The public health harm of tobacco and its prevention in Hong Kong

TH Lam

This paper briefly reviews the health hazards associated with smoking, including passive smoking, with specific reference to local (Hong Kong) evidence. A *Medline* search of Hong Kong papers from January 1966 to January 1998 was made, and these and other relevant papers were reviewed. In Hong Kong, at least 10 people die daily from smoking-related diseases. Local studies show that smoking is associated with lung cancer, oesophageal cancer, liver cancer, ischaemic heart disease, peripheral vascular disease, ischaemic stroke, peptic ulcer, osteoporosis, impaired lung function, respiratory symptoms, and other adverse health effects. Smoking in pregnant women can result in smaller babies being born. Pooled results from four case-control studies show a 60% excess risk of lung cancer due to exposure to environmental tobacco smoke. Several studies confirm the link between exposure to environmental tobacco smoke and respiratory illness, hospitalisation, and asthma in children. The risks of smoking (one of every two smokers will be killed by tobacco) are not well known and are underestimated by both doctors and the public. Stronger health messages and more local evidence are needed to support tobacco control in Hong Kong.

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Introduction

Although smoking is widely known to be hazardous to health, there are still many gaps in our knowledge of its health effects. Firstly, there are gaps in the scientific knowledge, and more research is needed to fill these gaps. Secondly, there is a question about how much scientific knowledge is known by medical and health professionals, and in the general public. Thirdly, the tobacco industry and its agents, including scientists and advertising agencies, continue to deny the health evidence and portray smoking as a fashionable and desirable habit. They promote smoking aggressively to young people and women, especially in China and other developing countries. While smoking is the single most preventable cause of death, the multinational tobacco companies are also the single most powerful advocates against tobacco control.

This paper is a brief review of the health hazards of smoking, including passive smoking, with special reference to local (Hong Kong) evidence. A discussion of the problems of how the knowledge can be better used to prevent the tobacco epidemic in Hong Kong is also included.

Department of Community Medicine, The University of Hong Kong, Patrick Manson Building South Wing, 7 Sassoon Road, Pokfulam, Hong Kong
TH Lam, MD, MPH

Correspondence to: Prof TH Lam

Tobacco and associated deaths

The World Health Organization (WHO), based on current patterns of consumption, predicts that more than 500 million people currently alive will be killed by tobacco. In developed countries, about 20% of all deaths at present are due to tobacco. By 2020, tobacco use will cause more than 12% of all deaths globally, which is higher than the combined percentages of deaths from infection with the human immunodeficiency virus, tuberculosis, maternal mortality, motor vehicle accidents, suicide, and homicide. On average, smokers who begin smoking in adolescence and continue to smoke regularly, have a 50% chance of dying from the habit. Tobacco kills nearly 10 000 people every day, amounting to 3.5 million deaths annually.[1] How much does Hong Kong contribute to this death toll?

The first estimate of the total number of deaths attributable to smoking in Hong Kong appeared in the 1991 to 1992 Department of Health Annual Report,

which states that "Smoking was estimated to be responsible for about 3500 lives lost annually."[2] This constituted approximately 12% of the registered deaths in 1991. It was also the first time that smoking was mentioned as "the single most important risk factor, accounting for 90% of the lung cancer deaths of men and more than 30% of all cancer deaths." The estimate was referred to as "about 3700" in the 1992 to 1993 report[3] and "at least 3700" in the 1993 to 1994 report.[4] No estimate was mentioned in the 1994 to 1995 and 1995 to 1996 reports.[5,6] In a speech given to the Legislative Council on 15 January 1997, the Secretary for Health and Welfare stated that up to HK$4 billion in medical bills and lost productivity, and approximately 4600 deaths per year were due to smoking.[7] Although the methods of estimation were not described, we understand that they were calculated by multiplying the total number of deaths due to each disease by the percentage attributed to smoking, the latter figure being based on WHO estimates. Another estimate that includes detailed calculations based on risk estimates from the United States has been reported by Tsang.[8] A total of 5682 (18.8%) of 30 222 deaths in 1993 were attributed to smoking: 4987 (29.4%) of 16 987 deaths in men, and 695 (5.3%) of 13 231 deaths in women. The direct health costs were estimated to amount to HK$670 to 970 million annually.

Because these estimates are not based on local data of risks, the Tobacco Institute challenged the government estimates, saying that they represented "nothing more than the result of an exercise in mathematical speculation."[9] While we are collecting local data in the Hong Kong death registries, it is reasonable at present to accept a conservative estimate (based on WHO methodology) that at least 10 people are killed by tobacco each day and Hong Kong contributes 0.1% to the global tobacco death toll.

