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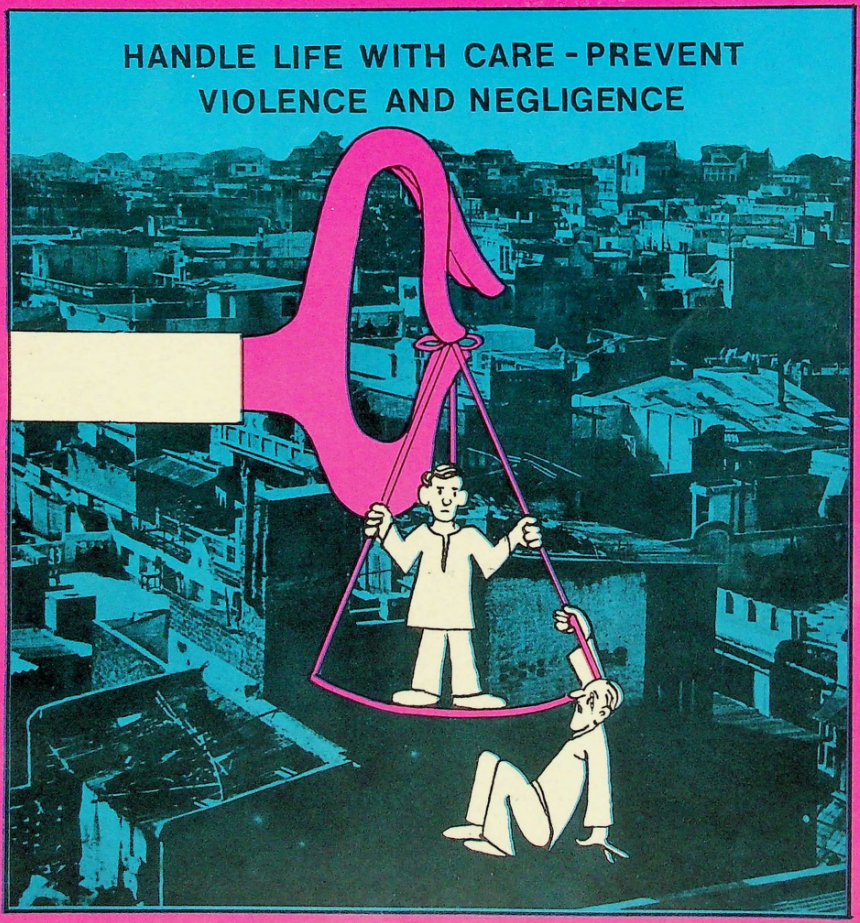

WORLD HEALTH DAY NUMBER

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WORLD HEALTH DAY—1993

Disability — physical, mental locomotor, hearing, speech — accounts for about 12 million victims as per National Sample Survey of 1981. This means 1.8 per cent of the total population suffers from one or the other form of disability. This could not be very accurate as Sample Surveys usually are, but presents an anticipatory view of the problem. About 10 per cent of the disabled had more than one physical disability. When broken down by types it shows that 5.43 million had locomotive, 3.43 million visual, 3.42 million hearing and 1.75 million speech disability. Being a country of villages, where 80 per cent of the population lives, the prevalence of disability is higher in rural areas where more males are victims of disability than females.

In urban areas, traffic accidents account for 0.4 to 0.8 million disabled/seriously injured; domestic accidents besides being responsible for 2 to 4 million disabled/seriously injured and occupational accidents are responsible for 1 to 2 million disabled/seriously injured claiming nearly 0.1 million lives.

The accidental rate among industrial workers would surely be rising in the years to come as there is greater industrialization and more locomotives are coming to market.

To get an idea of the enormity of economic loss to the nation because of the disabled we may quote the figure available for blindness-related economic consequences. Maintenance of the estimated 9 million blind and the estimated 45 million visually handicapped if calculated at the rate of Rs. 75 per person costs about Rs. 8100 million and the loss of production at the rate of Rs. 5 per day amounts to Rs. 10,000 million annually. Any figure worked out in the same refrain for the disabled through accidents, domestic handicaps and industrial hazards will only be mind-boggling and spine-chilling. These figures speak of the disastrous consequences for individuals and society of accidents and acts of physical violence, which may often are preventable.

It is possible to prevent accidents if every individual feels responsible and considers safety is prime concern.

Keeping this in view *Swasth-Hind* devotes this issue to Accident Prevention—the theme of the World Health Day—7 April, 1993. Its slogan being:

Handle life with care; prevent violence and negligence

Edited by M. L. Mehta, M. S. Dhillon

Cover Design Madan Mohan

In this issue

Articles on health topics are invited for publication in this Journal.

State Health Directorates are requested to send in reports of their activities for publication.

The opinions expressed by the contributors are not necessarily those of the Government of India.

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Backgrounder

HANDLE LIFE WITH CARE

prevent violence and negligence

• WORLD HEALTH DAY • 7 APRIL 1993 •

Most accidents are caused by unsafe conditions and unsafe acts or both. In such events safety rules have either been ignored/forgotten or misunderstood. The World Health Day, 7 April 1993 therefore has been devoted to the prevention of accidents. Its slogan is : Handle Life with Care—Prevent Violence and Negligence.

With the industrialisation and unbanisation of the country the vehicular population has registered about seventy-fold increase to that of vehicle population at the time of Independence. The vehicle density (vehicle per lakh of population) has also shown an increase of about 30 times since 1950 and is about 2,600 vehicles per lakh of population. Alongwith this increase, it has also registered a ten-fold increase in road accidents and more than 10 lakh persons have lost their lives in road accidents during the last forty-five years. On an average, 155 persons die per day in road accidents in the country in addition to 700 people getting injured. During 1991 more than 2.94 lakh accidents were reported which resulted in the loss of 57,000 lives in road accidents.

There is an accident every second minute and a fatality on road every ninth minute in India. Ill-designed and ill-maintained roads and or vehicles coupled with their poor maintenance, negligent or drunken driving are the chief factors for accidents. Maximum brunt of injuries are borne by pedestrians and two-wheeler users including cyclists.

