

An overview of the tobacco problem in India

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ABSTRACT

This is a review paper comprehensively encompassing the different aspects of tobacco control with particular reference to the Indian scenario. The information on prevalent tobacco habits in India, health hazards and environmental hazards due to tobacco use, passive smoking and its impact, economics of tobacco, legislation to control tobacco in India, the tobacco cessation services and the way ahead for effective tobacco control are discussed. Tobacco is a leading preventable cause of death, killing nearly six million people worldwide each year. Reversing this entirely preventable manmade epidemic should be our top priority. This global tobacco epidemic kills more people than tuberculosis, HIV/AIDS and malaria combined. This epidemic can be resolved by becoming aware of the devastating effects of tobacco, learning about the proven effective tobacco control measures, national programmes and legislation prevailing in the home country and then engaging completely to halt the epidemic to move toward a tobacco-free world. India is the second largest consumer of tobacco globally, and accounts for approximately one-sixth of the world's tobacco-related deaths. The tobacco problem in India is peculiar, with consumption of variety of smokeless and smoking forms. Understanding the tobacco problem in India, focusing more efforts on what works and investigating the impact of sociocultural diversity and cost-effectiveness of various modalities of tobacco control should be our priority.

Key words: *Cigarettes and other tobacco products act, framework convention on tobacco control, hazards of tobacco, tobacco control, national tobacco control program*

INTRODUCTION

Tobacco use kills nearly six million people worldwide each year. According to the World Health Organization (WHO) estimates, globally, there were 100 million premature deaths due to tobacco in the 20th century, and if the current trends of tobacco use continue, this number is expected to rise to 1 billion in the 21st century.^[1]

Jha *et al.* have estimated that around 1 million deaths a year in India will be attributable to smoking by the early 2010s.^[2] Gupta *et al.* have estimated the tobacco-attributable mortality among Indian men and women from their Mumbai cohort study. Based on these estimates, nearly 23.7% of the deaths among men (527,500) and 5.7% of the deaths among women (83,000) aged 35–69 years are due to tobacco-attributable illnesses.^[3] Another cohort

study from southern India reported mortality risks of 0.98 (0.86–0.94) and 1.22 (1.04–1.44) for all-cause and tobacco-related cancer mortality, respectively, for tobacco chewing, while with smoking, the respective mortality risks were 1.31 (1.24–1.39) and 1.68 (1.36–2.08).^[4]

According to the National Family Health Survey (NFHS)-3 survey, conducted in 2005–06, tobacco use is more prevalent among men, rural population, illiterates, poor and vulnerable section of the society.^[5] The estimates of the Global Adult Tobacco Survey (GATS) conducted among persons 15 years of age or older during 2009–10 indicate that 34.6% of the adults (47.9% males and 20.3% females) are current tobacco users. Fourteen percent of the adults smoke (24.3% males and 2.9% females) and 25.9% use smokeless tobacco (32.9% males and 18.4% females).^[6] According to the Global Youth Tobacco Survey (GYTS) conducted among 24,000 students aged 13–15 years in 2009, 14.6% students were tobacco users.^[7]

India's tobacco problem is very complex, with a large use of a variety of smoking forms and an array of smokeless tobacco products. Many of these products are manufactured as cottage and small-scale industries using varying mixtures and widely differing processes of manufacturing.^[8] Bidis

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are mostly manufactured in the unorganized sector while cigarettes are mainly manufactured in large-scale industries.

