



THE WORLD HEALTH ORGANIZATION

Tobacco & Health in the Developing World

A Background Paper
for the
High Level Round Table
on
Tobacco Control and Development Policy

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I. Introduction

Health and education are the basis of economic productivity. Healthy populations are critical for poverty reduction, economic growth and long-term development.

In addition to the traditional burden of communicable diseases, developing countries today are faced with a huge increase in noncommunicable diseases, mental illness and violence and injuries. Tobacco is a major contributor to these diseases, which now account for more than half the disease burden in those countries. This alarming increase threatens to undermine their economic and social development.

Tobacco is cultivated in many regions around the world and can be legally purchased in all countries. The dried leaf of the plant *Nicotiana tabacum* is used for smoking, chewing or snuff. Contrary to what many believe, tobacco use and its attributable deaths are not a bane that afflicts developed countries primarily.

In June 1995, representatives of 22 international organizations and other individuals met in Bellagio to examine the implications of current global trends in tobacco production and consumption for sustainable development, especially in developing countries. The meeting participants concluded that tobacco posed a major challenge not just to health but to social and economic development and environmental sustainability. The participants recommended that tobacco control be more widely recognized as a development priority, and expressed concern that it was not on the agenda of most development agencies.¹

II. Health impact and burden of disease attributable to tobacco useⁱ

Currently, an estimated 4.9 million deaths per year are caused by tobacco. Without further action, it is predicted that in 2020 the mortality burden attributable to tobacco will increase two-fold. Approximately 70% of these deaths will occur in developing countries. Together with HIV/AIDS, tobacco use is the fastest growing cause of death in the world and is set to become the leading cause of premature death in the 2020s.

The past few decades have seen dramatic increases in smoking in developing countries, especially among males.² This contrasts with steady but slow decreases, mostly among males, in many industrialized countries. Smoking rates are on the rise in some low and middle income countries, especially among young people and women, and they remain relatively high in most of the former socialist economies. Smoking substantially increases the mortality risk from lung cancer, upper aerodigestive and other cancers, heart disease, stroke, chronic respiratory disease and a range of other medical conditions (see **Table 1**).³ In populations where smoking has been common for many decades, tobacco use accounts for a substantial proportion of all mortality.⁴

Recent epidemiological studies illustrate the magnitude of the tobacco epidemic in developing countries. In China, for example, if current smoking patterns persist, approximately 100 million of the 300 million Chinese males now aged 0-29 will die as a result of tobacco use. Significantly, tobacco use was found to be a major cause of the mortality caused by tuberculosis in China. Tobacco's adverse effects are not limited to cigarette-smoking. In India, bidi smoking and tobacco *quid* chewing were shown to play a significant role in the development of fatal diseases.⁵

Table 1: Tobacco use related diseases

Principal diseases caused in part by smoking
Cancers of mouth, pharynx and larynx
Cancer of oesophagus
Cancer of lung
Cancer of pancreas
Cancer of bladder
Ischaemic heart disease
Hypertension
Myocardial degeneration
Pulmonary heart disease
Other heart disease
Aortic aneurysm
Peripheral vascular disease
Arteriosclerosis
Cerebral vascular disease
Chronic bronchitis and emphysema
Pulmonary tuberculosis
Asthma
Pneumonia
Other respiratory disease
Peptic ulcer

ⁱ This section is largely based on Chapter 4 of the World Health Report 2002.

Other harmful effects caused in part by smoking

Cancer of lip

Crohn's disease

Cancer of nose

Osteoporosis

Cancer of stomach

Periodontitis

Cancer of pelvis of kidney

Tobacco amblyopia

Cancer of body of the kidney

Age-related macular degeneration

Myeloid leukaemia

Reduced fecundity

Reduced growth of fetus

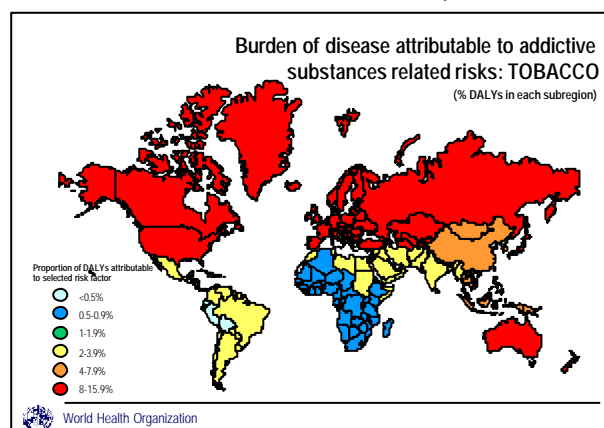
Source: Doll 1998 Table 11, 12 and 13.

