

Frequently-asked Questions and Answers

“A Nationally Representative Case-Control Study of Smoking and Death in India”

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Disclaimers:

1. This study is only of the consequences of the patterns of tobacco use in India and not the causes of those patterns.
2. The aim is to give only information, not recommendations, to governments, organizations and individuals.

Note: Indian and western numbers: 1 lakh=100 thousand, 10 lakh=1 million, 1 crore=10 million

Q. How does this study add to the recent WHO Report on Tobacco Control?

A. This study shows that risks of smoking are even greater than previously believed. The extreme risks from smoking are especially surprising as smokers in India start at a later age than those in Europe or America and smoke less. The WHO report outlines that most countries, including India, do not have adequate tobacco control efforts in place. This is the largest study of smoking and death ever done in India and finds that the recommendations in the WHO report need to be implemented in order to address the surprisingly high risks of death in India.

Q. Who carried out the study, how much did it cost and who funded it?

The study was led by the Centre for Global Health Research (CGHR; at the Keenan Research Centre of the Li Ka Shing Knowledge Institute, St. Michael's Hospital, University of Toronto, Canada) in partnership with the Registrar General of India (RGI) and leading institutions such as Post Graduate Institute of Medical Education and Research, the Indian Council of Medical Research, the Clinical Trial Service Unit and Epidemiological Studies Unit (CTSU), UK Medical Research Council, Cancer Research UK, and others. The study was organized within the RGI's Sample Registration System (SRS), which monitors births and deaths in a nationally-representative sample of 1.1 million homes all over the country. The study cost about \$1 million Canadian (Rs 4 crore) over 5 years, and was funded primarily by the Fogarty International Centre at the US National Institutes of Health and the Canadian Institutes of Health Research. The SRS is funded and organized by the RGI. The funding agencies had no role in writing the final scientific paper- this was the responsibility of the investigators.

Q. Why conduct research on smoking in India?

A. Smoking patterns vary between countries, and the differences can be striking between developed and developing countries. In India, most people smoke bidis, a smaller cigarette which mixes tobacco with the leaf of another plant, *temburni*, and

which has about $\frac{1}{10}$ of the tobacco of a cigarette. People, especially in urban areas, also smoke Western-style cigarettes. Indian men start smoking at a later age than men in Europe or North America and smoke fewer packs per day. Studying deaths due to smoking in India allows physicians, health administrators and researchers to understand how it harms people in India and also helps inform individuals of the risks. The study also helps tailor actions to the country's specific issues.

Q. Why did you do this study anyway? We already know that smoking is harmful

A. Because new things might be found — and, in fact, they were, the risks in India turn out to be much bigger than might have been expected, given how little people smoke and how late they start. The main disease by which smoking kills in rural India is tuberculosis, and the main disease by which smoking kills in urban India is heart attack. The medical consequences of smoking have not been studied thoroughly in the developing world, including India. India has about 120 million (12 crore) smokers. More than one-third of men and five per cent of women aged 30-69 smoke – mostly in the form of bidis.

While the health hazards for smoking are well known in Europe or North America, its harmful effects on smokers in India could be substantially different. Also, the earlier studies measuring smoking deaths in India were done only in parts of Tamil Nadu (in south India) and Mumbai (formerly Bombay, in the west of India). In both localities, female smoking was too uncommon to study.

Our study shows that smoking will cause about 1 million deaths (10 lakhs) per year during the 2010s. Smoking already causes about 5% of all deaths among women and 20% of all deaths among men – about 100 000 (or 1 lakh) female deaths and 600 000 male (or 6 lakh) deaths a year) between the ages of 30-69 in India. It also shows that smokers in India have a particular risk of dying from tuberculosis.

Q. Where was the research conducted in India?

A. Everywhere, India is a diverse country with huge regional differences and variations within communities. The research covered 1.1 million (11 lakh) households in 6671 areas (4436 rural and 2235 urban) — scattered over the whole country — north and south, east and west, urban and rural, and chosen to be nationally representative of the whole population.

