Policy Basis for Tobacco Control: The Health and Economic Consequences of Tobacco Use

(This is the second of a series of two articles on "Tobacco or Health".)

Prof Habibuz Zaman

THERE is little scope for doubting the causal relationship between tobacco use and a large number of illnesses and mortality in individuals who smoke. In fact tobacco is now regarded as the single most important preventable cause of morbidity and mortality in many societies.

Lung cancer is one of the commonest cancers in males in many countries throughout the world. Of 100 males, who die of lung cancer in the USA, 98 are smokers. Smoking and tobacco use in many forms are also responsible for the vast majority of cases of cancer of the mouth and the oro pharynx — one of the commonest cancers in the sub-continent (since oral cancer occurs frequently in both males and females). Tobacco, smocked or taken as khayni or dukta or kimam with pan chewing, is held responsible for the vast majority of these cases. The habit of reverse smoking with the burning end of the chew-root placed inside the mouth in South India gives rise to cancer of the hard palate. So also the use of tobacco powder to cleanse the teeth and the gums leads to the habit of repeating the process several times during the day and may ultimately be responsible for the development of a cancer of the mouth or gums. Cancer of the larynx, not infrequent among males in the sub-continent, is related to smoking of bidis and cigarettes. Tobacco use has also been incriminated in cancers of the urinary bladder, liver, oesophagus, stomach, pancreas, and uterine cervix amongst others mentioned above, on the basis of a statistically significant dose response relationship between cigarette smoking and mortality rate.

The smoker's cough leads to chronic bronchitis, fibrosis of the lungs, and emphysema, a very debilitating and distressing lung disorder. The incidence of coronary heart disease from heart attacks are generally much higher in most populations than those from lung cancer. Smoking has been established as a major risk factor in the actiology of coronary heart disease. Smoking is also held responsible for many forest fires and household accidents (and deaths from burns). During 1985 as many as 390,000 premature deaths were attributed to smoking in the United States of America alone. The corresponding figure for 1988 was 434,000 deaths.

Tobacco Industry Protects it's Selfish Interests

Although tobacco is highly addictive, many adults above the age of 30 have been quitting smoking in developed countries, thanks to the publicity about dangers of smoking. However, the tobacco industry has been generally successful in hooking in large numbers of adolescents into it, through suggestive advertisements in newspapers, magazines, billboards, radio and television (in countries where these are not yet banned). The tobacco industry has a very powerful lobby in many countries and spends huge sums in efforts to prevent legislation to restrain the use of tobacco. It is said that world-wide the industry spends more than US dollars two billions a year to protect its interests. They have been successful in attracting large numbers of young women to take up smoking by persuading them that is part of women's liberation. This is most unfortunate since smoking in pregnant women has the added risk of disease and distress in the foetus including low birth-weight of the new born, and an increased occurrence of respiratory and other diseases of the new-born due to exposure to cigarette smoke after birth. Other complications of smoking during pregnancy include pre-term delivery, bleeding during pregnancy, and premature and prolonged rupture of the membranes.

Actions to Control Tobacco Use

Nevertheless, efforts against smoking have gathered momentum during the past decade in this part of the world as well. More and more countries have initiated or extended health legislation against smoking. These include mandatory use of the warning, as in Bangladesh, over packets of cigarettes or advertisements (where allowed) : "SMOKING IS INJURIOUS TO HEALTH"; restrictions against smoking in public places e.g. cinema halls, public transports viz. buses, airlines etc ; restrictions in the use of the electronic media (radio or television) or the print media (newspapers, magazines) and billboards for advertisement of cigarettes or bidis and other tobacco products.

Legal Actions Against the Tobacco Industry

Now the battle is being fought in courts of law in some of the advanced countries e.g. in the USA and Sweden. The tobacco industry has been answering charges that it is responsible for specific cases of deaths caused by smoking. The industry has also been blamed since no warning against the adverse effects of smoking had been carried for many years on cigarette packs, even though the industry had possessed incontrovertible evidence that smoking was injurious to health. Employers, who had not set up smoke-free areas in their offices, have also been held responsible for deaths from passive smoking. So the fight goes on. In a small number of cases, courts have awarded compensation to the plaintiffs against the tobacco industry.

Revenue from Tobacco or Health: The Choice is Ours

Many governments fail to take action to restrict the further growth of the tobacco industry as substantive revenue is derived from excise duties — generally regarded as a safe and easily collectable tax. Tobacco is a cash crop for the cultivators. So it is a politically explosive issue even to curtail its demands, not to speak of banning or reducing its cultivation. In several developed countries, although millions of smokers have quit smoking, generally the industry has not reduced its production of cigarettes, although further expansion is unlikely. In fact in several countries the tobacco industry has diversified its investments into such areas as the hotel industry. Even then markets have to be found in other countries to sell the excess product. The developing world is a good target. Countless numbers of cigarettes are being smuggled into developing countries. Unless this unfortunate practice can be halted, it would be difficult to justify reducing or banning the cultivation of tobacco or the manufacture of cigarettes in any developing country.