Everyday hundreds of people succumb to the ills of growing pollution of environment, to die a slow and steady death while others die in a catalystic way as thousands died in Bhopal in 1984. India's Chemical Industry with 4,000 factories is the most hazardous one. In 1980, ten thousand workers were injured and 100 killed in accidents, at the rate of 33 for every one million employed.

India uses nearly one lakh tonnes of pesticides annually. At least 70% of these consist of the pesticides which are banned or severely restricted in the western countries. A WHO study, which analysed food samples across India, found that 50% of them were contaminated with pesticide residues with 30% exceeding permissible limits.

Thousands of workers die every year because of occupational hazards. Besides, a number of risks are involved around us may be it is the house we live in, the surrounding environment, the workplaces, the vehicles we are travelling by or even during walking on the road, the materials we are handling—almost in all the activities. With the modernization of our agricultural Sector, a number of risks have crept in this profession also which was considered as the most safe and simple one. The modern agricultural equipments such as tractors, threshers, fodder machines, etc., pose a serious threat of accidents and have rendered a sizeable population of agricultural workers disabled. There is a serious threat to the health of the people by the use of pesticides and herbicides in agriculture, by way of poisoning or long-term side-effects leading to various diseases.

* Studies in Nepal have shown that minor cuts are as frequent as diarrhoea; burns and scalds as frequent as dysentery and parasitic diseases; and more common than infectious diseases and malnutrition in India, four times as many years of life are lost to injuries than to cancer.

* In South-East Asia, 12-22 per cent of all hospital admissions are linked to injuries.

* Those who are under the influence of alcohol and other intoxicants are at greater risk of injury. They are more likely to hurt themselves by falls, by burns or scalds, more likely to overdose on medicines, and are more likely to drown and to commit homicide and suicide. There is enough information to suggest that it is too much of drinking that trigers acts of violence, deaths on road-houses etc.

* There is a threat to health from "injuries and death" that are a consequence of violence particularly in the developing world where traditional family authority is disintegrating. Urbanisation, drugs, crime, over-crowding, unemployment has increased the death rates. In India, rallies and bandhs are becoming a symbol of violence.

* Family violence such as wife abuse, battered children, sexual abuse, coupled with increase in homicides, suicides and acts of violence have led to injury induced deaths becoming the third killer reported besides cardiovascular diseases and cancer.

Handle Life With Care : Prevent Violence and Negligence

Major cause of injuries is the carelessness on the part of the individual to handle different objects or carelessness in the house, on the road, in the workplaces, etc. Since this carelessness results in injuries or injury related deaths, there is a need to handle life with care.

Most accidents are caused by unsafe conditions and unsafe acts or both. In such events safety rules have either been ignored/forgotten or misunderstood.

Situations and conditions that need precautions to be taken to avoid accidents are :

Home and its Unsafe Environment

People at home can very often be absent-minded, careless and may create an unsafe environment for the family members as well as for the visitors to the house.

Falls from an elevated surface in the house as a result of stumbling, slipping or loss of balance are the result of plain carelessness. Objects left on stairs, spilled oil, grease or water, fruit peels may also cause falls. The following precautions may make the home and environment safe :

* Ensure that furniture in the house does not have sharp corners or edges.

* Toys with sharp edges and corners are liable to hurt children.

* Falls from ladders have disabled many. Stairs with many landings are preferable to a long continuous flight of stairs. This may help break the fall after a short distance. Make stairs safe for children by blocking spaces under the railing to avoid their accidental slipping.

* Rugs and carpets are very effective in reducing the severity of injury due to falls. Use them in areas where children are likely to encounter risk of falls. Due care is to be taken in their fixation otherwise they can cause tripping.

* Keep chemicals such as pesticides, herbicides, etc. or medicines locked or in places that are inaccessible to children and old people.

* Cigarette smoking is the biggest cause of domestic, and forest fires. Discourage smoking of cigarettes in the house to reduce the probability of fires.

* Keep children away from reach of the kitchen since they are most liable to get hurt with the fire, hot water, hot utensils and cooked food. Kitchens today with LPG cylinders and gas stoves and other electric gadgets is the most dangerous place if necessary precautions are not taken.

* Unused electric sockets often tempt youngsters to poke at them with anything they have in their hands. Hence these outlets should be taped over

or covered with blank switches when not in use.

* Be extremely careful of pets in your home. Make certain that they are periodically checked by a veterenarian and are duly immunised.

Safety on the Road

Some fundamental traffic tips for road safety are :

1. Keep to the left, allow traffic in the opposite direction to pass you on the right.
2. Overtake only on the right.
3. Overtaking on the left is permitted only when the car in front is about to turn right.
4. Overtaking is not permissible, if it is likely to cause inconvenience or danger to the other traffic or where the road ahead is not visible.
5. When being overtaken or passed by another vehicle do not increase your speed or try and prevent the other vehicle from passing you.
6. Slow down when approaching intersections, road junctions or road corners. Enter the intersection of junction, if it does not endanger anyone.
7. When entering a main road from a junction give way to the vehicles proceeding along the main road. Give way to all traffic approaching the intersection on your right hand. If there is a "Dead slow—major road ahead" sign, yield right of way to the vehicles on your left also.
8. Drive slowly when passing a procession or when passing road repairs. In any case, your speed should not exceed 25km p.h.
9. When turning to the left, drive close to the left hand side of the road.
10. When turning to the right draw to the centre of the road, stop, if necessary, at the intersection, then move to the left hand side of the road you are about to enter.

Besides, the emphasis should be placed on the following target groups :

* School children need to be imparted road safety education specifying the various safety measures to be adopted while on the road.
* Motorists should be constantly reminded of the need to take special care of children on the roads, near the schools, etc.
* Several measures to enforce the use of zebra crossings by the pedestrians should be initiated and motorists have to be told to give right of way to pedestrians. There is a need to enforce a sence of discipline on the pedestrians.

The Govt. of India and State Govts. have undertaken the programmes of road safety. Some progress has been achieved and the rate of accidents has started slowing down during the last couple of years. The objective is to reduce the number of fatalities to 25,000 and the number of accidents to be brought down to 2 lakhs per year by the year 2000. It is certain that with the active involvement of the public this target can be achieved.

