

G. RISK FACTORS UNDERLYING MAJOR CAUSES OF DEATH

Alan Lopez focused on two types of behaviour that placed people at a greater risk of early death: tobacco smoking and excessive alcohol intake. Epidemiological research had shown that smoking increased the risk of contracting cancer and cardiovascular disease, whereas excessive alcohol consumption increased the risk of cardiovascular disease, cirrhosis of the liver and injuries. Based on a number of studies that attempted to quantify the hazards associated with smoking, Lopez estimated that, in Western countries, smoking among males was associated with a 70 to 80 per cent excess mortality from all causes. At the individual level, smoking had the largest effect in increasing the relative risk of contracting cancer of the lung and of the upper-aerodigestive tract and a smaller effect in increasing the risk of cardiovascular disease. However, because cardiovascular disease was a more common cause of death than the other causes related to smoking, at the population level the impact of smoking was greatest in increasing the number of deaths due to cardiovascular disease. Thus, in 70 to 80 per cent of the smokers dying because of cardiovascular disease before age 50, the disease had been caused by smoking, making it the factor responsible for a three-fold increase in mortality during middle age. With respect to lung cancer, smokers were 10 to 12 times more likely to die of the disease than non-smokers and the excess risk associated with smoking increased with the duration and intensity of smoking. On average, a smoker who had begun smoking as a young adult and continued to do so for the rest of his or her life had at least a 50 per cent chance of eventually dying because of a smoking-related illness.

Lopez estimated that in 1995 tobacco smoking was responsible for 1.9 million deaths in developed countries, 1.2 million of which occurred in the developed market-economy countries and the rest in countries with economies in transition. In developing countries, smoking-related deaths amounted to 1.6 million, half of which occurred in China. This distribution of smoking-related deaths by region was changing rapidly. By 2020,

smoking was expected to cause 8.4 million deaths annually, 6 million of which would occur in the developing world. That year, smoking would be by far the leading cause of death in the world. The expected trends in smoking-related mortality were the result of changes in the prevalence of smoking in different regions. WHO estimated that by the mid-1990s there were about 1.1 billion daily smokers in the world or about one-third of the world's population aged 15 years or over. Eight hundred million of those smokers were male and 700 million lived in developing countries. Globally, almost half (47 per cent) of all men aged 15 or over smoked, but considerably fewer women did so (12 per cent). There were, however, marked regional variations. Thus, in developed market-economy countries, 37 per cent of men were regular smokers, compared with 60 per cent in the countries with economies in transition and in China. The prevalence of smoking was also estimated to be high in other developing regions: 40 per cent among men in India, Latin America, North Africa and Western Asia, and 54 per cent in other parts of Asia. Between 1980-1982 and 1990-1992, cigarette consumption declined by 1.5 per cent per year in developed market-economy countries, remained relatively constant in countries with economies in transition, and rose by 1.4 per cent annually in developing countries, with the result that global consumption remained relatively constant at around 1,650 cigarettes per adult per year.

In contrast with smoking, Lopez noted that the effect of alcohol consumption on survivorship was not necessarily negative. When consumed at low levels, alcohol provided some protection against ischaemic heart disease. However, moderate to high levels of alcohol intake increased the incidence of cirrhosis of the liver, certain cancers, certain types of cardiovascular disease and traumatic or violent deaths mostly due to accidents. According to estimates by Murray and Lopez, 1.25 million deaths were caused annually by alcohol, 625,000 because of injuries and 620,000 because of disease. However, alcohol intake was also responsible for preventing 470,000 deaths that would have been due to ischaemic heart disease.

Therefore, the net annual contribution of alcohol consumption to mortality amounted to 775,000 deaths, 640,000 of which occurred in developing countries and 710,000 of which were deaths of men. Data on alcohol consumption compiled by WHO confirmed that alcohol consumption was rising rapidly in many developing countries and that hazardous consumption of alcohol was prevalent in many developed countries although some of them had been successful in reducing hazardous drinking (e.g., France).

Hugo Kesteloot focused on another set of behavioural factors considered to affect the risk of morbidity and mortality: diet and exercise. With regard to diet, Kesteloot reviewed the strong evidence linking high levels of saturated fat intake to the incidence of cardiovascular disease, especially ischaemic heart disease and stroke. The effect of high saturated fat intake was said to be modulated by genetic factors, smoking and obesity, and the level of serum cholesterol was used as a biomarker that had an important effect on the incidence of cardiovascular disease. Epidemiological evidence also suggested that high levels of saturated fat intake increased the risk of developing certain types of cancer (e.g., of the lung, breast, rectum and prostate) and that a high salt intake was related to an increased incidence of stomach cancer. A diet high in sodium was also associated with increased blood pressure which was a major predisposing factor for stroke.