HAZARDS OF TOBACCO USE

Health

Tobacco is deadly in any form or disguise. Scientific evidence has unequivocally established that exposure to tobacco smoke causes death, disease and disability.^[9] According to the International Agency for Research on Cancer (IARC) monograph, there is sufficient evidence in humans that tobacco smoking causes cancer of the lung, oral cavity, naso-, oro- and hypo-pharynx, nasal cavity and paranasal sinuses, larynx, esophagus, stomach, pancreas, liver, kidney (body and pelvis), ureter, urinary bladder, uterine cervix and bone marrow (myeloid leukemia). Colorectal cancer is seen to be associated with cigarette smoking, although there is insufficient evidence for it to be causal.^[10] Ninety percent of all lung cancer deaths in men and 80% in women are caused by smoking.^[9] Causal associations have been clearly established between active smoking and adverse reproductive outcomes, chronic obstructive pulmonary disease and cardiovascular diseases.^[10] Studies on bidi smoking, the most common form of tobacco smoking in India, provide evidence toward causality of it as carcinogenic substance. Case-control studies demonstrate a strong association of bidi smoking with cancers at various sites, such as oral cavity (including subsites), pharynx, larynx, esophagus, lung and stomach. Almost all studies show significant trends with duration of bidi smoking and number of bidis smoked.^[10] Forty percent of the tuberculosis burden in India may be attributed to smoking. Significant association is seen between passive or active exposure to tobacco smoke and tuberculous infection, disease and tuberculosis mortality.^[11] Smoking was associated with excess deaths among smokers between 30 and 69 years, mainly from tuberculosis and also from respiratory, vascular or neoplastic disease.^[2] The risk of tuberculosis deaths among bidi smokers was 2.60-times higher than never-smokers in Mumbai.^[12] Workers engaged in tobacco cultivation suffer from an occupational illness known as green tobacco sickness (GTS), an acute form of nicotine toxicity resulting from absorption of nicotine through the skin.^[8]

Pednekar *et al.* in their Mumbai cohort found that the incidence of oral cancers was 42% higher among bidi smokers as compared with cigarette smokers.^[13] Smokeless tobacco use was associated with cancers of the lip, oral cavity, pharynx, digestive, respiratory and intrathoracic organs.^[13] A study in North India showed a significant association of chewing tobacco and oral cancer with direct relation between quantity and duration of use.^[14] India has one of the highest rates of oral cancer in the world, with

over 50% attributable to smokeless tobacco use.^[15]

There is sufficient evidence in humans for the carcinogenicity of smokeless tobacco. Several studies have established a causal association between use of smokeless tobacco and cancers of oral cavity, esophagus and pancreas. Smokeless tobacco causes acute increases in blood pressure and heart rate, and has been associated with a small increase of cardiovascular disease risk. Effects on insulin sensitivity, glucose tolerance and the risk for diabetes from smokeless tobacco use are plausible.^[16] The use of smokeless tobacco causes reproductive and developmental toxicity, and its use during pregnancy increases the risks for preeclampsia and premature birth, causes increased placental weight and reduces mean birth weight. Smokeless tobacco use by men causes reduced semen volume, reduced sperm count, reduced sperm motility and an increased frequency of abnormal spermatozoa.^[16]

Environment

Tobacco leads to clearing of forests for cultivation, stripping fuel wood for curing and forest resources for packaging thus damaging the environment. Tobacco depletes the soil nutrients at a very rapid rate and displaces the indigenous flora and fauna thus becoming a source of pests for other crops.^[8]

Passive smoking

Second-hand tobacco smoke (SHS) kills 600,000 people each year. Globally, about one-third adults are regularly exposed to SHS. The GATS-India shows that 52% of the adults (rural-58%, urban-39%) were exposed to SHS at home.^[6] SHS is three- to four-times more toxic per gram of particulate matter than mainstream tobacco smoke. More than 4000 chemicals have been identified in tobacco smoke, at least 250 of which are known to be harmful. Toxic chemicals from SHS cling to rugs, curtains, clothes, food, furniture and other materials. These toxins remain even in the presence of windows, fans or air filters, and can recycle back into the air through the filters. They coat the surfaces of rooms, materials and smoker's belongings, and are sometimes referred to as "third-hand smoke."^[17] There is conclusive evidence linking passive smoking to an increased risk of cardiovascular diseases, lung cancer and other cancers, asthma and other respiratory diseases in adults and asthma and other respiratory diseases, ear infection and sudden infant death syndrome in children, to name but a few of passive smoking's harmful effects.^[8,17]