Q. How was the research done?

A. The research looked at information about all deaths of men and women during 2001-2003 that occurred in the 1.1 million (11 lakh) homes. A team of 900 non-medical staff obtained histories of how people died and also asked questions about the smoking, patterns of 74,000 who had died and of 78,000 living people. A “verbal autopsy” was obtained for every death by a trained interviewer. Two trained physicians independently determined the causes of death based on these verbal autopsy reports.—Researchers compared the smoking patterns of those who had died from particular causes with the smoking patterns of those who were still alive (the “controls”).

Q. What were the main results of your research?

A.

- Smokers aged 30-69 were much more likely to die from medical causes than non-smokers: At these ages, 9% of women who died from medical causes had smoked compared with only 5% of the living women of similar ages. The death rate for female smokers aged 30-69 was about twice the death rate for non-smokers in that age range. Among men at ages 30-69 years, 55% of those who died from medical causes had smoked compared with only 37% of the control men of similar ages, meaning risks of death in male smokers were about 2/3 higher than otherwise similar non-smoking men.
- About 66% of men and 13% of women who died from tuberculosis were smokers. Smokers also had higher risks of stroke, heart disease, respiratory disease, cancer and liver disease. Disease rates differed between smokers that live in rural and urban areas: Among smokers, deaths from tuberculosis are more common in rural areas whereas deaths from heart disease are more common in urban areas.
- About 62% of women aged 30 who smoke would die at ages 30-69, in comparison with only 38% of otherwise similar non-smokers (absolute difference 24%), [which means that on average, female smokers lose about 8 years of life].
- About 61% of men aged 30 who smoke would die at ages 30-69 compared with 41% of the male non-smokers (absolute difference 20%), [which means that, on average, male smokers lose about 6 years of life.]
- For both men and women, the risks of smoking are evident even before age 50: 15% of female smokers would die at ages 30-49, compared with 7% of non-smokers. Among men, 15% of male smokers versus 9% of male non-smokers would die at ages 30-49.
- We estimate that in 2010, 900 000 (9 lakhs) deaths a year (including men and women) will be caused by smoking that year. Because of population growth, there will, on average, be about 1 million (10 lakhs) deaths per year from smoking during the 2010s.
- Over 70% of smoking deaths in India occur in middle age (age 30-69), which is much higher than the proportion of smoking deaths in the US or Canada. Smokers, who are killed by tobacco would, on average, have lived on for about 20 or more years if they had the death rates of otherwise similar non-smokers, so smoking does not only take away life, it also takes away many years of good life.
- Over half of the tobacco deaths occurred in illiterate men or women and nearly 80% occurred in rural areas.

Q. What is unique about this research?

A. This is the first nationally representative study of smoking in India as a whole. It has an innovative research methodology that used “verbal autopsy” or a structured interview to obtain the causes of death. The study found unexpected patterns of tobacco-related disease, revealing that female smokers in India lose about 8 years of life on average in comparison to their non-smoking counterparts, and that male smokers lose about 6 years.

Q. Why are there differences in smoking and smoking related deaths between rural and urban areas of India?

A. India is an extremely diverse country, with striking variations within and between communities in the ways that people live and the types of disease from which they die. The populations that live in urban and rural parts of India differ in their demographics and underlying disease patterns. Low-income people are more likely than higher income people to smoke, which means more smoking in rural areas. Smoking deaths are far more likely to be from tuberculosis in rural areas and from heart disease (chiefly heart attacks) in urban areas. Smoking often makes underlying diseases worse.

Q. Why do more smokers die of medical causes other than lung cancer in India?

A. We don't fully know. Certain diseases are more common in India than developed countries, and since smoking makes underlying disease patterns worse, smokers in India are more likely to die from those diseases than are smokers in developed countries. In India, most adults die from vascular disease, respiratory disease, tuberculosis or cancer, even without tobacco, and smoking makes this worse.