Kesteloot argued that nutrition and dietary factors were likely to have a more important influence on survivorship than genetic factors, since the genetic composition of the population had not changed much but countries that had adopted diets richer in fruits and vegetables and with a lower content of meat products and other sources of saturated fats had recorded marked reductions in mortality. He also suggested that a "healthy" diet, low in saturated fats and sodium while rich in plant products, might counterbalance or reduce the negative effects of factors such as stress, environmental pollution or even tobacco smoking. Kesteloot underscored that, if the life span and health status of a population were to keep on improving,

behavioural changes in regard to nutrition were necessary.

With regard to the influence of physical exercise in improving survivorship, the evidence was more mixed. Kesteloot noted that, as discussed in the case of mortality differentials by socio-economic status in developed market-economy countries, male manual workers whose level of physical activity was higher than that of non-manual workers had higher levels of mortality than the latter. In that case, dietary and other behavioural factors were probably responsible for the bulk of the differentials observed but, unless such confounding factors were controlled for, linking physical activity to risks of death at the population level was less than straightforward. Furthermore, in most developed market-economy countries physical activity at the population level had been declining just as mortality had been falling, suggesting that physical activity was not a major determinant of a longer life. Yet, studies linking physical activity, especially during leisure time, to all-cause mortality, to mortality due to cardiovascular disease, and to morbidity all indicated that risks of all three were lower among persons who exercised regularly. However, the results of such studies could not be taken as definitive because they failed to control for interactions between different risk factors, interactions that might be large because persons who exercised regularly were a selected group that was generally health-conscious and tended to have other behaviours that were known to reduce risks of morbidity and mortality. Kesteloot concluded therefore that, whereas the evidence pointing to the important effects that nutritional factors could have on survivorship was strong, the case for the relevance of physical exercise was less so.

Dinesh Sethi and Anthony Zwi considered yet another aspect of behaviour whose influence on the morbidity and mortality of populations was increasing: the frequency of accidents and violent events leading to injury or death. It was expected that, as mortality due to natural causes declined, the relative importance of mortality from external causes (injuries and violence) would rise. By 1990

already about one in every 10 deaths in the world was attributable to such causes. Accidents and injuries accounted for 12.5 per cent of all deaths among males and 7.4 per cent among females. In the developed market-economy countries, homicides caused 6 per cent of all deaths compared to 12 to 13 per cent in Latin America and the Caribbean and in sub-Saharan Africa. In the latter two regions, homicides accounted for one sixth of all male deaths. But the major cause of injuries and death by external causes was road traffic accidents. By 1990 they were estimated to be the ninth most important cause of death worldwide. Between 1968 and 1985, road traffic fatalities (fatalities per 10,000 registered vehicles) increased by 150 per cent in Asian countries and by 300 per cent in African countries, whereas in market-economy European countries they declined by 25 per cent. Such changes took place even though African and Asian countries had lower vehicle densities than developed market-economy countries. Furthermore, the statistics cited did not reflect the major impact that accidents and violence had on morbidity and on health expenditures. In the United States, for instance, US\$ 400 billion were spent in 1993 to treat injured persons, four times the cost of treating cardiovascular disease.

Dinesh and Zwi remarked that, traditionally, injuries had been a neglected public health problem because both authorities and donors tended not to perceive them as amenable to intervention. Although that perception was changing in developed market-economy countries, it was important to stress that most injuries were preventable and there was a growing body of community-based experience on ways of reducing road traffic accidents, lowering the risk of injury or death when they occurred, and on strategies to prevent or reduce inter-personal violence. Efforts were needed to transmit such information to low and middle-income countries which were only beginning to consider the possibility of intervention. Little was known about the transferability of experience between developed market-economy countries and the developing world. Regional and multi-sectoral exploration of solutions was desirable, especially to establish an exchange of

information and approaches among developing countries.