LEGISLATION AND ENFORCEMENT

WHO framework convention on tobacco control

Legislation is recognized as the critical driver for meaningful progress in tobacco control. The WHO framework

convention on tobacco control (WHO FCTC) is a global public health treaty developed as a global response to the globalization of the tobacco epidemic, which aims at reducing the burden of disease and death caused by tobacco. It was adopted by the World Health Assembly in May 2003, and India was the eighth country to ratify it on 5 February 2004. The FCTC embraces scientific evidence-based approaches that have shown effectiveness in reducing tobacco consumption. It does not lay down a law, but sets out guidelines for various national and international measures that would encourage smokers to quit and restrain nonsmokers from taking the habit. The success of the WHO FCTC, which as of July 2009 had more than 160 parties covering 86% of the world's population, demonstrates the global political will for making tobacco control far more comprehensive and successful.^[18] The WHO has established the MPOWER package to help countries comply with the WHO FCTC. This is a package encompassing six most important and effective tobacco control policies: Monitoring tobacco use and prevention policies, Protecting people from tobacco smoke, Offering help to people to quit tobacco use, Warning everyone about the dangers of tobacco, Enforcing ban on tobacco advertising, promotion and sponsorship and Raising taxes on tobacco.^[1]

In India, since 1975, it is mandatory to display a statutory health warning on all packages and advertisements of cigarettes because of the Cigarettes (Regulation of Production, Supply and Distribution) Act, enacted by the Government of India (GOI). Further restrictions on tobacco trade were initiated along with efforts to bring forth a comprehensive legislation for tobacco control during the 1980s and 1990s. The Indian Parliament passed the Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Bill, 2003 in April 2003. This Bill became an Act on 18 May 2003 – COTPA.^[19] Rules were formulated and enforced from 1 May 2004. The Act is applicable to all products containing tobacco in any form, and extends to the whole of India.

The key provisions of COTPA -2003 are as follows:

- Prohibition of smoking in public places (including indoor workplaces). This has been implemented from 2nd October 2008 in the whole of India.
- Prohibition of advertisement, direct and indirect (point-of-sale advertising is permitted), sponsorship and promotion of tobacco products.
- Prohibition of sales to minors (tobacco products cannot be sold to children less than 18 years of age and cannot be sold within a radius of 100 yards of any educational institutions).
- Regulation of health warning in tobacco products

packs. English and one more Indian language to be used for health warnings on tobacco packs. Pictorial health warnings also to be included.

- Regulation and testing of tar and nicotine contents of tobacco products and declaring on tobacco products packages.

National tobacco control programme

The Ministry of Health and Family Welfare (MHFW), GOI, has launched the National tobacco control programme (NTCP)^[19] in the XI Five Year Plan to facilitate the implementation of the Tobacco Control Laws, bring about greater awareness about the harmful effects of tobacco and to fulfill the obligations under the WHO-FCTC. The Cabinet Committee on Economic Affairs (CCEA) on 28 January 2010 approved the programme. The NTCP will establish tobacco product testing laboratories, provide baseline estimates of tobacco prevalence and status of implementation of the Tobacco Control Law. The pilot phase will focus on 42 districts of 21 states.^[19] The activities of NTCP are arranging exhibitions, seminars, banners at District level, implementing the anti-tobacco act in letter and spirit, sending monthly reports regarding the anti-tobacco activities in the district level to the state. At the headquarters the activities focused are promoting Information, Education and Communication (IEC) activities at the district level and multi-sectoral involvement for the implementation of the Act with the help of NGOs, Police Department, Education Department and the Local Administration.