Safety while Handling Chemical Agents

Many pesticides and herbicides are being used in farming operations to improve the fertility of the soil. The chemicals though used for a good cause can become dangerous. The operator must be fully aware of the dangers involved and of safety measures. Simple basic rules are :

* Read the label and follow the directions on the label.
* One must know the contents of container, what it is for, how to use it safely, what equipment may be needed, how to store it, how to dispose of the unused portions and the container, and what to do if toxic chemicals get on or in the body.
* Use only the amount recommended on the label.
* Use special protective devices during operation.
* Avoid contact or inhalation, while using these chemicals.
* After the use of chemicals wash your hands, wear separate clothes when using chemical spray, change these clothes before return to your home.
* Chemicals should be stored in the original or approved container, label intact in a suitable storage area beyond the access and ingenuity of children and unauthorised persons.

* Unused chemicals and empty containers of chemicals should be buried. Burial is the best method to dispose of toxic material. These should not be burned since they might give off harmful fumes, leaves poisonous ashes, cause intense fire.

* Toxic chemicals should never be poured on the ground or into a stream.

Occupational Safeguards

Occupational injuries are common in most industrial establishments resulting from accidents that occur either due to carelessness or because of unprotected machinery. Protection of the industrial worker from adverse health effects resulting from his work environment can be done through personal protection by the workers, control and safety measures undertaken by the industrial management and also through workers education.

Personal protection is used to safeguard workers from contact with harmful agents and includes protective clothing as well as equipments like eye and hearing protectors and respirators. Protective clothing includes boots, gloves which need to be worn by the workers while handling a wide range of substances.

A safe work environment can be achieved by:

* Elimination or reduction of risk.

* Total enclosure processes which can ensure that the workers do not come in contact with toxic materials.

* Segregation of a process by isolating hazardous jobs from the rest of the production line.

* Suppression of dusts by water sprays and wetting agents.

None of these measures can be totally successful unless occupational health education is imparted to workers. Hence all industrial set-ups should provide occupational health services and education.

These are but a few situations. There are many more areas that require attention for safety measures in our day-to-day social interaction, changing lifestyle and developing technology. The desired results cannot be achieved without the involvement of the people who need to be enlightened through information and education about the importance of safety in life and about what can be done to improve it. The leaders in health, both medical and paramedical, need to work with people, accepting them as partners.

—M.S.Dhillon

A universal problem

It was long believed, and still is believed by some, that accidents occur only in developed countries, being the price that has to be paid for industrialization, technology, urbanization and motorization. This is not true. In the developing countries, accidents are perhaps just as common, and their consequences are often more serious.

—C.J. Romer & M. Manciaux. *Accidents in childhood and adolescence: the role of research*, Geneva, World Health Organization, 1991, p. 1.

PHYSICAL VIOLENCE AND HEALTH —An Area of Growing Concern

DR A.C. URMIL DR P.A. SOMAIYA DR A.C. MAGDUM

Throughout the 20th century, the physical violence has been a cause of major concern. It is a paradox that despite the bitter experience of two world wars—and experience of nuclear and chemical warfare first time in human history—no lessons have been learnt to prevent these self-created catastrophes. The potential threat of future large-scale wars still looms large. And violence has already gripped many countries, including ours. Its ill-effects are being felt in all spheres of life, including health.

"The seventeenth century has been called the Age of Enlightenment; the eighteenth, the Age of Reason; the nineteenth, the Age of progress and the twentieth, the Age of Anxiety. Although the path to a meaningful and satisfying way of life has probably never been an easy one, it seems to have become increasingly difficult in modern times".

—James C. Coleman in *"Abnormal Psychology and Modern Life".*

Physical Violence : Present Concern

ALTHOUGH the dictionary meaning of the word "Violence" is "Swift and intense force; injury", the term is now used in a broader sense in physical, mental (psychological) and social contexts. Unlike negligence which is regarded as an act of "Omission", violence is regarded as an act of "Commission". It has its wide repercussions on all aspects of life, including health of the people, actively or passively involved in it. For example during riots, not only the active participants or propagators suffer from injuries and may succumb but even the non-participants, the accidental victims, meet the same fate. Besides disrupting the social life, it imposes a tremendous load on existing medical and health services, too. It diverts, for example, the existing hospital services for tackling the medical emergencies consequent on it, thus depriving the other needy persons of these facilities particularly when curfew continues to be imposed for long durations as a precautionary measure. Special "high risk" groups, *e.g.,* seriously/critically ill individuals and those in need of urgent health care, have to unnecessarily suffer during such periods for no fault on their part.

Throughout the 20th century—the century of material progress as well as of social turmoil—the physical violence has been a cause of major concern. It is a paradox that in spite of having the bitter experience of two World Wars—and experience of nuclear and chemical warfare first time in human history—no lessons have been learnt to prevent these self-created catastrophes. The potential threat of future large-scale wars still looms large and violence in its various forms has already gripped many countries of the world including ours, during the recent past. Its ill-effects are being increasingly felt in all spheres of life, including health. It is therefore not only appropriate but of crucial significance for the W H O to select "Handle Life with Care: Prevent Negligence and Violence" as the Slogan for the World Health Day to be observed on 7 April, 1993.

Vigilance: The Need of the Hour

The root cause behind large scale physical violence is the social discontentment/disharmony among various population groups/communities. Besides these, political rivalries, religious and ethnic conflicts have also been responsible for its genesis as is evident from the past and current global scenario in many parts of the world. Eruption of violence (date and time) remains unpredictable in most cases where it is of sudden onset, although in certain situations such as ongoing rivalry/conflict, it may be anticipated with high degree of certainty. However, in order to tackle the situation and its consequences effectively, adequate prior preparation on all fronts, including medical and health, is required. It therefore calls for keeping an adequate vigilance at all times and at all places, playing paticular attention to those areas/regions which have already been recognized as "Violence prone" in the light of past experience. It also calls for an effective monitoring/information system for timely warning to all concerned—including medical and health authorities—about its anticipated/actual eruption and

susbsequent progress. Police/ intelligence department should be competent to play this role and bear this responsibility. This is one area where inter-sectoral cooperation is of crucial importance.