Smoking also harms others. There are definite health risks from passive smoking and smoking during pregnancy adversely affects foetal development. In June 2002, the International Agency for Research on Cancer concluded that involuntary smoking (exposure to secondhand or 'environmental' tobacco smoke) was carcinogenic to humans.⁶ Chewing tobacco may lead to oral cancer, as does cigar or pipe smoking.

In industrialized countries, smoking is estimated to cause over 90% of all lung cancers in men and about 70% of all lung cancers in women. In addition, smoking is responsible for 56–80% of all chronic respiratory disease and 22% of all cardiovascular disease.

Figure 1 shows the sub-regional burden of disease attributable to tobacco. Worldwide, it is estimated that tobacco causes about 8.8% of deaths and 4.1% of DALYsⁱⁱ (59.1 million). The rapid evolution of the tobacco epidemic is illustrated by comparing the estimates for 2000 with those for 1990. In 2000 there were at least a million more deaths attributable to tobacco, with the increase being most marked in developing countries. The extent of disease burden is consistently higher among groups known to have smoked. For example, mortality due to tobacco-related diseases is greater in males (13%) than in females (3.8%). Worldwide, the proportion of diseases caused by tobacco use is as follows: 12 % for vascular disease; 66% for trachea bronchus and lung cancer and 38% for chronic respiratory diseases.

Figure 1: Burden of disease attributable to tobacco (% DALYs in each subregion)

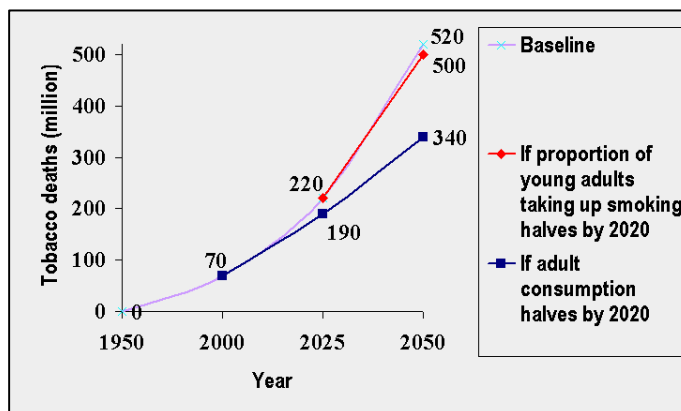


Source: World Health Report 2002

ⁱⁱ DALYs –Disability Adjusted Life Years– measure the burden of disease in population. It combines 'Years of Life Lost' (YLLs) and 'Years Lived with Disability' (YLDs).

Approximately 16% of the global burden of tobacco-related illness occurred in countries of the Western Pacific Region that experience low child and low adult mortality such as China, Lao People’s Democratic Republic, Mongolia, Papua New Guinea, and Viet Nam, whereas 20% occurred in South-East Asian countries that experience high child and high adult mortality (Bangladesh, India, Myanmar and Nepal). **Figure 2** shows the enormous death toll that awaits if effective interventions are not put in place rapidly.

Figure 2: Unless current users quit, tobacco use deaths will rise dramatically over the next 50 years

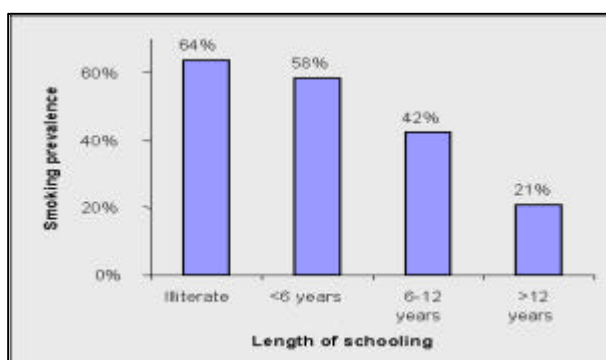


Source: Peto et al, 1994; Peto, personal communication

Explaining the mortality gap between the rich and the poor - tobacco use among the less educated and the poor

The staggering size of the burden of disease attributable to tobacco use in developing countries justifies in itself significant investments in comprehensive tobacco control programmes. It is, however, important to note that tobacco use, and its associated burden of disease, tend to follow a gradient. That is, poorer individuals tend to use tobacco products more than their wealthier counterparts. Similar patterns exist with respect to education levels and socio-economic status.⁷ For example, in China, individuals with no schooling were 6.9 times more likely to smoke than individuals with a college degree⁸ while uneducated adults in Brazil were 5 times more likely to smoke than adults who had received at least a secondary education.⁹ **Figure 3** illustrates these patterns. In a comprehensive review of tobacco use prevalence patterns, The World Bank concluded that “prevalence in most developing countries is already highest among the poor, and if these countries experience a similar pattern to the high-income countries, the gap in smoking between rich and poor groups will widen over time”.

