Review Article

Evidence Building for Policy: Tobacco Surveillance/Surveys and Research in India

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Summary

India is at a crucial juncture relating to tobacco control and implementing the recommendations of the WHO FCTC. Tobacco consumption in the country remains alarmingly high in urban as well as rural areas. Smokeless tobacco consumption is very popular among larger masses, including the youth. Cigarette smoking has declined, but *bidi* use has increased concomitantly. Youth continue to be lured to initiate tobacco consumption through efficient marketing strategies of tobacco companies. The epidemiology of tobacco consumption is markedly varied across the country, with high rates in 15 States. Progress has been made towards tobacco control by the enactment of laws and regulations and the National Tobacco Control Program. Strengthening their implementation and enforcement is the biggest challenge and requires resource inputs. Evidence generation and its translation and utilisation for policy interventions would be useful.

Key words: Tobacco, India, Evidence, Research, Policy

Introduction

The four leading causes of death globally in 2030 are projected to be ischaemic heart disease, cerebrovascular disease (stroke), chronic obstructive pulmonary disease and lower respiratory infections (mainly pneumonia). The total tobacco-attributable deaths are projected to rise from 5.4 million in 2004 to 8.3 million in 2030, at which point they will represent almost 10% of all deaths globally.[1]

Tobacco is a global problem, and health consequences from its consumption are driving the control efforts. It poses a unique problem for India as it is produced, manufactured, exported and consumed in abundance. It was introduced by the Portugese in Goa about 400 years ago, and during the British regime its production and cigarette manufacturing began.[2] Presently, India is the third largest producer of tobacco in the world with an annual production of about 725 million Kgs. As an exporter of tobacco, India ranks sixth in the world next to Brazil, China, USA, Malawi and Italy.[3] In 2006-07, tobacco and its products earned an annual sum of about ₹10271 crores (approx. US$ 22824 million) to the national exchequer by way of excise revenue, and ₹ 2022 Crores (UD $ 449 million) by way of foreign exchange.[4] Furthermore, tobacco is a source of gainful employment and livelihood. Tobacco consumption continues to grow at 2-3% per annum, and would account for 13% of all deaths in the country by 2020.[2] The regulation and control efforts of tobacco have a short history in India- beginning with Cigarettes Act, 1975. India was amongst the first 8 countries to ratify the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) in 2004, and became the regional coordinator for the South East Asian Countries of WHO. The Ministry of Health and Family Welfare, Govt. of India brought out the comprehensive Report on Tobacco Control in India,

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Access this article online	
Website: www.ijph.in	Quick Response Code:
DOI: 10.4103/0019-557X.89947	

2004.[5] In 2007-08, the Government of India launched the pilot phase of the National Tobacco Control Programme in 18 districts of the country with widespread mandate of putting up systems of governance of the program, effective implementation provisions, mass awareness programs, setting up of the National Regulatory Authority and improving research and training. The Global Adult Tobacco Survey (GATS) conducted in India in 2009-10, has provided recent comprehensive data on tobacco use using standardised methods to allow global comparisons.[6] It was estimated that India would have the fastest rate of deaths attributable to tobacco use due to the high addiction rate during youth period of life. This would take a huge toll on the nation's aspiration to lead in economic, social, and environmental health. India should aim to achieve a 30% reduction in the prevalence of tobacco consumption by 2020 and a 25% reduction in tobacco related mortality by 2050.[7]

The country is now passing through a crucial phase in tobacco control activities and, hence it is appropriate that policies should be focused to address any gaps and emerging challenges. This paper aims to assess the current scenario of tobacco use in India, identify key gaps in knowledge required for policy development, refinement and strengthening for effective tobacco control in the country.

