Post-2015 Development Agenda

India Perspectives

Non-communicable Diseases

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Summary: White Paper Report by Elizabeth Brouwer and Rachel Nugent

India already has the world's second largest population and is expected to overtake China before 2030. At the same time, the population is becoming older and more sedentary. The country is undergoing a demographic transition and is also experiencing an epidemiological transition, with non-communicable diseases (NCDs) – a result of lifestyle rather than infection – becoming an increasingly important factor in life expectancy.

NCDs now account for the majority of death and disability in the country and affect in particular adults in the productive years between 30 and 69. Most of these conditions are caused by underlying (and often inter-related) risk factors such as smoking, high blood pressure, obesity and lack of exercise. 15% of Indian females and 12% of males are classified as overweight or obese and about 30% have high blood pressure (hypertension). Rates of hypertension are generally higher in urban areas, an important factor as more and more people are moving to cities from the countryside.

The government has in recent years set up two programmes to address NCDs, the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) and the National Programme for Health Care of the Elderly (NP{HCE), but there are further cost-effective interventions which can be made to reduce tobacco use and hypertension.

About 10% of all the world's smokers live in India and about a million of these die every year from tobacco-related disease, including cancer, heart disease, diabetes and respiratory conditions. This costs the economy about one million crores of rupees every year ($22.4 billion). Almost 60% of men and 11% of women under 50 use tobacco products, although women are more likely to chew tobacco than smoke. Smoking rates are higher in rural areas and among poorer groups in society.

In 2003, a number of restrictions were imposed on tobacco advertising and sale and smoking in public places was banned. More recently, excise duty was raised, but the various types of product are not taxed uniformly. In particular, the bidi (made with uncut tobacco rolled in leaves) which is the most widely-used tobacco product and generally bought by the poor, is lightly taxed and over half of those consumed are believed to have had no tax paid on them at all.

Consumption could be decreased by raising taxes, with the bidi market being particularly price-sensitive. 1.17 million tobacco-related deaths are projected for 2030, but between 65,000 and 90,000 of those lives could be saved each year by increasing taxes by 35% and 45% respectively. Each rupee spent on implementing the tax increase would pay back between 28 and 38 rupees in benefits. To achieve this, it is important that the tax system is simplified, made more transparent and properly enforced. The additional revenue would be very useful for funding programmes to reduce smoking and improve health in other ways.

Hypertension is a risk factor for heart disease, stroke and diabetes, and about 11% of all deaths in India are attributed to it. Only about a third of people suffering from high blood pressure are aware of it and of those only about half are managing their condition successfully. People considered to be at medium to high risk of heart disease or stroke are treated with a combination of readily available and inexpensive medicines including aspirin, beta-blockers and statins.

Raising the number of diagnosed patients who treat their condition from 33% to 75% would reduce deaths by 110,000 a year in 2030, assuming treatment was successful in half of cases. The cost would be only about $10 per patient per year, and the average return would be R4 for each rupee invested. An alternative would be to

raise the success rate of treatment from the current 50% to 90%, by making free medication as widely available as possible, which could save a further 90,000 lives. Spending a rupee on this would pay back about R7 in benefits.

White Paper Report by Elizabeth Brouwer and Rachel Nugent

Every country has limited resources to spend on health, and those health expenditures should reflect disease burden. India currently boasts the world's second largest population and is predicted to become the largest before 2030. In addition to increasing in number, India's population is getting older and progressively more sedentary. While infectious diseases and malnutrition continue to be major issues for a large portion of the Indian population, non-communicable diseases (NCDs) now account for over 60% of all deaths in the country. More worrisome still is that these deaths are disproportionately affecting adults of working age, causing families to forego income and pay for costly health services.

The rising burden of NCDs poses substantial challenges to India's health care system, and the country's economic progress. Although some NCDs are expensive to treat, there are affordable and feasible primary and secondary prevention interventions that will stem the growth of NCDs in India. It should be a priority in India to reduce tobacco consumption immediately and scale up prevention of diseases related to poor diet and physical inactivity.

Decades of tobacco policy in high-income countries have provided a solid evidence base for cost-effective interventions to reduce population tobacco use, the most effective of which is taxation. Low-cost pharmaceutical treatment is also available to reduce high blood pressure, which is a risk factor for diabetes, heart disease, and stroke. There is less robust evidence for preventing obesity or diabetes at a population level, however early treatment and management of obesity-related diseases can reduce the severity and complications of NCDs. Here we offer details about how these health risks are present in India, and what the government can do to reduce them. We also provide estimates of the financial costs and benefits of taking action.