Other Elements of a Tobacco Control Programme

Indeed there is adequate rationale for substituting tobacco cultivation by another cash crop such as oil-seeds, wherever feasible. This may be followed by efforts in reducing the demand on cigarettes through motivating smokers in giving up the habit; legislative and executive actions against the sale of tobacco products to children; prohibition of school and college teachers from smoking in public places; banning the sale of tobacco products within a mile of an educational institution; and all such actions, aimed at preventing youngsters from being seduced into the habit.

Health professionals and paramedicals of all categories may be induced to refrain from smoking at all health centres, clinics, and hospitals. So also all categories of other workers in these institutions may be persuaded against smoking in the presence of patients and their attendants.

The Cost of Tobacco Use

Use of tobacco involves injuring oneself with three poisons; the tar which causes cancer; nicotine which is highly addictive and is responsible for profound deleterious effects on the heart and blood vessels; and carbon monoxide, which reduces oxygen delivery to the tissues and predisposes to heart attacks and stroke. Costs in terms of morbidity, mortality, and the resources required for the treatment of several serious diseases, related to tobacco use, are staggering. Revenue derived by governments from the tobacco industry in any country is but a tiny fraction of the resources expended in dealing with these many adverse consequences of tobacco use. Enlightened governments of the people, by the people, and for the people must be politically committed to take appropriate actions in formulating and implementing an effective programme on "TOBACCO OR HEALTH."

Rights of Smokers vs Non-Smokers: "Passive Smoking": Its there a "Safe" Cigarette?

Much has been made by the tobacco industry of the rights of smokers including their freedom of choice — thereby meaning that an individual has the inherent right to enjoy smoking if one so desires. Generally speaking, the industry vehemently opposes all kinds of restrictive actions on smoking, including those on the promotion of their "lawful" product through advertisements in various media. The permission to set up a cigarette manufacturing plant, they claim, carries with it the basic right to push their newer brand names, including those with a lower content of tar and nicotine. This is a clever strategy to make the promotion of these products more acceptable.

How can adolescents and others be protected from the influence of suggestive or even provocative advertisements, glamourizing smoking? On the other hand, it is generally felt that there is no "safe" cigarette. The smoker is apt to satisfy himself smoking a much larger number of low-tar and low-nicotine cigarettes having longer puffs, taking deeper inhalations and burning a longer length of the cigarette, thereby negating whatever questionable virtue "low-tar," "low-nicotine" cigarettes may have. Thus the claimed safety of these cigarettes is in fact reduced to a myth, and the rationale for imposing this added burden on governmental authorities of monitoring the implementation of these restrictions difficult to sustain.

On the other hand, non-smokers also have the right to refuse to subject themselves to the unacceptable irritation from and the obnoxious odour of cigarette fumes and to such "passive smoking"; that is, to the adverse effects of the smoke exhaled by the smoker (in offices, public places, public transports). The role of passive smoking in lung cancer has been proven.

Time for Action is Now

Economic considerations have been advanced by the tobacco multinationals for the expansion of tobacco cultivation in the developing countries. In fact financial and other incentives have been provided to the producers for this purpose. Presently over 60 per cent of the world production of tobacco is derived from the developing countries. It is a significant source of employment especially in countries where the crop is grown in small holdings. In some countries it is also a substantial exportable commodity. The cultivation, curing, and processing of tobacco for the manufacture, marketing, and sale of tobacco products — cigarettes, bidis and a host of non-smoking items — do provide employment to a sizeable population.

These seemingly positive considerations have to be weighed against the high health costs from the use of tobacco, the price of absenteeism from work and the pain and suffering associated with such serious diseases as pulmonary emphysema, lung cancer and coronary heart disease. It is not widely appreciated that in the developing countries sizeable amounts of forest wealth are expended every year in the process of curing of tobacco, which involves the use of huge quantities of wood as fuel. This has led to deforestation and desertification in countries in which this is already a matter of grave concern.