Numerous voluntary organizations like the HRIDAYSHAN, CPAA-Cancer patients aids association, the Salaam Mumbai Foundation, HealthBridge, Voluntary Health Association of India, etc. are actively involved in tobacco control activities in India. Healis is actively engaged in conducting quality research in tobacco control. In addition, it is involved in media mobilization for tobacco control, public education, conducting workshops for different stake holders and conducting scientific conferences and meetings of national and international level.^[20] The Public Health Foundation of India (PHFI) has launched a multi-faceted website to create an enabling environment for tobacco control in the country. The web portal comprehensively offers training, resources and research evidence with regard to tobacco control.^[21] To support global efforts for tobacco control, The Union focuses on several key policies that are proven to reduce tobacco consumption. In India, the Union has been active in collaborating with the central and state governments and prominent NGOs to strengthen pack warning content and its implementation. The WHO is actively involved in tobacco control in India. Tobacco surveillance has been included in the integrated disease surveillance programme.^[22] A National Tobacco Control

Cell was set up by the WHO in collaboration with the Ministry of Health and Family Welfare, which has activities in the different spheres of tobacco control, with the main impetus on spreading awareness.^[23]

TOBACCO CESSATION SERVICES

There are several policy measures of tobacco control being implemented at the national and international level to fight the battle against tobacco. However, these efforts may not directly benefit the current tobacco user as nicotine in tobacco is very addictive, making quitting difficult. It has been estimated that a lack of cessation services may lead to an additional 160 million global deaths among smokers by 2050. A majority of tobacco users (nearly 70%) wish to quit the habit, but only 3–5% actually succeed in doing so. The WHO in collaboration with the MHFW, GOI, set up 13 tobacco cessation centers (TCC) in 2002 spread across India in diverse settings (cancer treatment centers, psychiatric centers, medical colleges and NGOs) to help people quit tobacco. This number has now increased to 19. The WHO algorithm for tobacco cessation^[24] consists of assessing the tobacco habit and then going through the procedures of simple advice, behavioral counseling and pharmaceutical treatment as per requirement.

Simple advice by health professional, taking as little as 30 s, can produce quit rates of 5–10% per year. Every patient who uses tobacco should be offered a brief intervention method of 5 A's, ASK (about tobacco use)- ADVISE (to quit) – ASSESS (commitment and barriers to change) – ASSIST (users committed to change) - ARRANGE (follow-up to monitor progress). The tobacco user's readiness to change can be assessed by the trans-theoretical model of Prochaska and Di Clemente, wherein the stages of change are noted as precontemplation, contemplation, preparation, action, maintenance and termination. Specific interventions are then tailored as per the person's stage of change in order to increase the likelihood of the success of quitting.

Pharmacological interventions when used with behavioral strategies can produce quit rates of about 25–30%. Pharmacotherapies that reliably increase the long-term smoking abstinence rates include:

- Agents that appear to decrease craving – Bupropion, Selegiline, Nortryptiline, etc.
- Agents that are used to substitute the nicotine, obtained from tobacco – Nicotine gum, Nicotine patch, Nicotine inhaler or Nicotine nasal spray. Nicotine Replacement Therapy (NRT) provides a slow and steady supply of nicotine in order to relieve craving and withdrawal symptoms, and is associated with quit rates of about 23% as against 13% with placebo.

TCCs from India have reported overall quit rates of around 16% at 6 weeks postintervention. The major disadvantages of a clinic approach of TCCs are its reach to specific population and loss to follow-up. Repeated contact counseling is a key to the success of cessation and prevention of relapses. Hence, expansion beyond clinics is the need of the hour to meet the needs of millions of current tobacco users in India. This can be in the form of community outreach clinics, interventions provided at schools, colleges, workplaces, youth groups, women's groups, etc. Spontaneous peer groups may be formed within the community, which may further support an individual's decision to quit. The workplace is an excellent setting to conduct a tobacco cessation programme as it gives an opportunity to interact with large number of people simultaneously, helps to train the industrial medical staff in tobacco cessation activities, promises positive peer pressure and a stable population for follow-up. Several cessation activities have been conducted at a variety of workplaces in both urban and rural India, demonstrating a good quit rate.^[25,26] This method needs to be explored further.