Figure 3: Smoking prevalence among men in Chennai, India, by education levels



Source: Gajalakshmi et al. 2000

The aforementioned figures suggest that the poorest socio-economic groups will likely suffer the consequences of tobacco use more than the richest. Although few studies have examined whether tobacco use 'explains' the socioeconomic differences in diseases that it causes in developing countries, the emerging evidence is clear. Differences in tobacco use can explain a significant portion of the mortality gap between rich and poor. In Canada, England and Wales, Poland, and the United States, the middle-age mortality gap between rich and poor would be reduced by between one-half and two-thirds if smoking could be eliminated.¹⁰

Tobacco use and malnutrition

In addition to its direct effects on health, tobacco use contributes to malnutrition because money is spent on tobacco instead of food. In Bangladesh, for example, it has been estimated that if poor people did not smoke, 10.5 million fewer people would be malnourished.¹¹

The proportion of household expenditures used to purchase tobacco products is often very high in developing countries. For example, in Bulgaria low income households with at least one smoker spent 10.4% of their total income on tobacco products in 1995. In China, smokers surveyed in the Minhang district reported spending 17% of their household income on cigarettes.¹² Recent research in India found an association between tobacco use and low body mass index (BMI) and thinness. Tobacco use was found to be an independent risk factor for low adult BMI¹³ and an independent risk for thinness.¹⁴ Being underweight is a major mortality risk factor in poor countries, causing more than 3.7 million deaths per year¹⁵

Health and safety of family farmers who grow tobacco

Quite apart from the health impacts of smoking or chewing tobacco are the health hazards of working with tobacco. The nicotine inhaled from smoking or absorbed from chewing tobacco is also rapidly absorbed through the skin when harvesting tobacco, leading to a condition called 'green tobacco sickness' (GTS). GTS has been reported to occur in 1-10% of US tobacco workers. Younger workers are at higher risk, which means that the prevalence may be even higher in developing economies where children play a substantial role in harvesting and processing tobacco.¹⁶

Recent research in southern Brazil by Christian Aid revealed fundamental problems in the relationship between a multinational tobacco company and growers. Farmers were found to suffer from illnesses associated with exposure to pesticides including depression, anxiety, neurological dysfunction, muscle aches and Parkinson's disease-like tremors.¹⁷

Tobacco, deforestation and environmental health implications

Tobacco cultivation is increasingly being linked to deforestation because wood is often used as fuel to cure tobacco leaves. A recent study that assessed the amount of forest and woodland consumed annually for curing tobacco concluded that

deforestation related to tobacco constituted an issue of global relevance which could be found on all continents, on average contributing nearly 5% to overall deforestation in the respective growing countries of the developing world.¹⁸ The Bellagio statement on tobacco and sustainable development concluded that, in the developing world, "tobacco poses a major challenge, not just to health, but also to ... environmental sustainability."¹⁹

In addition to its environmental impact, deforestation has been associated with outbreaks of parasitic and other infectious diseases by favouring the spread of malarial mosquitos or freshwater snails that spread schistosomiasis and other diseases such as lymphatic filariasis, dengue fever, leishmaniasis, Chagas disease and bacterial meningitis.²⁰

Child labour

In the late 1990s, UNICEF concluded that the use of children in tobacco production was widespread in many tobacco producing countries. Children harvesting tobacco often experience nausea, vomiting and faintness due to nicotine poisoning, and frequent heavy lifting and repetitive strain can cause permanent damage to growing spines.²¹ The ILO is also actively working to stop the exploitation of children involved in bidi rolling.²² Tobacco farmers often have no option but to involve their children in tobacco cultivation because they cannot afford to employ casual labour and cannot manage all the work themselves.²³ Work-related injuries and fatalities in children have been estimated to reach 6 million and 32,000, respectively, each year.²⁴

Cost-effective interventions that make a difference

In most countries some form of government action, including taxes and legislation, has been enacted to control tobacco consumption. Countries that have adopted comprehensive tobacco control policies including a ban on advertising, strong warnings on packages, controls on the use of tobacco indoors, high taxes on tobacco products, and health education and smoking cessation programmes have had considerable success.²⁵