Lastly, Jacob Adetunji discussed another of the growing threats to human well-being: the AIDS epidemic caused by the human immunodeficiency virus (HIV). Because sexual intercourse was the main form of transmission of HIV, behavioural factors were at the root of the epidemic and needed to be addressed if the epidemic was to be brought under control. Adetunji noted that the basic information on the prevalence of HIV infection and AIDS was generally poor and that, consequently, most estimates for the world as a whole and for sub-Saharan Africa in particular were derived from models. In 1997, an estimated 22.6 million people in the world were HIV-positive and 14 million (63 per cent) of them lived in sub-Saharan Africa. Between 1992 and 1995, another 1.5 million persons had become infected with HIV in Africa. African countries with the highest prevalence rates of HIV infection included Botswana, Burundi, the Central African Republic, Kenya, Malawi, Rwanda, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe, whose geographical location produced the so-called "AIDS belt of sub-Saharan Africa". As discussed in the session focusing on mortality trends in developing countries, the high prevalence of HIV infection had already had deleterious effects on the survival chances of the population of those countries. Furthermore, because the persons most likely to contract HIV were those in the most productive ages, the epidemic was having a strong negative impact on the human capital of the countries affected. From the social perspective, the AIDS epidemic was undermining the levirate system, whereby a man was obliged to marry his brother's widow, as well as the tendency to adopt or take care of a dead brother's children. The growing number of orphaned children whose parents had died of AIDS was putting undue stress on the extended family. The policy options available to countries with high HIV prevalence rates included promoting low-risk behaviours, such as the use of condoms and the avoidance of sex with multiple partners; reducing the likelihood of transmission by treating and preventing sexually transmitted

diseases; providing treatment for co-infections, such as tuberculosis, among those already suffering from HIV infection; and providing some assistance to families with AIDS patients or children left orphan because of AIDS.

The discussion acknowledged the importance of behavioural factors in determining risks of morbidity and mortality, but it emphasized that such factors generally did not operate by themselves. Rather, interactions between the behavioural factors themselves and those with the context in which they were rooted were more important. In Eastern and Central Europe, for instance, there was currently a clustering of unfavourable social and economic factors that favoured high-risk behaviour and increased the risk of morbidity and mortality. Consequently, any intervention aimed at reducing high-risk behaviour would have to take account of the contextual factors that might be promoting such behaviour. To be successful, interventions to change behaviour should be rooted in a firm understanding of the influence that societal forces had on individual actions. Although legislation could be used to influence behavioural change, it had better chances of being successful if its formulation was based on sufficient knowledge about the characteristics of the persons most inclined to adopt risky behaviour, on people's perceptions about what constituted risky behaviour, and on their responses to risk. In the United States, for instance, the effectiveness of anti-smoking legislation depended in large part from the stance taken by non-smokers to prevent their own exposure to passive smoking. The need for political commitment to the reduction of high-risk behaviours was also stressed.

Although several participants noted the potential conflict between individual rights regarding freedom of choice and societal or governmental action to influence individual behaviour, it was recognized that people required assistance to make informed choices and that, especially in the case of minors, public authorities had the responsibility of preventing their being exposed to harmful influences. Thus, it was appropriate for Governments to prevent tobacco companies from undertaking advertisement campaigns

geared mostly to minors. Furthermore, as far as the rights of individuals were concerned, one could raise the issue of whose rights were at stake, since those engaging in high-risk behaviours often subjected to risk persons who did not choose to follow similar behaviours. That was the case of non-smokers subjected to passive smoking or of persons injured by accidents caused by those acting under the influence of alcohol.

Several participants raised issues related to the possible existence of "social causation", that is, of social factors that determined the adoption of different behaviours among distinct population groups. It was thus noted that women tended to engage less in high-risk behaviours than men (women smoke and drank less than men, for instance) and that such "risk avoidance" might be socially determined. Similarly, the fact that the better educated segments of society tended to adopt healthier lifestyles than other groups suggested that socio-economic status influenced behaviour. However, it was not just a matter of access to resources since, in Eastern and Central European countries during the communist period the better educated were not necessarily better-off economically than the rest of society. The processes leading to such social differentiation were not yet sufficiently understood.

Despite such gaps in knowledge, participants stressed that much was known about which interventions were successful in influencing behaviour. In the case of smoking or alcohol consumption, for instance, raising the price of tobacco or alcohol products would almost surely have a dampening effect on their consumption, especially by the less well-off groups in society. It would also make those products less accessible to adolescents. Examples were also cited of campaigns that had been successful in reducing drunken driving or violence within the home. Since it was clear that major improvements in health status and gains in survival could be achieved by reducing the prevalence of smoking and preventing the abuse of alcohol, there was agreement that action in that front was urgently needed and did not have to wait for better or more information to be available.