Q. Why does smoking triple the death rate from tuberculosis?

A. Subclinical tuberculosis infection is common in India, but usually the person's immune system is able to contain it and the person may not ever become sick or even be aware of the hidden infection, which can persist for decades. However, when the person smokes, tobacco damages so much of the lung tissue that the body can no longer keep the tuberculosis infection under control, leading to fatal disease if not treated. Also, smoking probably increases the spread of tuberculosis to others, due to coughing by those with active disease.

Q. Are bidis any safer than cigarettes?

A. Not enormously different. Most smokers use bidis, but smoking either cigarettes or bidis increased the risk of death substantially. Cigarette smokers had more than a doubling of the risk of death in middle age, suggesting about a 10-year gap in survival between cigarette smokers and non-smokers. These risks are comparable to those in a recent UK study where most of the male smokers had been smoking substantial numbers of cigarettes from about 18 years of age.

Q. Can we not just smoke a few cigarettes or bidis a day and get away with it?

A. Any smoking raised the risk of death. Even among those who smoked only 1-7 bidis a day, smoking caused about one-quarter of all deaths from medical causes, and

among those smoking only 1-7 cigarettes a day, smoking accounted for almost half of all medical mortality.

Q. What about chewing tobacco?

A. This study found that the risks in smokers were not greatly different in those who did or did not chew tobacco. Earlier studies in India have shown that chewing increases the risks of mouth cancers and other diseases. Any type of tobacco use is bad for health, and this study will release future results on the risks from chewing tobacco.

Q. What does it mean to claim that smoking is a “cause” of death?

A. People who smoke are more likely to die young than people who do not smoke. While it is true that some smokers don't get any tobacco-related diseases and some non-smokers develop lung cancer, many smokers who die young would not have died at that age if they had not smoked.

Q. Are the people killed by smoking already old?

A. About 70% of the smoking deaths in India occur at ages 30-69, and those killed by smoking at those ages lose, on average, about 20 years of life in comparison to similar non-smokers. This is a much higher proportion in middle age than occurs in the West (or even in China).

Q. Why do fewer women smoke in India?

A. It is unclear. Our study does not examine the causes of smoking, only its consequences. Smoking rates could increase for women in India if they were exposed to Western-style cigarette promotion, which would eventually cause more premature deaths among women. It appears smoking risks are, at least, as large among women as among men.

Q. Are male or female smoking rates changing in India?

A. Other studies have suggested that men are beginning to smoke at a progressively younger age. Smokers have also begun to shift to cigarettes from bidis as their income rises. Programs are needed to encourage smoking cessation and to prevent young people from starting. Also, while female smoking is not as common as male smoking, there are reports that smoking by females in urban areas is increasing.

Q. Will rates of smoking decline among women and men in India?

A. We don't know. Currently, only 2% of adults have quit smoking, and often people quit only after they have developed disease. The ex-smoking rate is much lower than in Western countries (in many of which most smokers have now quit). Smoking is more common among illiterate men than those who had at least completed primary education, particularly for bidis. We know that policies to reduce tobacco use can increase quitting attempts and their success.

Q. Can India do anything to reduce tobacco-related deaths among women and men that smoke?

A. Individually, adults can choose to stop smoking, and studies from around the world show that if adults stop before they have developed serious disease then they can reduce their risks of death remarkably. To impact the death rate of smoking significantly over the next few decades, India would need a huge proportion of their smokers to quit. Programs to reduce smoking rates could be used, including higher taxes on cigarettes and bidis, prominent warning labels, complete bans on tobacco advertising and publicity, complete bans on smoking in public places, and raising awareness of how many lives are lost to smoking in India each year. In particular, pictorial warning labels that can convey risks of smoking to the large numbers of illiterate adults in India who smoke might be a particularly effective strategy.

Q. What does this study mean for smoking in other developing countries?

A. This study shows that the health effects of long term smoking are at least as dire in developing countries as they are in developed countries. India and China both seem to have about 1 million (10 lakh) tobacco deaths a year, which, in each case, is more than the sum of annual tobacco deaths in the US, Canada and the UK combined.

