

The evolving hazards of smoking and benefits of cessation

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Worldwide death rates before age 70 fell by about 19 percent from 2000 to 2010, driven in large part by reductions in child mortality (1). Death rates from tobacco-related diseases are falling less slowly, partly because previous generations, characterized by fewer people smoking seriously throughout adult life, are being succeeded by generations where many do (2-4). Hence the proportion of adult deaths due to smoking is set to rise. Indeed, if current smoking patterns persist, tobacco will kill about 1 billion people this century, mostly in low and middle income countries (LMICs).

The details of the evolution of the smoking epidemic in the 21st century have become clearer only in the last few years. Large recent studies in the UK, US, Japan and India have examined the eventual effects on mortality in populations of men and of women where many began to smoke in early adult life and did not quit (5-10). These studies found that in middle age (about 30-69 years) cigarette smokers had 2 or 3 times the mortality rate of otherwise similar never-smokers, leading to a loss of about 10 years of healthy life. This average reduction combines zero loss for those not killed by tobacco with an average loss of well over a decade for those killed by it. In this issue of *Addiction*, Lam and colleagues show that elderly Hong Kong residents above age 65 who currently smoke have a mortality rate just under twice that for similar never smokers (11). Many of those killed from smoking are still in middle age (and in India, fully 70 percent of tobacco deaths occur in middle age [10]), losing many years of good life. Some of those killed in middle age might have died soon anyway, but others might have lived on for decades. On average, those killed in middle age lose about 20 years of never-smoker life expectancy.

Worldwide about 1.3 billion people now smoke, most in LMICs where cessation remains uncommon (12). In China, cigarette consumption continues to rise steeply, and now accounts for more than 2 trillion of the global total of about 6 trillion cigarettes consumed per year (3). There is a delay of about half a century between widespread adoption of smoking by young adults and the main effect on mortality in later life (2). In US adult cigarette consumption per adult averaged 1, 4 and 10 per day in 1910, 1930 and 1950. Tobacco caused 12% of all US deaths in middle age in 1950 and this proportion increased to 33% by 1990. A similar pattern was seen about 40 years later in Chinese men, who consumed about 1, 4 and 10 cigarettes per day in 1952, 1972 and 1992. In 1990 tobacco caused about 12% of Chinese male deaths in middle age, and it could well cause about 33% in 2030 (13-14). Hong Kong men started smoking

about 2 decades earlier than mainland Chinese men, and among them about a third of all deaths are due to smoking (15). Note that smoking causes few deaths in Chinese women, as less than 1% of Chinese women born since 1950 smoke (12).

Among men in LMICs where many smoke but the death rates in middle age from smoking are not yet substantial, a full decade of life expectancy will eventually be lost by young adults who continue to smoke. Tobacco smoking accounts already for between 12 and 25% of adult male mortality in LMICs such as China (13, 14), India (10), Bangladesh (16) and South Africa (17) and on current smoking patterns these hazards are likely to increase. Worldwide, about half a billion people below age 35 already smoke, and this number is set to increase if current uptake rates persist, and at current cessation patterns relatively few will quit (12).

In comparison with the slow increase in tobacco-attributable mortality following the uptake of smoking, the effects of cessation emerge more rapidly (3, 5-10, 18). Those who have smoked cigarettes since early adult life but stop at 30, 40, or 50 years of age regain, respectively, about 10, 9, and 6 years of life expectancy, compared with those who continue smoking (5-10). The paper by Lam and colleagues shows that even elderly former smokers reduce their excess risk of all cause death by about 50% compared to current smokers. This might underestimate the hazards of smoking and benefits of cessation: many smokers quit as a result of disease, not to avoid it and among current smokers, some quit between time of interview and study follow up. Finally, the best strategy to raise cessation rates remains substantial increases in the excise taxes on tobacco products (3, 19).

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