Hong Kong studies of the effects of smoking

Local Hong Kong studies that have been published internationally (based on a *Medline* search from January 1966 to January 1998; unpublished reports were not included) show that smoking is associated with lung cancer,[10] oesophageal cancer,[11] liver cancer (hepatitis B surface antigen–negative cases),[12] ischaemic heart disease,[13] poorer outcome after recovery from myocardial infarction,[14] peripheral vascular disease,[15] Buerger's disease,[16] cardiac arrhythmia,[17] ischaemic stroke,[18] peptic ulcer,[19] multiple duodenal ulcer,[20] poorer duodenal ulcer healing rates,[21] upper gastro-intestinal haemorrhage,[22] osteoporosis,[23] impaired ventilatory function[24] and diffusing capacity of the lungs,[25] and respiratory symptoms.[26] A hospital-based case-control study design was used in most studies and, unfortunately, no large prospective study that focused on smoking and was of a sufficiently long duration (more than 10 years) of follow-up has been performed. Because of methodological problems, such as unrepresentativeness of the sample, small sample size, potential bias in data collection, and failure to adjust for confounding factors, the associations observed in Hong Kong cannot be considered as definitive proof of causation in the local context.

All the Hong Kong results, however, corroborate results from elsewhere and they add to the total body of evidence about the many known health hazards of smoking in the literature. Hence, unless proven otherwise, we can conclude that smoking does cause the same diseases in Hong Kong as occur in many other countries. But there are no precise estimates of the magnitude of the risks and the number of cases attributable to smoking.

Although in Hong Kong, few pregnant women smoke, one case-control study showed that in those who did, on average, the babies born were smaller by 200 g and shorter by 1 cm, and had a head circumference that was smaller by 0.3 cm. These results are very similar to those obtained elsewhere, even though the prevalence of smoking among Chinese parturients is low (2% in this study).[27] With the rising prevalence of smoking in young women in Hong Kong and in the region, results from such local studies should be more widely publicised.

Passive smoking

Passive smoking, even if it does not cause cancer, is a nuisance—a factor which gives strong grounds for its control (as with other nuisances such as noise, vulgar language, and indecent exposure). Smoking is a nuisance not only because of the smell and dirt (ash) it creates, but also because burn injury can result from the accidental contact of the skin of a non-smoker with the burning end of a cigarette of a smoker. In addition, smoking is a fire hazard.

It is common for people to experience eye, nose, or throat irritation from the secondhand smoke; some people also get headaches after inhaling the smoke. Before the first studies on lung cancer and passive smoking were reported in 1981,[28,29] earlier studies had shown that passive smoking is harmful to children's respiratory health. But these reports did not attract as much attention as the relationship between passive smoking and lung cancer.

In 1986, the United States Surgeon General[30] and the National Research Council[31] reviewed all the available evidence independently and concluded that passive smoking can cause lung cancer in adult non-smokers and respiratory illness in children. The same conclusions were reached by the Independent Scientific Committee on Smoking and Health in the United Kingdom in 1988.[32] Inhaling other people's cigarette smoke constitutes exposure to environmental tobacco smoke (ETS), which consists of mainstream smoke (15%), which is exhaled by the smoker and sidestream smoke (85%), which is released from the burning cigarette. The concentrations of some carcinogens are higher in sidestream than in mainstream smoke.[30]

The most comprehensive review of the effects of passive smoking is the 1992 report of the United States Environmental Protection Agency (EPA), which concluded that ETS causes lung cancer in adults and respiratory illness in children, and also classified ETS as a Class A human carcinogen.[33] Whether or not ETS can cause coronary heart disease (CHD) was not examined in the EPA report, but several reviews conclude that ETS can cause CHD.[34-36] In 1997, a review by the California EPA confirmed previous findings and further concluded that ETS can cause CHD in non-smokers, bearing an excess risk of approximately 30%.[37]

In the same year, two meta-analyses were published in the *British Medical Journal*. The first, by Hackshaw et al,[38] reviewed 37 epidemiological studies of women and nine of men, and announced that "A woman who has never smoked has an estimated 24% greater risk of lung cancer if she lives with a smoker." The second, by Law et al,[39] reviewed 19 epidemiological studies and concluded that the excess risk of CHD due to ETS, after adjusting for diet, was 23%. The most recent report about ETS is the report of the Scientific Committee on Tobacco and Health from the United Kingdom,[40] which concludes that ETS causes lung cancer (excess risk 20%-30%), ischaemic heart disease, serious respiratory illness and asthmatic attacks in infants and children, sudden infant death syndrome, and middle ear disease.