Authorities in Bangladesh would be ill-advised to ignore these very real, important and basic considerations. In addition, the level of poverty being what it is in Bangladesh, lack of good and adequate nutrition being as pervasive as it is today, many smokers in Bangladesh continue to smoke at considerable peril to their own nourishment as also to that of their family members. No doubt serious efforts to wean away people from smoking in Bangladesh as elsewhere are not only called for and warranted, but it is also most desirable that further actions are taken now to control tobacco use, before the habit becomes more widespread and the costs of coping with the critical consequences of tobacco use rise far beyond our modest means. Had tobacco been discovered today, which responsible government would allow its uncontrolled use, the unhindered expansion of the tobacco industry and the free marketing and sale of tobacco products, recognizing its highly addictive property and its established propensity for producing several serious and fatal diseases? Concerned citizens and our own representative government must work together to establish a tobacco-free society as the healthy norm.

Cleanliness ensures better health, small family a better life.

The Latest Medical Discoveries in France

First of all, it should be pointed out that when people complain of their liver (and, in France, they are legion), the liver is hardly ever to blame and, in 95% of cases, the problem lies with the gall bladder. Indeed, the liver is an "oversized" organ and at least 40% of the liver cells have to be diseased for the first clinical and biological disturbances to appear.

Nevertheless, the liver does have fearful enemies. These are primitive cancer, cirrhosis very often caused by alcohol and the lesions of viral hepatitis. The only chance of survival is by transplant surgery which is sometimes performed in emergency (for sudden hepatitis or malformation in children).

France is in the forefront for this form of surgery. She is the leader in Europe, particularly the Paul Brousse Centre in Villejuif, near Paris, which recently carried out its 500th transplant: The number of operations has been steadily increasing with 130 cases in 1988 and 150 in 1989. The patients, who had been practically doomed, regain a good quality of life and most often take up their professional and other activities normally. 90% survive more than a year and 80% more than three years, with this latter figure remaining at a steady level so long as immuno-suppressants are taken daily.

The surgical and medical technique has now been perfectly developed, with the only difficulty lying, as always with transplants, with donors. Patients usually have to wait from two to six months.

Mental illness

The way our brain works still holds a lot of mystery. After the "psycho-social" conception of mental illness, prevalent until the 70s, the role of neurotransmitters has appeared with all its complexity. These chemical substances, which are estimated as numbering more than 1,500, act in infinitessimal amounts on a particular group of brain cells and control our reactions, begaviour and impulses, exactly like hormones, enzymes and vitamins do in their own areas.

Through the insufficiency or excess of their production, neurotransmitters play an essential part in the origin of mental illness, which it should be possible to cure (and not just to palliate as now), when the large amount of research being carried out at present all over the world, will have attained a better understanding of their make-up and effects, and also their interaction.

Genetics is involved. For a long time now, it has been known that mental illness could be hereditary and that the possibility of transmitting it cannot be ruled out. In 1987, from a study carried our in the United States in the Amish community which is greatly affected by manic-depressive psychosis, it appeared that a factor of vulnerability could be found in the area surrounding the tyrosine hydroxylase gene in the short segment of chromosome 11.

In spite of its interest, this hypothesis, which could not be checked, was abandoned. A French team of researchers (J Mallet at the CNRS and M. Leboyer at INSERM 155) recently published the results of a study demonstrating the polymoryphism of the tyrosine gene, in 150 patients of this kind. Moreover, this gene, which was chosen from among many other possibilities, is involved in the synthesis of catecholamines (neuro-transmitting substances), which are, themselves, recognized as being responsible for states of depression.

Gerontology Coming of Age

ALTHOUGH everyone ages, no one knows how exactly they do so.

Now, scientists are applying the tools of molecular biology to understand the exact mechanism behind aging and offer the hope of extending our lives.

A growing number of gerontological researchers are conducting molecular level studies to prevent the degenerative diseases of old age, or actually postpone the aging process.

In the process they are separating out the pathologies of old age from the normal process of aging, reports the journal "Science".

Although scientists have presented many theories in the past to explain what causes aging, there is little evidence to support them. One such theory holds that a single gene for aging that is turned on late in life is responsible for the process. Others hold that aging is simply the result of cells becoming less efficient at self-repair as they become older.

One theory that became popular in the last decade is the "garbage can" theory which says that as the cell line ages, it becomes some sort of a "multigenerational waste basket"— somehow later generation cells accumulate metabolic byproducts that can damage cellular macromolecules including nucleic acids and proteins. These later generation cells seem to be less efficient in repairing the damage.

Supporters of the "garbage can" theory are looking at intercellular debris to understand how that waste might interact with the cells' genome.

One significant component of the garbage can appears to be the free oxygen radicals which can invade the cell's membranes and attack its fats and proteins, forming destructive hydrogen peroxides and lipid hydroperoxides. These highly reactive free oxygen radicals are formed during cell metabolism and can bond readily with chemical groups .

Scientists in the United States have shown that in young cells, certain enzymes known as anti-oxidants disarm the free radicals. A team of scientists from the National Institute of Aging (NIA's) Gerontology Research Centre in Baltimore, headed by Richard G Cutler, are investigating the role of these enzymes in extending a cell's longevity.