Burden of Disease

India is a prime example of both epidemiological and demographic transitions, with an aging population increasingly afflicted by NCDs (figure 1). While those over 60 years old make up about 9% of the population currently, they are expected to be 20% of the population by 2050 (Arokiasamy 2015). NCDs account for the majority of death and disability in India overall, but particularly among adults in their productive years, aged 30-69. Cancer, ischemic heart disease, stroke, and respiratory disease account for 60% of deaths in 30-69 year olds and almost 50% of all deaths (table 1).

NCDs are primarily caused by underlying, synergistic risk factors, such as tobacco use, hypertension, obesity, or lack of physical activity. In India, 15% of females and 12% of males are classified as overweight or obese, with females having consistently higher rates of obesity (Bloom 2014). About 30% of Indian adults have high blood pressure; rates are almost universally higher in urban areas, while rural areas in east and south India have higher rates than the rest of the country (Anchala 2014). K. Srinath Reddy and colleagues also found tobacco use and hypertension to be significantly more prevalent in low-education groups, while dyslipidemia prevalence was higher in high-education groups (Reddy 2007). Because NCDs share many of the same risk factors, patients often suffer from more than one condition at a time -- 9% of adults over 45 in India had reported at least two chronic conditions (Arokiasamy 2015).

NCDs are receiving attention at the highest levels of the Government in India (GoI). In response to the High Level Meeting of the United Nations General Assembly in 2011, the GoI created two national programs to address NCDs: National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases

and Stroke (NPCDCS), and the National Programme for Health Care of the Elderly (NPHCE) (Mohan 2013). Various Indian states have also put policies and programs in place with widely varying coverage.

Tobacco Taxation

Roughly 10% of the world's tobacco smokers live in India, and about 1 million people die per year from tobacco-attributable disease, including cancer, heart disease, diabetes, and respiratory conditions (John 2010, Jha 2008). In 2011, the total economic costs attributable to tobacco use for those under 70 was over Rs. 1 million crores ($22.4 billion) (WHO 2012). Almost 60% of men and 11% of women under 50 use tobacco products, although men are much more likely to smoke while women are more likely to use chewing tobacco. Tobacco use is not evenly distributed; prevalence is higher in rural areas, among scheduled castes and tribes (historically marginalized and poorer), and among the illiterate (John 2010).

While tobacco use is highly prevalent and subsequent health consequences staggering, leaders in India have taken steps towards reducing consumption. In 2003, Parliament banned tobacco advertising and smoking in public places, restricted sponsorship of sporting and cultural events by tobacco manufacturers, and forbade the sale of tobacco to children under 18 (John 2010). In 2004, India ratified the global Framework Convention on Tobacco Control. More recently, India's national government took steps to raise the excise tax on cigarettes between 10-70%. Different types of cigarettes are manufactured by the four major tobacco companies in India; and do not receive uniform taxation. Tax rates on bidis remained unchanged (John 2014). Taxing tobacco products in India has been historically difficult because of the variation in size, price, and type of products available. India's federal government structure also lends to the complexity, as the Union government imposes the central excise taxes while the state governments impose the value added tax (VAT) (PHFI 2013). The bidi, made of uncut tobacco rolled in leaves, is the most prevalent tobacco product and is generally consumed by the poor. Because bidi consumers generally have less disposable income, bidi consumers have a relatively higher price elasticity than cigarette consumers. Despite the sensitivity to price increases, nine Indian states do not tax bidis and an estimated 52-70% of all bidis consumed in India have no taxes paid on them, either through lack of regulation, non-compliance, or no tax application (PHFI 2013).

The tobacco tax regime in India can be improved and strengthened as a way of further reducing consumption. We explore the benefit-cost ratio of several tax increase scenarios for the year 2030. First, we assume all tobacco products will be taxed in a relatively uniform and transparent way. The three scenarios shown in table 2 are labeled as current, proposed and ambitious. Current refers to the current tax structure where there is little to no tax on bidis and cigarettes are taxed below the WHO recommended rate. The proposed tax scenario explores tax increases similar to those currently under implementation; in the proposed scenario, the total tax on bidis and cigarettes increases to 30% and 60% of their total retail prices respectively. We then explored an even more ambitious tax increase that raises the taxes on bidis and cigarettes to 40% and 70% of the retail price respectively. Based on estimated projections of India's population and smoking prevalence in 2030, we estimate that of the 1.17 million tobacco attributable deaths projected for 2030, 65,000-90,000 premature deaths could be averted if taxes were raised 35 or 45 percentage points respectively. We borrow the costs estimate of $0.05 per capita from Asaria 2007. Using the Copenhagen Consensus' methodology of discounting, and valuing lives at both $1000 and $5000 per DALY averted, increasing tobacco taxes in India would result in $28-$38 return for each dollar invested by 2030 (Table 3).