Evidence for policy

It is pertinent to consider the interaction between evidence and policy. Policy has been defined by WHO as a specific official decision or set of decisions designed to carry out a course of action endorsed by a political body, including a set of goals, priorities and main directions for attaining these goals. The policy document may include a strategy to give effect to the policy, which in turn is implemented through an action plan and specific programs. The interaction of evidence and policy has been described by researchers and practitioners of policy variously as evidence based policy, evidence informed policy, evidence supported policy and evidence driven policy, indicating to the potential role of evidence for use in policy. The range of resources available to policy makers constitutes as evidence. Thus evidence could be research, knowledge and information, ideas and interests, politics and economics. Each influences and is influenced by several factors, including contextualisation, timing, political endorsement and resource constraints.[8]

Surveillance and policy

The widely accepted concept of public health surveillance is the ongoing systematic collection, analysis and interpretation of health data essential for planning, implementing, and evaluating public health activities, closely integrated with timely dissemination of the data to enable effective and efficient action to be taken to prevent and control disease.[9] It ranges from compulsory notifiable diseases, specific disease registries (population-based, hospital-based), continuous or repeated surveys of representative samples of the population, to aggregate data for recording trends on consumption patterns and economic activity. It is important to differentiate surveys from surveillance as the former does not imply data collection for action. Tobacco surveillance would aim at utilising the information for prompting a call for refining ongoing intervention or framing a new intervention.

Article 20 of the WHO FCTC[10] addresses surveillance as follows:

"...2. The Parties shall establish, as appropriate, programmes for national, regional and global surveillance of the magnitude, patterns, determinants and consequences of tobacco consumption and exposure to tobacco smoke. Towards this end, the Parties should integrate tobacco surveillance programmes into national, regional and global health surveillance programmes so that data are comparable and can be analysed at the regional and international levels, as appropriate."

Further, Article 21 on Reporting and exchange of information, requires that Parties submit "...periodic reports on its implementation of this Convention, which should include...information on surveillance and research as specified in Article 20."

Through its surveillance mechanisms, WHO's Tobacco Free Initiative (TFI) monitors and evaluates international tobacco-related issues by reviewing:

- Structural elements (existence of task forces, commissions, nongovernmental organizations (NGOs);
- Process developments (laws and regulations, economics, behaviour, exposure, advocacy) outcomes through epidemiological data (prevalence, morbidity, mortality) and tobacco industry activities.

Assessment of tobacco use in India

In order to identify evidence gaps and the need for further research, it is imperative to assess the current information. In this section we have looked at the present scenario under the following sections;

Burden

The Global Adult Tobacco Survey (GATS), India, is the most recent comprehensive tobacco survey undertaken across 29 States and 2 Union Territories between 2009-10, covering 99.9% population of the country in men and women aged 15 years and above, residing in urban and rural areas.[6] It revealed that 35% of adults use tobacco in some form or the other (smoking, chewing, application on teeth and gums, sniffing), 21% use only smokeless tobacco, 9% only smoke and 5% smoke as well as use smokeless tobacco. Thus, the estimated number of tobacco users in India is 274.9 million, of which 163.7 million use only smokeless form, 68.9 million smoke and 42.3 million use both smoking and smokeless tobacco. On an average, a daily cigarette smoker smoked 6.2 sticks per day and a daily bidi smoker smoked 12 sticks per day.

During 1980s, the prevalence of tobacco use among men and women above 15 years age in urban areas was 43% and 2%, whereas in rural areas it was 63% and 16% respectively.[11] The number of tobacco-attributable deaths in India was estimated as 630,000 per year. Conservative estimates in 2004 indicated that the tobacco-attributable deaths range between 800,000 and 900,000 per year. The cost of the tobacco attributable burden of just three groups of diseases, cancer, heart disease and lung disease was estimated as ₹ 277.611 billion (US$ 6.5 billion) in 1999. This increased to ₹ 308.33 billion (US$ 7.2 billion) in the year 2002-2003.[5]

Regional variation

There is lot of regional variation in tobacco use in India, with 14 States accounting for a higher use than the national average of 37%. In a regional analysis of tobacco usage, Northern region (19%) reported the overall lowest tobacco usage with the highest in Eastern region (45%), smoking form was highest in Northern region (12%) and lowest in Western region (5%), smokeless usage of tobacco was highest in Eastern region (30%) and lowest in Northern region (5%), and the combined use was highest in North-Eastern region (9%) and lowest in Northern region (2%). The prevalence of smoking and tobacco chewing shows marked geographical differences at the level of villages, districts and states, even after controlling for the individual and household demographic markers.[12]