Responsibility for Vigilance and Control

The reponsibility of vigilance and control lies with every individual, every community (political, religious, socio-economic etc), administrators (enforcers of law and order) and providers of medical and health care—governmental and non-governmental. The success to achieve this aim entirely depends upon proper understanding of one's role and devotion to duty and also upon intersectoral cooperation. Community leaders in various fields (politics, religion, etc) and all categories of prominent citizens whom the society respects (writers, poets, actors, artists, doctors, industrialists etc) can play a very vital role in preventing and controlling it and must come forward when situation calls for their help. Mass media (newspapers, T.V., radio, etc) should be fully utilized to make people change their mind and attitude and give up the idea of resort to violence. During actual period of disturbances such as riots, the safety of medical/ paramedical personnel and ambulances must be ensured through liaison with police/army authorities. Members of voluntary organizations/voluntary health workers can play a very crucial role in mitigating the human sufferings. They should, however, be easily recognized through separate uniform/cap/badge/rib and etc. People should be told well in advance (in case of anticipated violence) through mass media and after eruption of violence also through loudspeakers on police vans—whom to contact, how to contact and where to contact in case of an urgent help required.

Care and Management of Victims

It is indispensible to treat all kinds of violence as an emergency at par with "man-made disaster". Emergency first-aid arrangements and provision of ambulances should be made at suitable places preferably in consultation with police/military authorities detailed for violence control. The ideal would be to train in advance, the young people and mothers, in the art of first aid in violence prone areas. The victims in the violence affected area should be tackled by the medical/paramedical staff present there, according to priority when their number is large, following the "Principle of triage" as followed in respect of war/ disaster victims when mass casualties occur so that the loss of life could be minimised and complications prevented to the maximum possible extent. The hospital authorities should keep fully prepared to deal with large and unexpected number of casualties ensuring adequate accommodation, beds, equipment and medical stores, adequate manpower (doctors, nurses, X ray, laboratory and blood bank technicians, compounders, dressers, other administrative and general duty personnel), mortuary ambulance services and communication (telephone, telex, wireless etc). In case of any deficiency/constraints, higher authorities/voluntary organizations must be immediately approached for necessary help. A Control Room should also be opened to provide feeding of information to all concerned. In nutshell, the action plan for managing the casualties should be on the same lines as followed during a disaster.

Prevention of Physical Violence: Some Considerations

It is unfortunate that physical violence is becoming more prevalent in our society as one way of dealing with certain problems at various levels. The instinctual tendency of humans to aggress under frustration, disputes and arguments is evident everywhere. The seeds of violence are laid in early part of life when children are exposed to 3 key conditions which influence their level of aggressive potential and/or behaviour—their family, their peers and the broader socio-cultural environment. The parental models mainly influence during the early part of their development and the peer groups during adolescence. During recent years focus has been shifted to role of socio-cultural environment, particulalry mass media in development of aggressive behaviour. Violence has now become a standard fare in films, TV, newspapers and magazines to which youth are getting exposed more and more. "Children begin to absorb the lessons of TV before they can read or write————————. In a fundamental way, TV helps to create what children expect of themselves and others and what constitutes the standards of civilized society————————. Yet we daily permit our children during their formative years to enter a world————————of routine demonstrations of killing and maiming" according to National Commission on Causes and prevention of violence (45, 1969). These considerations bring out the importance of crucial role the parents, the peer groups and the mass media have to play in laying the seeds of non-violence in the minds of children from the very beginning. Children and

youth should be particularly motivated:—

A. To believe in the maxim "love one another" and other basic ethical tenets of the world's religious philosophies and a belief in the worth of an individual and of human survival.

B. To believe, in the present context, that recourse to violence of any kind is not the answer to sort out disputes of various nature, at various levels since violence is not only an anti-social but an inhuman act. History has made it amply clear that the final outcome of violence is always unpredictable. The need of the hour is therefore to settle all disputes and revalries in a peaceful manner, in a humane way, through talks/negotiations across the table, rather than resort to violence.

C. Not to fall prey to alcoholism which is also associated with automobile accidents and violence. In the USA, it was found associated with over 50% of all deaths and major injuries due to automobile accidents, about 50% all murders, 40% of all assaults, 35% or more of all rapes and 30% of all suicides. About 1 out of every 3 arrests in US results from abuse of alcohol. Due to rising trend of alcoholism among teenagers during 1970s, it was called the "teenage tragedy of the seventies".

Teachers' role is important in preaching non-violence to their students. They should however practise what they teach and never resort to violence in any form as punishment to a student at fault.

The United Nations observed 1986 as the International Year of Peace. There is a perpetual necessity of having similar campaigns and observe "International Year/Decade of Non-violence". Public opinion should also be mobilised through the UN in the endeavour to put an end to all types of conflicts, wars and building up of nuclear and biochemical arsenals. Lastly, it is worthwhile to recollect what late John F Kennedy had to say in this respect————————. "Each man can make a difference, and each man should try". □

Message from Dr Hiroshi Nakajima Director-General of the World Health Organization on World Health Day 1993

At least three and a half million people on our planet die every year as a result of injury caused by violence, accidental or intentional.

Whether on the roads, at home, at work or at play, the risks of injury to individuals have been neglected for too long, and the need to reduce them has so far received little public attention.

Today, public health is improving in many countries, and life expectancy of birth is increasing everywhere. Therefore, it is less acceptable than ever that so many people should meet a violent and premature death, or that millions of others should become permanently handicapped.

More than half of deaths of young people are due to injuries, and injuries represent the main cause of potential years of life lost.

As a result of negligence, indifference or foul play, millions of people each year require medical care after accidents or acts of physical violence.

At a time when economic crises are jeopardizing efforts to improve the health of mankind, injuries of all kinds cost the world community almost US$500 thousand million a year in medical care and lost productivity.

In devoting World Health Day 1993 to the prevention of accidents and injuries, the World Health Organization wishes to draw attention to the sometimes disastrous consequences for individuals and society of accidents and acts of physical violence, which very often can be prevented.

