity to encourage smokers with DM to quit smoking. Nonetheless, our recent qualitative study of Hong Kong Chinese smokers with DM showed that these smokers had many misconceptions about the association between smoking and DM.[2] They were reluctant to quit smoking and did not consider that the risks of continuous smoking could hinder their treatment efficacy and promote DM complications.

We performed a randomised controlled trial to examine the effectiveness of a brief, low-cost, stage-matched smoking cessation intervention to motivate smokers with type 2 DM to quit smoking and minimise their health risks. Subjects in the intervention group received a 20-min face-to-face individualised counselling session, a DM-specific leaflet, and a self-help pamphlet on smoking. Booster talks were given at 1-week and 1-month follow-ups via telephone by nurse counsellors trained in smoking cessation. Subjects in the control group received usual care and a self-help pamphlet as a placebo. Data were collected at 1 week and at 1, 3, 6 and 12 months by the nurse counsellors via telephone. Biochemical validation was conducted at 12 months on the subjects who claimed that they had quit smoking. We hypothesised that the subjects in the intervention group would have higher rates of self-reported and biochemically validated smoking cessation, higher rates of smoking reduction and better glycaemic control (as measured by haemoglobin A1c [HbA1c] levels) at 12 months, compared with the control group subjects.

Results

From 2012 to 2014, 557 subjects (mean age, 55 years; nearly 90% were men) were recruited from different diabetic clinics of nine major hospitals in Hong Kong and randomised to the intervention (n=283) and control (n=274) group. More than half of them had attained a secondary education and were employed. On average, the subjects had smoked for 38 years and consumed 14 cigarettes daily. Over 70% of them were in the pre-contemplation stage of quitting and perceived themselves to be in good health. The results of an intention-to-treat analysis indicated that the intervention and control group did not differ significantly in the 7-day point-prevalence (9.2% vs 13.9%) or secondary outcomes including a biochemically validated rate of smoking cessation at 12 months, stages of readiness to quit, and number of attempts to quit lasting at least 24 hours. Although the control group had a significantly higher rate of self-reported smoking reduction at 3 months (16.8% vs 10.2%, p=0.02), the two groups did not differ significantly at the 6- and 12-month follow-ups.

Discussion

The overall results showed no significant differences between the two groups, as nearly 80% of the patients thought that they were healthy and not in urgent need to quit smoking. This is consistent

with another study in which smokers with DM in the pre-contemplation stage were reluctant to receive smoking cessation intervention.[3] In addition, our subjects might have been hardcore smokers, so the brief intervention might not have been sufficient or intensive enough to trigger quitting. Although there are no standard criteria to define hardcore smokers, six characteristics are known for hardcore smokers.[4] Our subjects fulfilled three of them: regular smoking for 5 years or more, lack of intention to quit, and smoking daily. Besides, our subjects smoked up to 14 cigarettes per day, which also nearly fulfilled another characteristic of smoking 15 cigarettes/day. Our intervention could only point out the association between DM and smoking but not the causation, which might not be strong enough to motivate subjects to quit smoking. In a logistic regression analysis of the predictors of smoking cessation, subjects with higher daily cigarette consumption were more likely to fail to quit (odds ratio [OR]=0.93, 95% confidence interval [CI]=0.89-0.98). This information could be useful for healthcare professionals to estimate the quit rate and thus strengthen the intervention, as there was no association observed between past attempts at quitting and the final rate of quitting.

Quitters and non-quitters did not differ significantly in HbA1c levels at 12 months (7.96% vs 7.99%), but non-quitters had a decreasing trend compared with baseline (OR=0.83, 95% CI=0.71-0.97) after adjusting for confounders such as sex, age, and abstinence at 12 months. One possible explanation is that it is difficult to determine whether HbA1c levels respond to smoking cessation after 12 months. Some studies found that HbA1c levels require 3 years to respond to changes in smoking status, and the reduction in health risk in quitters with DM is only apparent after 5 years of smoking cessation. Thus, a longitudinal study is needed to monitor the HbA1c level among smokers with DM.

Limitations

The results of this study may not be generalisable to all patients with DM, as only those who smoked two or more cigarettes daily were included. We encountered difficulties in recruitment as the prevalence of smoking was low in those who presented to DM outpatient clinics. An early stop to recruitment was recommended by the Independent Data Monitoring Committee after an interim analysis showed that no further benefit could be seen in the intervention group under continuous recruitment. We also had difficulties in collecting data on HbA1c levels from the clinics; this led to non-significant findings due to missing data.

Recommendations

We suggest the use of stronger warnings on the health risks of smoking to motivate smokers with DM, particularly hardcore smokers, to quit. Patients may see smoking cessation as beneficial to their health in the long run. We also recommend that the causation between smoking and DM complications be emphasised. A longitudinal study would provide more data on the improvement in glycaemic control and the reduction in the complications of DM after smoking cessation.

Conclusions

A brief, tailored intervention was not effective in promoting quitting or reducing smoking in smokers with DM. The intervention also did not improve glycaemic control of these patients at 12 months.

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