Cutler and his colleagues have already shown that longer-lived species have more antioxidants than shorter lived species. He says that in aging cells, antioxidants may be neutralised or over-whelmed by an increasing number of free radicals which may prevent the cells from dividing and differentiating. Alternatively, according to Cutler, later generations of cells may be less efficient at producing the beneficial enzymes.

Another candidate for the garbage can may be glucose which can attach itself to proteins in a process known as non-enzymatic glycosylation. The protein-sugar complex triggers a chain of chemical reactions that cross-link adjacent proteins sticking them together into substances called "advanced glycosylation end products" (AGEs).

As people age, these end products gum up the tissues, making them stiffer and less elastic.

Longevity — a Growing Regional Problem

We all want a healthier world, but can we afford one in which almost everyone lives to a 'healthy' old age ?

by Alan Chalkley

NEW medicines and medical equipment are so effective today that we are all far healthier than ever before. We are living longer.

Back in the 1920s, most children could expect to live only to about 25 years of age on average over most of Asia. Today the expectation of life is commonly around 60 years.

Remember how shocked people in the West used to be to witness two children barely 10 or 12 years of age being betrothed for marriage in India? The reason was simple: if the young did not start producing babies the moment they were fertile, they might not live long enough to bring them up.

But now that terrible problem, which mired millions in poverty and ill-health, has vanished. People are living much, much longer. A girl can get out into a career, and think of marriage and children later. A young man can concentrate on his career, too, and won't be badgered into siring kids around the house for a while.

So everyone should be happy, right? We should all praise the wonderful medical and pharmaceutical innovators, who gave us antibiotics, steroids, sonar, lasers, etc., etc., right?

Well .... yes — but — there's a new problem. We are all living long. Perhaps too long. Old age is expensive. We save up to retire if we can. And if we can't, then someone has to look after us.

We create new demands — for sea-cruises (look at who comes down the gang-plank on those "Magical Mediterranean" or "Asia Saga" tours!), for hospital and old people's games facilities, for special foods, for special services for the lottery.

The problem of an ageing population is a real one. Who pays pensions, for instance? It is the *present* workforce. So workers in a country may be supporting more and more old folks, both through personal payments and through the tax system.

In Asia the challenge is greatest because the population was once growing so slowly, and then after 1950, grew so rapidly. A research paper by Linda Martin, a long-experienced demographer at the East-West Centre in Honolulu, measures the magnitudes.

The number of elderly people is projected to double over the next 35 years in Japan, triple in China and quadruple in Singapore, Malaysia and the Republic of Korea. "Given that the elderly populations of the year 2025 have already been born, no policy — however well implemented — can change the absolute numbers," says Ms Martin.

Singapore has actively encouraged births by offering incentives for having three or more children. "The 1987 incentives for the birth of the third child included a tax rebate of about S$10,000, and for working mothers, an additional rebate of 15 per cent of earned income," the author notes.

It had been recognised also that Singapore's low birth rate was affected by couples marrying at a later age. "Accordingly, the government has established a unit to provide computerised matchmaking services that will encourage singles to meet." But Ms Martin says the incentives are not likely to have a substantial long-run effect because more women are joining the labour force and child care is scarce.

Cambodia, Laos and Malaysia also have policies to encourage births, though they have not specifically cited ageing population as a policy rationale.

Another approach to changing age-group proportions is to encourage immigration. Several East Asian countries are beginning to increase immigration in an attempt to alleviate labour shortages and change age distributions.

"But the increase is slow," notes Ms Martin, "given concerns about illegal immigration, the potential change in ethnic composition, and the difficulties some European countries have experienced with guest workers."

In contrast, Japan is focusing on policies to accommodate its rapidly ageing population. An area of concern is the gap between age 55, the traditional retirement age in Japan, and 60. For firms that retain workers beyond the age of 60, the government gives the employer as much as US$300 a month per worker.

The state also provides firms with incentives to "re-employ" some workers, including one-time payments of up to US$3,000 per person. And it subsidises a chain of municipal labour exchanges called, almost lyrically, Silver Manpower Centres.

Not all of these measures will work in every country, because the accepted social views differ — and, what's more, they change. Traditionally, Chinese families hold their old folk in high honour; has this characteristic weakened? Traditionally, Japanese companies play a big social role in their employees' lives; has this link weakened, too?

It seems that money will not solve the problems in every country. How about the development of "sunset homes" for the oldsters, a solution now favoured in the US and Britain but hardly applicable elsewhere?

A healthier world is a great thing, but it comes with a price tag — an array of social questions, to which there are no easy answers.

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