It is time to show that in contemporary society safety is a matter of individual and collective responsibility. Far from being a marginal concern, it should form an integral part of health promotion policies.

Leading a healthy life, only to lose it through carelessness, is a tragic waste. Accidents and acts of violence happen easily, and not just to other people. The safety of each is the responsibility of all.

"Handle life with care; prevent violence and negligence"

ROAD ACCIDENTS

MAXWELL PEREIRA

More than 60,000 human lives are lost in road accidents each year.....The economic cost of a fatal accident is Rs. 2 lakhs, that of an injury accidents Rs. 1 lakh and the average cost of a minor non-injury accident, Rs. 3,000. This shows the kind of economic loss we are confronted with on account of road accidents each year.

THE traffic accident has come to be considered as among the deadliest of killer diseases. This disease is a problem that the motor age has created and we are sluggish in our attitude to adapt ourselves to the hazards of the motor vehicle as compared to our concern and adaptability to the maladies attached to other killer diseases.

The problem of traffic accidents is more acute in developing countries. Thus in respect of safety on roads, our own country's position is far from satisfactory. More than 60,000 human lives are lost in road accidents each year. In a study conducted in 1990 for the Planning Commission, the economic cost of a fatal accident has been placed at Rs. 2 lakhs, that of an injury accident at Rs. 1 lakh and the average cost of a minor non-injury accident, at Rs. 3,000. This should give us an idea of what kind of economic loss we are confronted with on account of road accidents each year.

Cities are accident-infested areas with high-risk of involvement in some sort of accident or the other. Though only about 20 to 25% of the population of the country lives in urban area, about 75% of accidents occur in cities and towns. The big cities of our country, thus contribute the major share in road accidents. The reasons for such high rate of accidents are many,———including urbanisation, economic growth, tremendous vehicular growth, traffic congestion, poor and inadequate enforcement of traffic rules, lack of road safety sense and so on.

The phenomenal increase in the two-wheeler traffic in the last decade, the inadequacy of a mass rapid transport system, a greater complexity and heterogenity of vehicular traffic among various other factors, have all contributed to push up the number of accidents in our country. Despite the steady toll on death and injury on our roads, it often appears that most people are apathetic, often feeling that such tragedies cannot be prevented. But they can be. The problem of road safety in our country has not been approached with the same urgency and earnestness as in the more affluent countries. This, due to the fact that our limited national resources have commanded higher priorities for economic development as compared to social requirement.

Road Safety Education

Most drivers in our country, irrespective of the vehicle mode, have invariably taken to reckless driving, with blatant disregard to behavioural norms such as signalling when changing traffic lanes, yielding the right of way to fellow drivers, and of displaying normal courtesy to others on the road. These are all factors that tend to cause road accidents. Lastly, the prevention of road accidents in any given city directly depends on the knowledge of its road users. Thus road safety education is an area that assumes paramount importance. The quality of road users produced, directly depends on the quality of traffic education that the user has been exposed to. One would normally expect that a person who has secured a driving license would do so after being fully conversant with the road rules and regulations and road safety norms. This, however, is a negative fact. In a recent survey conducted by the Delhi Traffic Police, the parents of school children visiting the school fete were subjected to a traffic knowledge quiz. While most children of the same school, because of their interaction with road safety officers, could secure more than 40% marks in the quiz, not more than two of the parents from among the 170 tested could secure above 40%. The driver licensing procedure, as such leaves, much to be desired.

Accidents today are among the leading causes of deaths in our country. There are many causative factors involved in road traffic accidents which makes it difficult to assess accurately the effectiveness of any particular preventive

measure directed specifically against one of them. Improved performance by road users would probably be the most important factor in accident prevention. Proper maintenance of a motor vehicle is the responsibility of the owner of the vehicle and would be a factor in reducing road traffic accidents. Efficient accident services, if promptly available, would save lives and more frequently, may prevent the worsening of injuries received in road accidents. Modern accident surgery can make a valuable contribution to reducing fatalities, as prompt and efficient treatment by an experienced surgical team considerably increases the patient's chances of recovery in many cases and shortens the period of incapacity in most others.

Active Coordination

The prevention of mortality and injury in road accidents is essentially a public health problem. Public conscience should be developed to make every individual automatically think preventively above road accidents. The multiplicity of circumstantial and environmental factors concerned in the causation of accidents suggests a need for multiple preventive measures. Preventive action involves the co-operation of experts in many fields—town planners, traffic engineers, medical practitioners, teachers, police officers, publicity experts, media persons, automobile manufacturers and representatives of the public as road users, etc. Thus there is need for more active co-ordination.

Education in road safety measures offers one of the most promising possibilities for accident prevention. Road safety education is of paramount importance in today's context. It is essential that public opinion should hold widely and strongly to the view that safety is more important than speed or added convenience. When it is safety versus convenience, we should learn to put safety first, even at the cost of convenience. The strengthening of public opinion in the direction of safety needs to be pressed, and pressed continuously. The creation and development of a social climate which is conducive to the cultivation of good and sound manners should be a natural effort for a cultured community of mature citizens. Good manners are life-savers on the road.

Message from Dr U Ko Ko Regional Director WHO South-East Asia Region on World Health Day 1993

In the long struggle for survival, humankind has successfully overcome formidable odds. Though disease, hunger, strife, natural and man-made calamities have made the road to progress rough and uncertain, much has been achieved on several fronts.

Undeniably, life expectancy is now better than ever before but what merits serious consideration is the avoidable suffering and deaths due to accidents and violence.

It is indeed a sad paradox of modern-day life that, while on one hand, breakthroughs in health science have made it possible for people to live longer and healthier lives, on the other, this very life preserved and protected at such cost, is cut short by accidents or violence—at home, at work, on the road or at play. Millions become partially or fully handicapped as a result. What is even more tragic is that more than half of deaths of young people are due to injuries. Contrary to general assumptions, accidents have now become a leading cause of morbidity and mortality in developing countries as well.

It is therefore most appropriate that this year's World Health Day theme focusses attention on the threat to health and life itself from injuries and violence and the urgent need for preventive measures. As the WHO Director-General, Dr Hiroshi Nakajima, has said, "leading a healthy life, only to lose it through carelessness, is a tragic waste. Accidents and acts of violence happen easily, and not just to other people. The safety of each, is the responsibility of all."