Place of residence

In the urban areas 23.4% of the population reported current use of tobacco (7.1% smoke, 14.1% use smokeless and 3.6% use both types), whereas in the rural areas 38.4% used some form of tobacco (9.1% smoked, 23.3% used smokeless and 3.6% used both forms). 38% adults in rural areas and 25% in urban areas used some form of tobacco. Users of smokeless forms of tobacco were higher in rural areas (29%) than urban (18%), including its daily users.[6]

Gender

In GATS India 2009-10, the overall prevalence of tobacco use among men was 48% and women 20%, as compared to 51.3% in men and 10.3% in women above 15 years in the NSSO survey 1995-96.[13] Smoking was prevalent in 24% men and 3% women, and similarly use of smokeless tobacco was higher in men than women (33% and 18% respectively). Bidi (16%) and cigarette (10%) were the major forms of smoking tobacco in men, while women smoking rates was less than 2%. Khaini, gutka and betel quid with tobacco were most common smokeless forms of tobacco use in men as well as women. Except Puducherry, Tamil Nadu, Meghalaya, Tripura and Mizoram, all other States and UTs reported high tobacco consumption in men. Men were more likely to be daily consumers of tobacco (41%) than women (17%), with higher proportions residing in rural areas (33%) than urban areas (21%).

Age

Tobacco use was reported from 15 years onwards and increased with advancing age in men and women residing in urban and rural areas. Smokeless form of tobacco use was highly prevalent in an age dependent manner amongst women users in both urban and rural areas.[6] The GYTS 2003 and 2006 surveys in 13-15 year old school children showed an increase in the ever smoked cigarettes for both boys and girls (9.5% to 12%). However, there was a decline in the proportion of children who initiated smoking before the age of 10 years from 49% to 37%, current cigarette smoker from 4.2% to 3.8%, use of non-cigarette forms of tobacco use from 13.6% to 11.9%.[14]

Initiation

The mean age of initiation of tobacco use (both smokeless and smoking forms) amongst its users aged 20-34 years

was 17.9 years. Two out of every five smoker had initiated it by the age of 18 years, 14% started smoking daily by 15 years of age, 26% in the age group of 15-17 years, 21% in the age group of 18-19 years and 39% above 20 years age. A similar pattern is observed for users of smokeless tobacco.[6]

Quitting and cessation

The quit ratio for smokers was 13% and for smokeless user 5%. In the past 12 months of the survey, 38% smokers and 35% smokeless users made an attempt to quit the habit in both genders, though a huge differential was observed amongst States and UTs. 22-26% tobacco users used traditional medicines for quitting, and less than 10% used counselling as a modality. The rates of cessation advice being given by the health workers was less than 50% for smokers, and even lower for smokeless tobacco users. The GYTS 2003-2006 showed a marginal increase in children desiring to quit smoking, but actually decreased for girls from 80.5% to 72.2%.[14]

Second Hand Smoke

Second hand smoke (SHS) exposure was reported by 52% of the population, more in the urban (58%) than the rural areas (39%). There were large differentials in exposure rates to SHS in indoor environments, workplace, entertainment places and public transport. Chandigarh UT reported the lowest national level SHS exposure rates.[6] The GYTS 2003-2006, showed there was a decline in the SHS reported at home and public places.[14]

Economics, access and availability

The monthly expenditure on cigarettes is higher in urban (₹ 469.00) than rural areas (₹ 347.00), but people spend more on bidis in rural areas (₹ 98.00). A small proportion of tobacco smokers purchase preferred brands. State and UT wise variations were also seen in expenditure. Stores were the most convenient point of purchase of smoking and smokeless forms of tobacco.[6]

Tobacco is a cash crop grown largely is 15 States of India with an annual production of 0.62 million tonnes during 2008-09 from 0.39 hectares.[15] The structure of employment shows a vast majority are engaged on a part time basis. The full time engagement is found in cigarette manufacturing, manufacturing of smokeless tobacco, retailing and distribution. NSSO estimates of 2004-05 indicate that about 7 million people are engaged directly or indirectly in tobacco industry constituting 1.5% of overall employment in the country.[16] It is estimated to rise to 36 million people.[3] The proportion of employment has gone up in tobacco trade related activities. There has been a consistent rise in employment in bidi manufacturing units. India is one of the largest exporters of unmanufactured, especially FCV tobacco in the world. The export earnings from chewing tobacco alone was ₹ 1003.69 million in 2010, accounting for 61% of smokeless tobacco exports. In the GYTS 2003-2006, the proportion of subjects who purchased their cigarettes from stores declined from 66% to 52%. Interestingly, children were able to purchase tobacco from stores even though they were underage increasingly from 55% to 72%, and 11% children reported being offered free cigarettes from tobacco company representatives in 2006 (an increase from 8% in 2003).[14]