There are many caveats to consider when discussing tobacco taxation, particularly in India. First, the complexity of the current tax system allows for evasion and substitution between products. The tobacco industry encourages countries to apply complex, tiered tax systems in order to reduce the sales dampening effect of cigarette tax increases (Jha 2011). Second, higher tobacco prices may encourage a substantial amount of illegal

smuggling. However, Yurekli and Sayginsoy (2010) find that poor governance is largely responsible for the illegal market in cigarette trade in a sample of 76 countries, rather than high taxes. Third, at projected high income growth rates, increasing numbers of Indians will be able to afford to purchase tobacco products over time unless taxes rise with the average income (Prasad 2014). In India, bidis became three times more affordable in 2011 than they were in 1990, and cigarettes were twice as affordable (Blecher and van Walbeek 2009, Jha and others, 2011).

We assume in our analysis that taxation is enforced equally across products, simplified, and made more transparent. Offsetting these caveats, however, is the income generated from taxation. Tobacco tax revenue is not captured in our calculations, but can be an excellent resource in funding tobacco cessation programs or other health initiatives.

Increase Access to CVD Medication

Hypertension, or elevated blood pressure, is a risk factor for most NCDs, particularly heart disease, stroke, and diabetes. In India, the prevalence of hypertension is about 30% (26.7%-33%) among adults and about 11% of all deaths are attributable to high blood pressure (Anchala 2014, IHME 2010, Mohan 2013). Of those with hypertension, currently about 33% are aware of their condition, and of those about 50% are managing their condition successfully (Anchala 2014). Hypertension rates are much higher in urban than in rural areas of India, at 20-40% and 12-17% respectively, however urban populations are aware of and successfully treat their hypertension at significantly higher rates (Mohan 2013, Anchala 2014).

Along with hypertension, health practitioners look at age, tobacco use, blood glucose levels and other measures to determine patients' risk for a CVD event in the following 10 years. Those at medium to high risk can take a combination of medicines, often including aspirin, beta-blockers, and statins, which significantly improve their condition. These medications are relatively inexpensive, particularly in India where cheap generics are produced in large quantities. The main roadblocks to effective pharmaceutical intervention are that people are often unaware of their conditions, the medicines are not accessible in public health clinics, or the patients do not successfully adhere to the daily regimen.

That is why we propose two alternative interventions to reduce the bottlenecks that keep high risk patients from life-saving medications. The first intervention would be to increase the number of diagnosed hypertensive patients who treat their condition. Although 33% of the hypertensive population in India is aware of their condition, only 33% of those aware treat their condition. Raising the percentage of diagnosed patients who treat their condition from 33% to 75% would avert almost 110,000 deaths in 2030 alone, assuming the success rate of hypertension medication is 50%. At about $10 per person per year, and using Copenhagen Consensus methodology, this would give a return of $4 ($1-$7) for every $1 invested (DCP3 Working Paper).

An alternative scenario would be to increase the adherence and therefore the success rate of those already treating their hypertension. Currently, about 50% of those actively treating their hypertension have it under control, although this rate is lower in rural areas than in urban (Anchala 2014). We consider a scenario in which the success rate is raised to 90%. This could be possible via many different channels; for example, if public clinics were consistently stocked with low-cost generic medication -- which by law should be free -- patients could reliably and affordably restock their medication. Other ways to increase adherence would be to use media or mobile technology. Using Copenhagen Consensus methodology, we found that increasing the success of pharmaceutical regimens would return about $7 ($2-$12) in benefits for every dollar invested (Table 3).

Conclusions

With enormous population growth and aging, India needs to start investing in its future. Affordable and feasible measures, like the tobacco and hypertension control options detailed above, offer benefits beyond the value of a statistical life. India cannot advance as an emerging and powerful economy without maintaining and growing a healthy workforce, making NCD prevention essential. Population interventions will also avert medical impoverishment, allowing for more robust finances at the family-unit level. Current policy conversations in India about aggressively increasing tobacco taxes are heartening, and could avert up to 2 million premature deaths in the year 2030 alone with a benefit to cost ratio of $64. Improved control of hypertension, in addition to having positive spillover effects on other conditions, could provide life-saving medicine to over 100 million people, avert more than 200,000 premature deaths in 2030, and provide $5-$7 in benefits for every $1 invested.