Other methods of cessation, like the group counseling, behavioral interventions in adolescents and pregnant women, technology-driven interventions, such as telephone counseling, dedicated quitlines, and mobile and web-based technologies have recently gained popularity. Combining different interventions gives good results as compared with a single intervention.^[27]

THE ECONOMICS OF TOBACCO

The economic contribution of the tobacco industry

The tobacco industry claims that it has a major contribution to economy with its employment generation in agriculture and manufacturing and revenues in the form of exports and taxes. Economic measures to reduce tobacco use that are part of a comprehensive tobacco control program can counteract these.^[28] In 2009, India was the third largest producer of tobacco in the world. It produced 620,000 (MT) of tobacco worth 987,513 (Int \$1000) in 2009. India exported 230,804 tonnes of unmanufactured tobacco, with a worth value of 748,553 (\$1000) in 2009.^[29]

According to the World Bank Report, the tobacco industry estimates that 33 million people are engaged in tobacco farming, of which 3.5 million are in India.^[30] Many women and children manufacture bidis and various forms of smokeless tobacco products working from home. It is estimated that bidi manufacturing provides employment to more than 4.4 million workers.^[31] Alternate cropping and alternate livelihoods need to be provided by the Government to replace tobacco farming and employment in the tobacco products manufacturing. In India, four major

cigarette players dominate the cigarette market worth an estimated 60 billion rupees viz. Indian Tobacco Company (ITC), Godfrey Phillips Limited, Golden Tobacco and National Tobacco.^[30] Bidis still remain a major tobacco market, with a predicted sale of 1031 billion bidis in 2007^[32] Smokeless tobacco products like Gutkha and pan masala are available in attractive colorful small sachets for as low as half a rupee, and have become increasingly popular with aggressive marketing and advertisements.

In India, tobacco export is mainly unmanufactured. Excise duty is imposed on the entire range of manufactured tobacco products, although the major contribution is from cigarettes. In 2000–01, tobacco contributed Rs. 81,820 million to the Indian economy and accounted for about 12% of the total excise collections.^[33] Bidi manufacturers producing less than 2 million pieces annually do not have to pay any excise duty. Pan masala is taxed 40% excise duty (*ad valorem*) and chewing tobacco and snuff with a brand name attracts 50% excise duty (*ad valorem*).^[31]

The economic losses due to the tobacco industry

Tobacco inflicts high direct and indirect costs on the society due to the morbidity and mortality associated with the consumption of tobacco products. According to the Indian Council of Medical Research, the total losses in 1999 due to tobacco-related diseases were about Rs 277.6 billion, equivalent to US \$6.5 billion. The estimates were Rs 350,000 for cancer, Rs 29,000 for coronary artery disease and over Rs. 23,000 for chronic obstructive lung disease.^[34] The estimated total cost by Reddy and Gupta for the three major tobacco-related diseases for the year 2002–03 is Rs 308.33 (\$6.6) billion.^[8] John *et al.* estimated the total economic cost of tobacco use in India in 2004 to be \$1.7 billion, which is 16% more than the total excise tax revenues collected from all tobacco products in the financial year 2003–04 (\$1.46 billion). This includes the direct medical costs of treating tobacco-related diseases, which was \$907 million for smoked tobacco and \$285 million for smokeless tobacco. They also calculated the indirect morbidity costs of tobacco use, which included the cost of caregivers and value of work loss due to illness. This amounted to \$398 million for smoked tobacco and \$104 million for smokeless tobacco. Tuberculosis accounted for 18% of tobacco-related costs (\$311 million) in India.^[35]