Awareness

Anti-tobacco awareness creation efforts were paying off in more than half of the population, highest being for smokeless (61%), bidis (61%) and cigarettes (52%). Chandigarh UT reported the highest awareness rates in the country, commenurate with other indicators of tobacco control efforts. Nearly half of those who noticed the health warnings, considered quitting. Cancer (85%) was the highest reported awareness regarding health outcomes followed by heart disease (64%) and stroke (49%).[6] The GYTS 2003-2006 reported a 4% decline of persons who saw a lot of advertisements for cigarettes on billboards.[14]

Addressing key gaps in evidence

For the purpose of this paper we referred to the WHO-FCTC to make an assessment of strengthening gaps in evidence. This was supplemented by the National Tobacco Control Program and various legislative and regulatory provisions in force in the country.

Epidemiology and magnitude of tobacco use

Over the past several decades research has done well in the area of describing the epidemiology of tobacco consumption in the country. The magnitude of consumption of tobacco in its various forms has also been well studied. The future evidence related to the epidemiology should;

- Ascertain the characteristics of tobacco consumers as they change their habits and attitudes, changes in the age differentials, type and mode of tobacco consumption and correlating this change to the health outcomes. Continued epidemiological monitoring of

tobacco consumption in youth (including women) will be crucial in reducing health impacts and achieving tobacco control. Determinants of such consumption patterns will help in planning suitable programs or repositioning the existing ones.

- Study preferred sites of smoking.[17] Observations have been made for smokers having preferred sites where they are likely to smoke more often eg. small eatery shops, tea stalls, waiting areas etc. Suitable interventions can be planned accordingly
- Epidemiological characterisation of tobacco consumption differentials across the country. It is important in planning and monitoring tobacco control all over the country.

Consequences of tobacco consumption

There is vast information available on the health consequences of tobacco consumption. Some studies have also determined the economic consequences as well as that on employment. Further evidence on the following issues will strengthen tobacco control;

- Health consequences. As revealed in the GATS India 2009-10 survey, most respondents identified cancer, cardiovascular diseases, stroke as the important disease outcomes of tobacco consumption. There is a need to expand the scope of this evidence to include all ill health effects, including addiction, reproductive health and fetal outcomes. Minor health impacts which occur should be documented scientifically so that a total picture of its health consequences can be ascertained. The dissemination of health warnings need to be assessed for their effectiveness to bring about the desired change.[18]
- Evidence on the ill health effects of nicotine derived from smokeless tobacco. It is known that nicotine absorption from the mucosa is rapid, erratic and continues even after the tobacco product is removed. It reaches brain rapidly and thus increases addiction rates.[19] Myths on the safety of smokeless tobacco over smoking needs to be well contextualised and used for advocacy purposes against smokeless forms of tobacco consumption.

Determinants of demand for tobacco use

One of the WHO FCTC interventions is to reduce demand for tobacco products through efficient strategies. This would require evidence on the biological processes, pyscho-social determinants, behaviour assessments, marketing tactics driving demand, pricing options etc. There is need to address the following evidence gaps;