WHO has examined how best to reduce the health burden associated with specific risk factors such as childhood undernutrition, cholesterol, unsafe sex and tobacco use by reviewing the cost-effectiveness of selected interventions aimed at these risk factors.ⁱⁱⁱ For tobacco, WHO examined the benefits of various interventions such as taxation, advertising and sponsorship bans, smokefree policies, information provision through package and labelling or counter-advertising and cessation programmes for population health (in terms of DALYs) through the impact of reduced smoking on the incidence of cardiovascular disease, respiratory disease, and various forms of cancer. It was found that such interventions, not surprisingly, have a larger impact on population health in regions with a high prevalence of tobacco use, especially those in the second or third stage of the tobacco epidemic (for example, Argentina, Guatemala, Ecuador, Peru, Georgia, Hungary, Bangladesh, Nepal, Sri Lanka, Cambodia, China and Viet Nam).

ⁱⁱⁱ This section is based on Chapter 5 of the World Health Report 2002.

Taxation was found to be the intervention of choice in all regions. Not only does it have the greatest impact on population health, it is also the most cost-effective option. Taxation also raises revenue for governments. Sometimes a portion of revenues from tobacco taxes is allocated to the health sector to promote health and discourage smoking behaviours. This in turn can help make other types of tobacco control efforts both more effective and self-financing. This is particularly important to developing countries where money to finance new public health initiatives is often scarce. The combination of taxation, comprehensive bans on advertising, and information dissemination activities was found to be affordable and cost-effective in the majority of subregions under study. Adding smoking restrictions in public places increases the costs, but results in even greater improvements in health.

These results match the findings of a comprehensive review of tobacco control interventions by The World Bank. The World Bank reaches the conclusion that most demand-side interventions such as increases in price, advertising and promotion bans, and smoking restrictions are effective in reducing tobacco attributable mortality and morbidity. However, while interventions to reduce demand for tobacco are likely to succeed, measures to reduce its supply are less promising with one exception, smuggling controls.

For example, the World Bank concludes that on average, a price rise of 10% would be expected to reduce demand for tobacco products by about 8% in low and middle income countries.²⁶ Using a model of cohort smokers alive in 1995, it is estimated that tax increases that would raise the real price of cigarettes by 10% worldwide would cause about 42 million of these smokers to quit, preventing a minimum of 10 million tobacco related deaths. A combined set of non-price measures (such as comprehensive bans on advertising and promotion, bans on smoking in public places, prominent warning labels, and mass information) would cause some 23 million smokers to quit and would prevent 5 million deaths.²⁷ These conclusions have tremendous implications for public health.

Treatment for tobacco dependence

Tobacco dependence is characterized as a long term disorder with high relapse rates demanding ongoing care²⁸. The treatment of tobacco dependence includes (singly or in combination) behavioural and pharmacological interventions such as advice and counselling, intensive support and administration of pharmaceuticals that contribute to reducing or overcoming tobacco dependence in individuals or populations.²⁹

Treatment of tobacco dependence significantly reduces the risk of tobacco-related diseases in the short and medium term. Meta-analyses show that, along with price and non-price measures, treatment of tobacco dependence is a cost-effective policy measure in low and middle income countries³⁰. As tobacco dependence increasingly becomes a disease of low and middle income countries, getting adult smokers to quit will be essential.³¹

Despite the evidence on the effectiveness and cost-effectiveness of tobacco treatment, smoking cessation interventions and treatment for tobacco dependence are scarce in low and middle income countries, where health care providers do not commonly carry out even minimal cessation interventions.

Treating individuals for tobacco dependence in low and middle income countries is hampered by a number of factors. These include:

- The lack of a supportive environment to help smokers quit (e.g. smoke-free places and smoke-free health care systems);
- Lack of integration of tobacco dependence treatment into health care systems;
- Lack of knowledge and training of health care providers;
- High price of nicotine replacement therapy (NRT) products and cessation services, and no insurance coverage;
- Regulation of NRT products.

Each of these factors is dealt with below.

Creating a supportive environment

The social environment lies at the heart of smoking cessation. For cessation efforts to be successful, smoking must be made socially unacceptable. Tobacco cessation must therefore include a broad mix of interventions that attempt to change the social climate by, for example, increasing tobacco taxes, banning advertising, increasing public health information and creating smoke-free public places. The other components of a tobacco control framework include a health systems approach that promotes clinical best practice and a surveillance, research and information approach.