It is sincerely hoped that World Health Day this year will lead to greater attention being paid on how we can better handle life with care by preventing violence and negligence.

Road Safety

Action to reduce road casualties

IAN JOHNSTON

Progress in road safety is reviewed with particular reference to radical measures that have proved beneficial in Australia. Community involvement in decision-making is vital if gains are to be made and sustained in this field.

THE casualty rate per unit distance of road travel indicates how safely a road transport system operates. Fig. 1 shows the records of four countries in this matter between 1965 and 1987. All of these countries now have much the same level of safety—between 1.5 and 2 deaths per 100 million vehicle-kilometres—despite very different safety programmes. This indicates that the precise nature of the action taken is less important than its amount, provided that the individual measures are selected scientifically. It should also be noted that these countries formerly differed greatly in their levels of road safety, Australia and Japan having undergone particularly rapid improvement in this respect.

With regard to the number of casualties per head of population, which indicates the level of personal risk, the rate of improvement has been comparatively slow (Fig. 2). Furthermore, Japan and the United Kingdom present a much more favourable picture than Australia and the USA. The explanation, of course, is in the very different levels of motorization (Fig. 3). Clearly, for countries with similar safety per unit distance of travel, the number of casualties per head of population will vary with the volume of travel. This is often overlooked in the road safety debate, particularly when international comparisons are being made. It should be borne in mind that the mobility provided by road transport has danger as a by-product, which has major implications for strategic planning.

Government intervention

Why do most highly motorized countries have remarkably similar levels of safety per unit distance of travel? As a country motorizes it gradually improves its infrastructure to cope with additional traffic.

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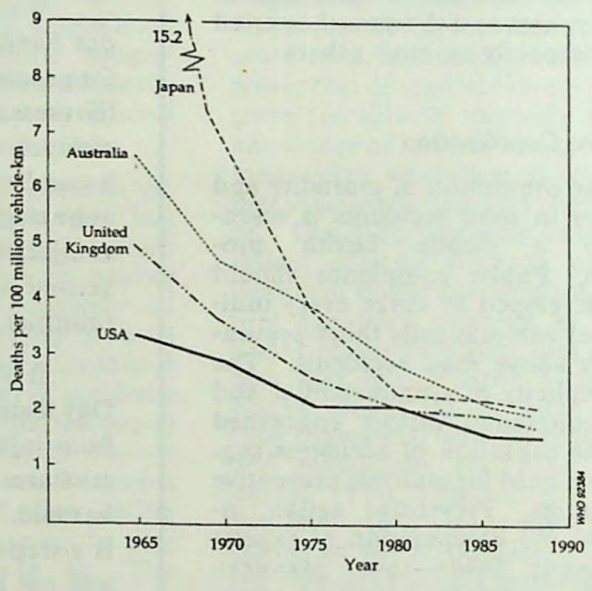
Fig. 1. Deaths per 100 million vehicle-kilometres, 1965-1987



The vehicle industry matures and the quality of its products improves; the mechanisms for controlling traffic flow develop and the behaviour of road users becomes safer.

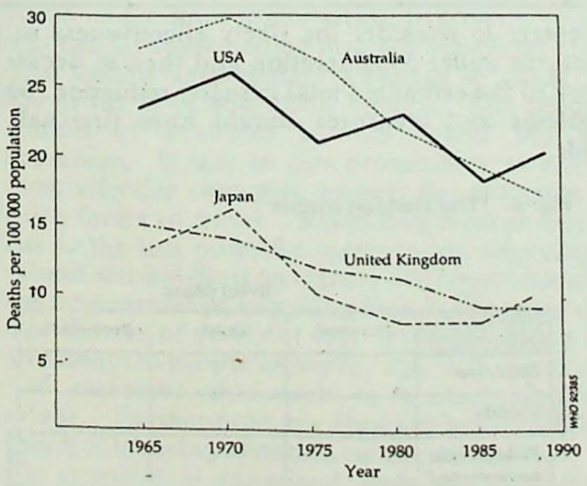
Much of the advance is safety has come from general improvements in road transport systems, specific measures having given additional gains. Such measures have to be tailored to each country's problems. In Australia, nearly 70% of the people who becomes casualties in road accidents are vehicle occupants, whereas in the United Kingdom the corresponding figure is just over 40% and in India it is only 5%; consequently, measures directed at the protection of occupants can be expected to have impacts on overall safety which differ considerably between these countries.

In Australia there has been a tendency for direct government intervention to control individual behaviour on the roads. The success of this approach is partly attributable to the powers held by the State governments in matters relating to road transport. Almost all of the country's major interventions commenced in one State and were later adapted by the others once success had been demonstrated. Most of these measures originated in Victoria, where an all-party parliamentary committee on road safety, established in the 1960s, paved the way for what many people consider to have been quite draconian measures.

There are two particularly effective road safety strategies. One is to seek to reduce levels of injury by means of protective devices. The other is to reduce the frequency of the forms of travel with the highest degrees of risk. Both require legislation and enforcement. In Australia, legislation on self-protection began in 1961 when Victoria made it compulsory for motorcyclists to wear crash helmets. The compulsory wearing of seat belts was introduced in Victoria in 1970 and in 1990 the same State introduced the compulsory wearing of helmets by cyclists. Victoria set a limit of 50 mg/100 ml for blood alcohol in 1966, required a blood sample to be obtained from every accident victim taken to hospital as from 1974, and introduced random breath testing in 1976. In 1984 Victoria introduced a zero blood alcohol limit for drivers with an initial, probationary licence. Learner motorcyclists are restricted to machines with an engine capacity of 250 cc or less, research having demonstrated that this category of road user has an especially high risk of crashing on powerful motorcycles.

Where improved behaviour is needed the authorities should promote it by every possible means.

Fig. 2. Deaths per 100,000 population, 1965-1988



Why have other countries with similar legislation not had the same success as Australia? And why do Australians tolerate a high level of government intervention? In Australia the public receive unambiguous messages. Thus in 1970 it was laid down that in all seating positions for which a belt was available it had to be worn. Even today there are very few countries in Europe which require seat belts to be worn in rear seating positions. In some countries, seat belts have to be worn only on high-speed roads. The clearer and simpler the message sent by governments, the higher is the probability of compliance.