Figure   1:   Demographic   Transition   in   India
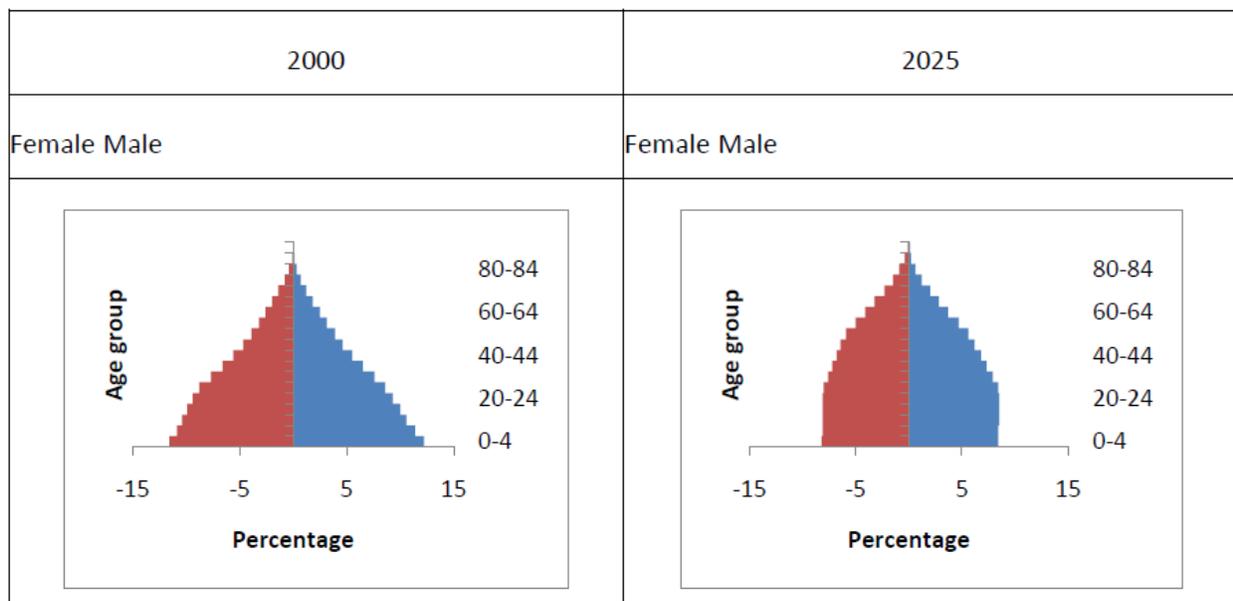
Source: U.S. Census Bureau. www.census.gov/ipc, accessed July 1, 2010.

Table 1: WHO GHE India's Burden of Disease in 2012

	Deaths from NCDs as a % of Total Deaths		DALYs lost from NCDs as a % of Total DALYs	
	30-69 year olds	All ages	30-69 year olds	All ages
Total from non-NCDs	30%	40%	30%	49%
Total from NCDs	70%	60%	70%	51%
Cancer	23%	14%	16%	9%
Ischemic HD	15%	12%	10%	6%
Respiratory Disease	13%	13%	11%	8%
Stroke	9%	9%	6%	4%
Other NCDs	3%	6%	21%	20%
Diabetes	3%	2%	3%	2%
Kidney Disease	3%	2%	2%	1%
Hypertensive HD	2%	2%	1%	1%

Table 2: Tax Scenarios

	% of smoking prevalence		Tax Rate (% of retail price)	% increase in price above original	% decrease in consumption
Bidis	85%	Current	7%		
		Proposed	30%	17.7%	-25.70%
		Ambitious	40%	23.6%	-33.70%
Cigarettes	15%	Current	45%		
		Proposed	60%	9.4%	-23.50%
		Ambitious	70%	14.7%	-36.75%
Total	100%	Current	0.127		
		Proposed	0.345		-25.37%
		Ambitious	0.445		-34.16%

Table 3: Benefit Cost Ratios of the Selected Interventions

		Discount Rate	Benefits ($ millions)		Costs ($ millions)	BCR (Median and Range)
			DALY=$1,000	DALY=$5,000		
Tobacco	Modest Tax Increase	3%	775	3,872	73.7	28 (9-52)
		5%	673	3,336		
	Ambitious Tax Increase	3%	1,046	5,224		38 (12-71)
		5%	910	4,550		
Hypertension	Increase Access to Medication	3%	1,308	6,541	960	4 (1-7)
		5%	1,137	5,687		
	Increase Adherence to Medication	3%	599	2,934	242	7 (2-12)
		5%	521	2,603		

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