



Editorial

## Smoking cessation changing the mortality risk



Smoking is one of the most preventable causes of death worldwide and represents a critical public health concern. There were approximately 100 million deaths from cigarette smoking in the 20<sup>th</sup> century, and tobacco consumption could kill about 1 billion people this century, primarily in developed countries.<sup>1</sup> In the United States, overall mortality rates are about three times higher among smokers than nonsmokers. In addition to causing chronic diseases, such as chronic obstructive pulmonary disease (COPD), cerebrovascular diseases, and cardiovascular disease, smoking is also a well-known risk of malignancy in the respiratory, digestive, genitourinary, and hematologic systems. Of all adverse health effects considered, cigarette smokers are generally associated with higher mortality rates compared with nonsmokers.<sup>2</sup>

Mounting evidence in the field of public health indicates that changing smoking behavior could modify a patient's lifespan. While most developed countries have reached the peak prevalence of cigarette smoking, the smoking population continues to grow in China. Hence, it is important to document the effects of smoking behavior change on the mortality rates in Chinese populations. In Taiwan, the prevalence of smoking in people aged  $\geq 18$  years has dropped from 21.9% in 2008 to 16.4% in 2014.<sup>3</sup> Additionally, exposure to second-hand smoke has dropped from 23.7% in 2008 to 7.5% in 2014. However, despite decades of prevention and intervention efforts, smoking still remains a critical concern affecting public health in Taiwan. A retrospective cohort study from Taiwan was conducted to explore the association between changes in the smoking behavior and mortality risk using a Taiwanese population survey in Kinmen.<sup>4</sup> This study enrolled a total of 4986 subjects and used an 18-year follow-up period, demonstrating that persistent smokers had a higher risk of 1.84 for all-cause mortality than never smokers, but new quitters had a risk of 1.49. Therefore, there was a significant 19% risk reduction in all-cause mortality for recent quitters. This consolidated study relied upon data from the recorded smoking status of registered residents and the Taiwan Registry of Deaths to investigate the survival effect of smoking behavior changes.

In the Asia-Pacific region, smoking cessation has been shown to reduce all-cause mortality.<sup>5</sup> Results in one study focusing on an Asian population concurred with the general finding from a Western population-based study indicating that

quitting smoking reverses the mortality risk.<sup>2</sup> However, it remains unclear how long the survival benefit persists after smoking cessation. In this Taiwanese study,<sup>4</sup> the authors used data from a population survey to determine whether smoking behavior changes that occurred within the last 6 years were associated with a reduction in long-term mortality among middle-aged and elderly persons. In its result, there was another 19% reduction in all-cause mortality risk among new quitters. In Singapore, a retrospective cohort study enrolled 48,255 Chinese participants with a mean follow-up of 8.1 years. That study found that new quitters who quit for a mean of only 4 years had a 16% reduction in all-cause mortality, and the long-term quitters had a 39% reduction.<sup>6</sup> Also, two Japanese<sup>7,8</sup> and one Taiwanese cohort studies<sup>9</sup> found that mortality risk was reduced to the level of never smokers  $\geq 10$  years after quitting. The rapid decline of mortality following smoking cessation has also been documented in Western studies.<sup>2</sup>

It is widely understood that reducing tobacco use can improve public health and provide economic benefits. In fact, the benefits of smoking cessation in reducing mortality from all causes and many specific causes have been confirmed by numerous studies.<sup>10,11</sup> However, some studies focusing on smoking cessation in Chinese populations did not show the beneficial effects of smoking termination on COPD.<sup>12</sup> One systematic review on mortality and smoking cessation even showed that former smokers had a higher relative risk of death from respiratory diseases than did current smokers in Asia.<sup>13</sup> One explanation for the vanishing beneficial effect of quitting smoking may be attributed to the timing of smoking cessation, which frequently coincides with the presence of smoking-related diseases in Asia. In developed countries, former smokers are more likely to have quit due to a desire to undertake a healthier lifestyle. However, in developing countries, where the dangers of smoking are less widely apparent to the public, current smokers most often quit due to a looming or recent bout of sickness or ill health. Additionally, extensive passive exposure to second-hand smoke either at home or in the workplace may have resulted in an underestimating of the harmful effects of smoking. Furthermore, environmental air pollution is a further concern associated with mortality and disability in developing countries. Consequently, with these other factors involved, the beneficial effects of smoking

cessation are likely to be underestimated among such populations in Asia.

Importantly, in this Taiwanese study, the authors found that quitting smoking reverses the harmful effects of smoking on mortality.<sup>4</sup> Furthermore, their results can provide additional and strong evidence that the associations between smoking, quitting, and mortality in Chinese people are causal. The strengths of the Taiwanese study were the detailed assessments of smoking status (never smokers, long-term quitters, new smokers, new quitters, and continuing smokers) and the long-term follow-up of 18 years. Because there is a time delay between the peak of tobacco-induced deaths and the peak of smoking prevalence, the health burden due to smoking would likely decrease gradually in the coming decades. Furthermore, compared with the United States, United Kingdom, and other Western countries, the tobacco epidemic is still ongoing in China and developing countries, with an increasing smoking prevalence in the past decades. Further research is needed, especially in developing countries and other populations where the tobacco epidemic is rising. Future tobacco control measures should highlight the results of this Taiwanese study that long-term quitters are associated with a sustainable reduction in mortality risk in comparison with new quitters.

#### Conflicts of interest

The author declares that they have no conflicts of interest related to the subject matter or materials discussed in this article.

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