Random breath testing, when introduced in Victoria, was not successful. It was not until several years later in New South Wales that legislation on random breath testing became effective. Random testing being a controversial issue, Victoria had proceeded too cautiously with only a low level of enforcement.

The public debate surrounding the introduction of random testing legislation led to a short-term reduction in alcohol-related crashes as motorists overestimated their chances of being apprehended. Within about six months this effect disappeared. The authorities then embarked on evaluation programmes. In 1978 and 1979 the Melbourne police conducted intensive random testing on a rotational basis in the four sectors into which the city was divided. Alcohol-related crashes were reduced only during and for two to three weeks immediately after testing. What mattered was not the actual experience of providing a breath sample but the intensity and visibility of enforcement. At a time when casualties in New South Wales were especially high, intensive random breath testing was introduced: a million people are tested annually in a population of just under three million licensed drivers, and the frequency of alcohol-related crashes has fallen markedly.

As regards the acceptance of so much government intervention, the explanation lies in the fact that legislative action is but one link in an integrated chain of measures. Let us consider Victoria's legislation requiring cyclists to wear approved helmets. Although it was introduced in 1990 the story begins in 1983. Most of the cyclists who suffered injury or death on the roads were children, and among the most serious casualties about three-quarters were found to have significant head injuries. However, a roadside survey revealed that less than 4% of child cyclists and only 15% of adult cyclists wore helmets. Few people accepted that helmets were necessary or effective and the available helmets were expensive, uncomfortable, inconvenient and unattractive.

A major educational campaign was conducted over five years. A concerted effort was made to get schools both to encourage the wearing of helmets and to provide secure storage for them. Publicity on

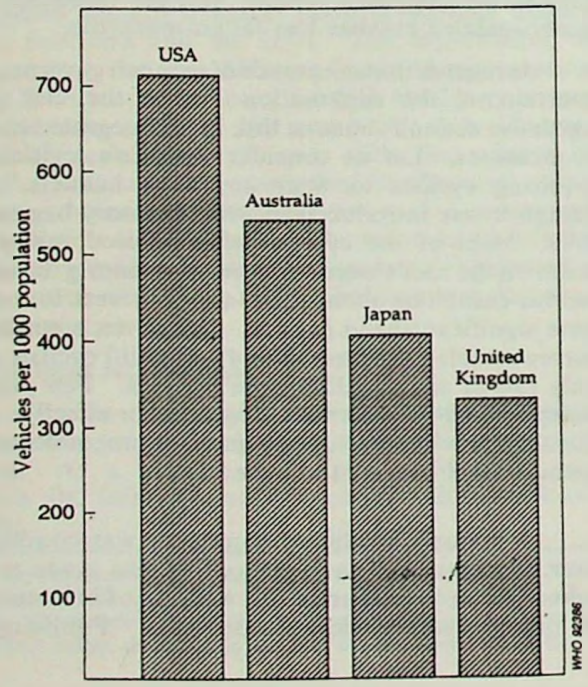
television and radio was directed principally at parents, they being in the best position to influence children's behaviour. Victoria implemented a rebate scheme whereby the purchaser of a helmet could get a 25% rebate from the government. Within about three years, roadside surveys revealed that the wearing of helmets had risen dramatically. For young children the wearing rate between home and school exceeded 50%; for older children it was about 20% and for adult commuters it was about 40%. Two years later, even though the intensity of the educational effort had been maintained, the wearing rates had not improved, suggesting that no further progress could be achieved voluntarily.

A further significant development helped to pave the way for the legislation. The major obstacle to helmet wearing, shown by market surveys, was that the helmets were heavy, hot and unattractive. The enormous increases in wearing rates generated by the educational campaign created an expanding market which led manufacturers to redesign helmets so as to improve their competitive position.

When the legislation was introduced there had been five years of intense educational effort. This had led the public to recognize the value of helmets in reducing injury, had brought to the market a range of helmets acceptable to the consumer, had reduced their cost, and had produced an atmosphere in which the majority of parents favoured the legislation because it simplified their own attempts to ensure that their children were adequately protected.

The success of the measures was due to the attention paid to inducing supportive social change. This

Fig. 3. Vehicles per 1000 population (circa 1985)



model is fairly typical of Australian road safety interventions. Legislation normally only follows educational efforts aimed at encouraging the desired behaviour and other efforts designed to remove obstacles to a sustained change in behaviour. The legislative approach has created a willingness among Australians to mandate self-protection and to limit the forms of travel carrying the highest risks.

Road safety strategies

Road safety did not come into its own until the late 1960s. Previously, separate authorities had been responsible for road building, traffic control, traffic law enforcement and public education. There was little integration of activity and no joint strategic planning.

William Haddon, the inaugural head of the Road Safety Agency in the USA, pointed out that road accidents were associated with numerous problems, each of which needed to be addressed separately *(1)*. He also demonstrated the value of comprehensive and reliable accident data systems. Without adequate data the problems and solutions can only be matters of speculation. If, on the other hand, reliable data are available, the problems become identifiable and sensible decisions can be made about the priorities to be given to them.

The importance of distinguishing between the magnitude of a problem and the level of risk involved is now understood. It is known, for example, that an inexperienced motorcyclist on a powerful motorcycle is about 20 times more likely to be killed in a crash than is the driver of a car. However, almost 70% of all crash casualties in Australia are car occupants, whereas less than 10% are motorcyclists. It is

It is necessary to increase community awareness of the key problems and to provide opportunities for wider participation in decision-making if road safety is to obtain an adequate share of resources.

necessary to consider the likely effectiveness of the measures under consideration and then to decide, in terms of the estimated total casualty reduction, which problems and measures should have first call on funds.