- Tobacco consumption as part of a larger behaviorial malady. It has been shown that those who smoke are more likely to consume inappropriate amounts of alcohol and other addictive substances[20] and have higher prevalence of cardiovascular risk factors.[21] Characterising these clustering of risky behaviours will be important from a cessation point of view as well as the willingness of such individuals of give up tobacco completely.
- Marketing innovations which convey a false sense of security to consuming tobacco needs to be studied and monitored very closely. The introduction of menthol flavoured cigarettes is the next public health challenge in developed countries which have already shown considerable progress in tobacco control.[22] The e-cigarettes should be evaluated for their safety and efficacy for administration of nicotine and other substances, and for quitting and relapse prevention.[22] Innovative packaging of smokeless tobacco products need to be monitored. Some glamorous products which are perceived as tastier, smoother and fragrant attract the beginners, delay cessation and find high use among women.
- Reduction of addictiveness of nicotine in cigarettes and other tobacco products is important since it sustains tobacco consumption. Determining the threshold dose of nicotine required for addiction to develop will be useful to develop regulatory requirements, as compared to research by the tobacco industry which determines the addictive level of nicotine to sustain consumption.[23]
- Understanding the reasons of persons to be non-daily/ intermittent/occasional smokers or consumers of smokeless tobacco. As this segment forms the bulk of tobacco consumer typology, they are likely to keep the demand up.
- Study on the deterrents of tobacco consumption (individual level, community level, policy level) would address the adamant type of tobacco consumers at all levels of interventions. The deterrent strategy is a bit harsher than barrier approach as it assumes that the adamant type would overcome the barrier easily. It also is a stronger approach to deter beginners of tobacco consumption. The deterrents would determine the transition from one to the other typology. It could be a mechanism to study ways to increase deterrence of initiation, maintenance and cessation. Social climate as a deterrent wherein smoking and consumption of tobacco is not well looked upon.

Determinants of supply for tobacco use

Measures to reduce supply of tobacco products traditionally are outside the purview of the health sector and hence their evidence is inadequately evaluated. Some evident gaps require;

- Assessment of net impact of tobacco control on the Indian economy on a short and long term basis.
- Efficient use of taxation as a means to reduce supply
- Smuggling and illicit trade should be banned as well made less lucrative through cross border pricing and taxation policies within and between countries.
- Pricing as a means to reduce demand. Price elasticity needs to be determined from time to time and its likely impact on poor tobacco users, youth and cessation.[24]
- Assessment of the role of structural elements promoting tobacco production, manufacturing, supply and marketing.
- Employment as a deterrent for stricter policy options of halting manufacturing and marketing. This is posed as a big barrier for governments to act against tobacco cultivation, processing and marketing. Estimates are required on alternative employment and livelihood avenues so as to counter this argument.[24]

Capacity for tobacco control

Tobacco control is a multi-pronged strategy involving various sectors and actors. The capacity of each factor is critical to strengthen, sustain and achieve tobacco control.

- Assessment of grass root workers and health professionals required to carry out tobacco control activities.
- Evaluate ongoing tobacco control programs and activities to assess usefulness of evidence used in their development
- Strengthen tobacco cessation programs through understanding utilisation determinants of these services. Involving the alternative systems of medicine needs to be assessed, particularly the findings of the GATS India 2009-10 survey of 22-26% using traditional counsellors.[6]
- Promoting smoke free places as mechanism of barrier for tobacco consumption (home, workplace, public transport, public open spaces, education institutions etc) and prevention from second hand smoke.
- Setting short term and long term targets so as to actually measure progress objectively through valid indicators
- Establishment of the National Tobacco Regulatory Authority as envisaged in the National Tobacco Control Program

Surveillance

The absence of a surveillance system for tobacco in the country limits a public health response to the changing scenario. This should be an integral part of the national program and work towards several additional indicators eg;

- Epidemiology and burden of tobacco related illness
- Land area under tobacco cultivation, annual domestic consumption of home grown and manufactured tobacco products, annual export of tobacco, tax revenue from tobacco etc.
- Nicotine content surveillance at point of consumption and manufacturing levels
- Smoke free places
- Environmental pollution eg. Cigarette butts
- Changing characteristics of tobacco consumers, including transitions from daily to non daily to non smokers and vice versa
- Tobacco cessation program
- Awareness programs

Conclusion

As progress is made in reducing tobacco consumption, the need for evidence to guide policies will grow to tide over the harder final phases. Continuing efforts, sustaining the gains through innovation, wide stakeholdership and patience shall take us towards total stoppage of tobacco consumption.

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Cite this article as: Mathur P, Shah B. Evidence building for policy: Tobacco surveillance/surveys and research in India. Indian J Public Health 2011;55:177-83.

Source of Support: Nil. **Conflict of Interest:** None declared.