It also demonstrates that the main ways that tobacco kills people varies between different types of countries—while heart disease is the most common cause of death from smoking in North America, tuberculosis is the greatest threat in rural India and chronic lung disease is the worst problem for China. Our research underlines the need for smoking cessation and smoking prevention programs in developing countries.

Q. What kind of future research will you carry out in India? Is such research relevant to any other countries?

A. This study of the 2001-3 deaths is the first phase of the “Million Death Study”, which will eventually study about 0.35 million (3.5 lakh) childhood and adult deaths during 1997-2003 retrospectively and 0.65 million (0.5 lakh) during 2004-2014 prospectively. Future studies are needed to assess the health consequences of smoking over the following decades, particularly as people in India are beginning to start smoking at a younger age and may switch to cigarettes from bidis. Also, while female smoking is not as common as male smoking, there are reports that smoking by females in urban areas is increasing. Further studies will also be needed to determine whether smoking cessation programs are effective in India. Finally, our group is studying how other risk factors such as diabetes, obesity, blood pressure and indoor air pollution are increasing the risk of death in India. All of these may well interact with smoking to raise risks of death.

The research results are very relevant to the large populations of South Asia and also to Asians living around the world. Importantly, India is so diverse that diseases that are common in one part are uncommon in another. This means that there may be many causes of disease that we do not yet understand and by doing so, we can provide better information for individuals as well as new treatments. This, research in India will help improve health worldwide.

Q. What about similar studies conducted in other developing countries?

A. Several countries have already begun similar studies. A worldwide network of studies that examines smoking risks in diverse peoples is underway. These studies are essential as they generate important scientific and political impact, including keeping attention on this great epidemic. For example, a similar study released in China in 1998 showed that some 100 million (10 crore) of the 300 million (30 crore) young men in China alive today will be killed by smoking. At that time, only 2% of Chinese males were ex-smokers. However, partly as a result of the 1998 study, the ex-smoking rates are now up to 9%, meaning the lives of several million men have been saved.

Q. Is there any other health issue facing the world today that is more important than tobacco?

A. Only two causes of death are large and growing worldwide: HIV and tobacco. While most countries have begun, at least, to respond to HIV, the response to the global tobacco epidemic has so far been limited in countries such as India. It's necessary to implement the Framework Convention on Tobacco Control, including ongoing monitoring of the evolution of the tobacco epidemic and the impact of control programs.

Q. Which other countries, other than India, face the highest death rates from tobacco in the future?

A. The countries with the largest populations, such as China, face the largest absolute numbers of deaths. Worldwide, the overall risks of smoking appear to be similar, but the specific causes by which it kills differ in different populations. Currently, death rates from tobacco are worst for men in Central and Eastern Europe.

Q. Are tobacco death rates falling anywhere?

A. Yes. In fact, in most Western countries, tobacco deaths are falling (www.deathsfromsmoking.net). In the UK, death rates from lung cancer in young men have fallen by about 80%. The reasons are complex. However, any country that has taken tobacco seriously has managed to reduce the epidemic with highly effective control policies (such as taxes, bans on smoking in public places and warning labels; see <http://files.dcp2.org/pdf/DCP/DCP46.pdf>).

Q. What would you like to see happen as a result of these findings?

A. We would like doctors, administrators, journalists, young people and, above all, adults who already smoke to know and really understand the risks of smoking. If they do not stop smoking then about a quarter of them will be killed by tobacco in middle age, losing, on average, about 20-25 years of life. If they stop smoking, they can avoid much of that risk. It is, however, their choice how they use that knowledge.

We would also like to see the national government and state governments take tobacco appropriately as a cause of death if they chose to implement effective policies against it, then that could substantially reduce premature deaths in India. Finally, we'd like the public, press and policymakers to pay attention to the 14th World Conference on Tobacco OR Health, which will be held in Mumbai, India from March 8-12, 2009: <http://www.14wctoh.org/>.