The cost-effectiveness of tobacco control and impact of tobacco control policies

Ranson *et al.* have shown that overall tax increases on cigarettes is more cost-effective relative to other health interventions.^[36] The evidence mainly emerging from the developed countries suggests that a 10% increase in cigarette prices would result in a 2.5–5% reduction in cigarette demand.^[37] The evidence on price responsiveness

from low- and middle-income countries has recently become available, suggesting that the impact is at least as large, and likely larger, than its impact in high-income countries.^[28] A price increase of 10% would reduce smoking by about 4% in high-income countries and by about 8% in low-income and middle-income countries.^[38] The 2002 estimates for China concluded that a 10% increase in cigarette prices would decrease cigarette consumption by up to 5.4% in the short run and by up to 6.6% in the long run.^[39] An all-India pooled sample report suggests that a 10% increase in bidi prices could reduce rural bidi consumption by 9.2% and a 10% increase in cigarette prices could reduce rural cigarette consumption by 3.4%.^[40]

Studies estimating the price responsiveness of cigarette demand to cigarette prices found that young people and lower-income groups are the most price-responsive.^[28] A study from Vietnam concluded that higher cigarette prices may not necessarily encourage quitting and may only divert cigarette smokers to other tobacco products.^[41] However, it is expected that increases in tobacco taxes reduce tobacco use by preventing initiation, increasing the likelihood of cessation among current users, reducing relapse among former users and reducing consumption among continuing users. It is clear that significant increases in tobacco taxes would be very effective in reducing tobacco use in low- and middle-income countries and, hence, it may be the most effective method of tobacco control in India.^[42] However, more research is certainly warranted in the Indian setting, both urban and rural, to investigate the cost-effectiveness of various modalities of tobacco control. In the context of several developing economies, further research would be needed to assess the possible impact of tobacco taxation on tobacco smuggling, substituting to other rustic tobacco products and on indigenous local tobacco production post taxation.

Various studies have shown that raising tobacco taxes leading to reduction in consumption is compensated by increased tobacco tax. Higher tobacco taxation improves public health by reducing tobacco use, and thereby helps a country generate additional revenue and reduce expenditures on the treatment of tobacco-related diseases.^[43,44] Indian projections suggest that tax-induced price increases of 52.8% on bidis and 176% on cigarettes would have a positive impact both on public revenue via taxes (expected to generate Rs 36.9 billion – US\$ 0.8 billion and Rs 146.3 billion – US\$ 3.1 billion) and on reduced tobacco-related public health expenditures.^[40]

WHAT WORKS FOR TOBACCO CONTROL?

There is strong evidence that tobacco tax increases, the

dissemination of information about the health risks from tobacco and increased access to cessation therapies are effective in reducing tobacco use. However, their implementation is uneven and limited, with higher-income countries having more anti-smoking laws in place than the low- and middle-income countries.^[45] Effective implementation may be affected by the tobacco industry lobbying power, partly due to political constraints and the country's overall commitment to tobacco control.^[46] The International Tobacco Control Policy Evaluation Project (ITC Project)^[47] designed to evaluate the impact of policies implemented under WHO FCTC will provide further evidence base to guide policies enacted under the FCTC and systematically evaluate the effectiveness of these legislative efforts.

THE WAY AHEAD

Measures that proved very effective in the developed world, like tax increases on all tobacco products, need to be enforced immediately and the taxes collected should be used to support health promotion and tobacco control programmes. Sustained efforts are needed from the Government to strengthen efforts on alternate cropping and alternate livelihoods to replace employment losses that may come up gradually.

Public health awareness, raising a mass movement against tobacco, sensitizing and educating all health care professionals for tobacco control and cessation by incorporating the topic in medical undergraduate curriculum, nursing curriculum, various CMEs, conferences, scientific meetings, workshops, etc. is vital. Eventually, if all healthcare professionals participate in tobacco control and cessation, it will have a huge impact. Expansion of TCCs to the periphery to reach the community, making them more accessible and widely acceptable, will facilitate millions of current tobacco users to quit the habit.

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