Integrating tobacco dependence treatment into health care systems

Currently, tobacco dependence treatments and support to help smokers stop are rarely integrated into health care systems and are not widely available to the general public. Ensuring the availability of such support would entail training health care providers and strengthening the infrastructure of health care systems to enable them to accommodate, integrate and deliver tobacco dependence treatment services. This will require commitment and resources by governments.

Training health care providers

Health care providers who do not have a basic knowledge of the dangers of tobacco use are less likely to motivate smokers to quit. In a recent WHO survey of health professionals in Bahrain, Kuwait and the Republic of Korea an average of 17% of physicians were reported to be unsure about whether or not passive smoking increased the risk of heart disease in non-smoking adults. Only 22% of physicians in Kuwait and Bahrain and 2% of physicians in the Republic of Korea were reported to be well-prepared to provide brief counselling advice to their patients.³² Smoking rates among the general population in these countries range from 23-64%.³³ As role models in many societies, health care professionals need to reduce their own tobacco consumption in order to set better examples for their peers and patients. In view of the high smoking prevalence proportions (55%, 53% and 48%) among male health care professionals in Bosnia-Herzegovina, Bulgaria and Georgia, respectively³⁴ health professionals themselves would greatly benefit from smoking cessation training programmes. In a number of countries, a decline in the prevalence of smoking among physicians has preceded a decline in prevalence of smoking in the general population.

Improving accessibility of nicotine replacement therapy

Currently there are six approved formulations of NRT (gum, patch, inhalers, nasal sprays, sublingual tablets and lozenges). The use of NRT increases the long-term rates of smoking cessation and relieves the symptoms of nicotine withdrawal.³⁵ NRT doubles the smoker's chances of quitting. Despite a number of studies documenting

NRT's high safety, efficacy and utility,³⁶ its availability is largely limited to some developed countries, and its high costs restrict its accessibility. A recent survey on the availability of NRT products in various developing countries showed that selected NRTs such as gum and patch were sold over the counter in Venezuela and Qatar, while in Thailand they were available only through prescription.³⁷ In all countries first-line pharmacotherapy such as Bupropion SR^{iv} is not reimbursed by the health care system.

Deregulating NRT products

In comparison with cigarettes, NRT products are more stringently regulated and hence less widely available. Deregulating nicotine products and lowering their price will improve their accessibility. Governments should ensure that NRT is at least as accessible as tobacco products. Private and public partnerships should be fostered in order to influence policies and programmes that make treatment of tobacco dependence more available, affordable and accessible.

Research for tobacco control

Current knowledge on tobacco control has never been more comprehensive and thorough. However, as always, gaps exist and more research is needed. The Research for International Tobacco Control (RITC) unit of the Canadian International Development Research Centre (IDRC) has been a leading player in creating a strong research, funding and knowledge base for the development of effective tobacco control policies and programme aimed at developing countries. A recently-updated Global Agenda for Tobacco Control Research concludes that funding for tobacco control is clearly inadequate at institutional and global levels. Funding levels must be increased and coordination between existing research initiatives must be strengthened.

^{iv} A non-nicotine medication with anti-depressant properties. It is the first non-nicotine pharmacological agent to be approved for use in smoking cessation and has received regulatory approval in both the US and European Union

III. Conclusion

Each day more than 13,000 people die prematurely because of tobacco use. This figure is expected to almost double by the year 2020. Countries at all levels of development are victims of the tobacco epidemic. The health impact alone of tobacco warrants significant investment in strong tobacco control programmes. However, the health consequences of tobacco use are only one facet of the tobacco epidemic. The following factors heighten the importance of acting swiftly:

- The poor and uneducated are more likely to be victims of tobacco use;
- The burden of disease associated with tobacco use is increasingly borne by developing countries;
- Tobacco use can contribute to malnutrition;
- The growing of tobacco leaves can have devastating health consequences for farmers, and workers –especially children;
- Tobacco farming has been shown to contribute to deforestation;

There are signs of hope. Just recently the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) adopted a key Reference Document on Poverty and Health which specifically mentions the profound effect of tobacco use on poverty and malnutrition in low-income countries, when poor families purchase addictive tobacco rather than food. In the words of Dr Gro Harlem Brundtland, the time has come to "involve the highest levels of Government and the highest levels of opinion leaders in their efforts to build on the present momentum, secure commitment, and reap the significant health and economic benefits that can be achieved from a reduction in tobacco use."

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