Passive smoking in Hong Kong

What evidence do we have about the health hazards due to ETS in Hong Kong? From 1982 to 1987, four case-control studies of women who had never smoked, which included a total of 429 lung cancer patients and 754 controls, were published and included in the 1992 United States EPA report, which calculated that the excess risk from the Hong Kong studies was about 60%.[33] In the review of Hackshaw et al,[38] eight studies in mainland China and four in Hong Kong were assessed; the excess risk was 22%. Not surprisingly, reviews that are directly or indirectly funded by the tobacco industry continue to refute these conclusions.[41,42]

Good evidence about ETS and CHD in Hong Kong has not yet been obtained, but we have much evidence that ETS can cause respiratory illness in children. We have found respiratory symptoms in primary[43,44] and junior secondary[45] level schoolchildren to be associated with ETS exposure. For instance, the excess risks of cough and phlegm in secondary level schoolchildren increased from 19% for exposure to one smoker at home to 85% for exposure to three or more smokers (ie a dose-response relationship).[45] The excess risk due to ETS is greater than that due to ambient air pollution.[44,46] We have also found ETS exposure to be associated with hospitalisation due to respiratory illnesses in children, the excess risk being 50% with a dose-response relationship.[47] Two studies by other researchers[48,49] suggest that ETS is associated with asthma in children. In adults, non-smoking women exposed to ETS have an excess risk of respiratory symptoms of 20% to 80%.[50] A public opinion telephone survey conducted by our department shows that more than half of the Hong Kong population often or sometimes experience symptoms due to ETS exposure in restaurants.[51]

We have sufficient evidence in Hong Kong to support stronger control measures on ETS, and such evidence should motivate doctors and other health professionals to join the battle against tobacco. At the least, we expect doctors and nurses to take every opportunity to educate their patients. Unfortunately, Hong Kong doctors do not want to spend time talking to patients about the effects of smoking, not to mention passive smoking.

The health effects of smoking

The big risks related to smoking are not well known to many Hong Kong doctors. In a survey of approximately 40 government doctors who attended a smoking cessation seminar in December 1995, 56% agreed with an incorrectly phrased statement that "About 1 out of 20 (ie 5%) smokers, if they continue to smoke, will eventually be killed by smoking" (the correct answer is one of every two smokers or 50%); a further 20% did not know the answer. The corresponding figures for a survey of 29 government dentists attending a seminar on smoking were 38% and 28%, respectively. These results strongly suggest that most doctors tend

to grossly underestimate the magnitude of risk associated with smoking (from 50% down to 5%) or are uncertain about the main risks. A post-seminar survey was performed 2 to 3 months afterwards and there were substantial improvements (unpublished data, 1996).

The gaps in the knowledge of both doctors and the public can be easily filled, if an individual recognises the gaps and acts to fill them. The next step is to use this knowledge to help oneself and others. Those who are really interested in preventive medicine, health promotion, and the well-being of their patients and children need to know a simple fact: the risk of death due to smoking is huge—one in two.[52] If you are a parent with two smoking teenage children, one of them will be killed by tobacco if they continue to smoke. If both of your parents smoke, one of them will die prematurely because they smoke. If you are a doctor with four patients who have been smoking regularly, one will be killed before 70 years of age (losing approximately 22 years of normal life expectancy) and another will be killed when older. If you are the family doctor of these patients, you will lose many years of business from them when they are hit by serious smoking-related diseases and admitted to hospitals, from which they will not return.

The health message needs to be simple, forceful, and targeted. If a doctor is talking to a smoking patient, the "one in two" message should be told. We have carried out a randomised controlled trial in government out-patient departments and the results show that even brief advice is effective in motivating patients to quit smoking. Compared with the 1% sustained abstinence after a 1-year follow-up, those who are given a booklet and brief advice have a higher abstinence rate of 5%.[53] Greater individual effort is needed for greater success. An organised campaign is urgently needed to control the public health harm of tobacco. The creation of a smoke-free environment will provide not only an environment that encourages smokers to quit but also the social climate needed to discourage children and women from starting the habit. Doctors and health professionals should actively support and lobby for stronger government action such as raising the tobacco tax, banning all forms of tobacco promotion, and prohibiting smoking in public places including restaurants, workplaces, and country parks.

Tobacco control policy, health education campaigns, and other interventions need evaluation studies. Public opinion surveys are important and should be regularly carried out. Studies are needed to monitor the pattern and trend of smoking, especially in children and women. Studies investigating the adverse health effects of smoking locally and in other parts of China will provide more and stronger evidence that would attract media attention and contribute to our knowledge about smoking in Chinese populations. The tobacco industry will continue to deny the health evidence and to argue that smoking is less harmful in Chinese or other populations when local data are not available. This is particularly important in Asia because the rise in smoking prevalence and cigarette consumption is more recent and there will be a delay of a few decades before the peak of tobacco-related mortality occurs. We are now seeing only the beginning of a growing tobacco epidemic in China, and risk estimates observed here may appear lower than those in developed countries, such as the United States and the United Kingdom, where smoking was widespread during the 1940s and 1950s.[54]

Conclusion

We know a lot about the health hazards of smoking and passive smoking but we may have underestimated the risks. We certainly have not done enough to apply our knowledge in preventive medicine, particularly in helping patients and the public to fight against smoking and passive smoking. Hong Kong has contributed substantially to the international literature but we have not successfully carried out large-scale prospective studies with a long duration of follow-up. The first Hong Kong Public Health Report in 1994 set some targets about tobacco control.[55] It is time to review how far we are from the targets set then, before we proceed into the next millennium.

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