Fig. 4. The Haddon matrix

Event phase

Agent	Pre-crash	Crash	Post-crash
Road user			
Vehicle			
Road/traffic environment			

WHO 92387

The Haddon matrix (Fig. 4) indicates all the options available for dealing with any particular safety problem. Let us examine the question of crashes involving vehicles running into roadside power poles. In Australia this type of crash accounts for about 10% of deaths in urban areas. Let us look initially at the road user in the pre-crash phase (see Fig. 4). How might such accidents be prevented through behaviour change? Most of them involve skidding, so it might be advantageous to have a training programme in which people are taught how to correct a skid. Such training is unlikely to be completely successful, but injuries might be reduced further if legislation is passed requiring the wearing of seat belts. In the post-crash phase, if most of the population has had first-aid training it might be possible to keep accident victims alive until paramedical help arrives. Let us now look at vehicle-based measures. We might prevent crashes by fitting vehicles with anti-skid brakes. We might minimize injury by having collapsible steering columns. We might insist on burst-proof fuel tanks to prevent post-crash fires. As regards the road traffic environment, crashes might be prevented if road surfaces were skid-resistant; the severity of impacts could be reduced if frangible poles were used; and identifying numbers might be placed on poles so that a passer-by could indicate the exact location of a crash when telephoning for an ambulance. It is not difficult to devise two or three solutions for each cell in the matrix. This kind of approach brings discipline to the analysis of each identified safety problem. After the identification of potential solutions the likely effectiveness of each has to be assessed. This is a function not only of the value of the measures but also of the probability that they can be implemented in a given sociopolitical climate. A single measure should never be selected to deal with a problem; instead a package of measures should be chosen with the intention of implementing them in an integrated manner.

Haddon's matrix provides guidance on the fundamental strategies of accident prevention, injury reduction and enhanced post-crash treatment. Each strategy can be implemented through behaviour modification and/or environmental change to either the vehicle or the road and traffic system. The conceptualization of strategies is very useful but has shortcomings. It fails to give prominence to one of the most effective strategies, namely the reduction of high-risk forms of travel. Restricting learner motorcyclists to the less powerful motorcycles, imposing a zero blood alcohol limit on learner drivers, prohibiting cyclists on motorways, imposing high fuel taxes to discourage the use of powerful cars, and prohibiting the sale of alcohol to people under the age of 21, are examples of measures that seek to control high-risk behaviour. Furthermore, the Haddon matrix has the drawback of focusing attention on the micro level. A specific problem is examined, only the immediate causes are considered, and an attempt is made to identify potential solutions. It is relatively uncommon for the broad picture of safety to be critically analysed, something that has become urgently necessary. As previously indicated, most motorized countries have achieved roughly the same level of safety in the operation of their road transport systems. Road infrastructures are now mature in these countries. At the same time an anti-car movement has developed in response to congestion on the roads and to the emission of greenhouse gases. These questions are constraining investment in road infrastructures but seem to be having little effect on the growth in traffic. In Australia the number of cars in use continues to grow at around 3% per annum, while the number of lorries grows

We are beginning to recognize that road safety does not exist in a vacuum and that pressures against it have to be countered.

at more than double that rate. A 30% reduction in the death rate per 100 million vehicle-kilometres is needed in Australia just to hold the total number of deaths in the year 2000 at today's level.

Safety and environmental goals are sometimes in conflict. In order to reduce greenhouse gas emissions and to conserve fuel, smaller cars are coming to the fore. In the USA it has been estimated that an improvement of a mile per gallon (35 km/100 l) in fuel efficiency resulting from the use of smaller vehicles translates into a 4% increase in the death rate per vehicle. It is often suggested that the compulsory use of car lights during daytime would improve safety, yet such a move would run counter to the aims of fuel efficiency and restriction of greenhouse gas emission.

As motorization proceeded, advances in safety were derived in considerable measure from steady improvements in road and traffic systems. Today, governments consider that it is no longer feasible to match demand by increasing supply, and are talking about restricting demand in accordance with the

Independent bodies could be established to conduct regular safety audits of the institutions involved in road construction, traffic management, traffic law enforcement, land-use planning, public health and education.

availability of road space. Road pricing is the new hope for combating congestion. However, little is known about the impacts on safety of the broader transport decisions taken with a view to environmental protection or the better management of mobility requirements.

New trends

Strategic planning for road safety at the macro level is beginning to take its place in Australia. New

Zealand, the USA and many European countries *(2—7)*. While this is a good trend, such plans must not be accepted uncritically. Some of the strategic plans that have been produced have had the following disappointing aspects.

- While most plans make passing reference to the need for trade-off decisions to balance safety, mobility and environmental objectives, none considers these issues in detail.

- Some plans propose numerous specific measures without considering the barriers to implementation or how they might be overcome. In the European Community, for example, differences in practices between Member States create a major difficulty in the way of harmonization. It is important that harmonization should not result in acceptance of the lowest common denominator.

- In the United Kingdom it has been proposed that, wherever possible, the strategy should avoid legislative controls on people *(5)*. Yet if the Australian experience has any single message it is that legislative interventions can be both successful and widely accepted without any perceived loss of freedoms.

- Reference is made in several strategic plans to involvement of the community and consultation with affected institutions and organizations. To be effective, consultation and institutional integration should be accompanied by the acceptance of meaningful accountability for the achievement of goals. In New Zealand, a country with under four million people, no fewer than 28 public and 45 non-governmental agencies were identified as essential to the networking process, yet there was no discussion as to how each could become accountable for its contribution *(6)*.

- There is a tendency to place the onus for safety on the individual road user. Of course, the individual's behaviour is a critical determinant of her or his safety, and communal behaviour likewise has a vital influence on the community's safety. However, it is not acceptable that governments should absolve themselves of responsibility. Where improved behaviour is needed the authorities should promote it by every possible means.

- In general the widespread use of cost-benefit analysis in decision-making is to be applauded. However, it is important to see things in their true perspective. It is preferable to spend a sum of money on a major problem with a cost-benefit return of 2 to 1 than on a minor problem with a cost-benefit return of 20 to 1. Furthermore, a slavish adherence to cost-benefit analysis tends to inhibit the testing of innovative solutions.

Despite the above concerns, the strategic plans undoubtedly hold promise of progress, as outlined below.

- There is a clear recognition that the political and community profile of road safety should be raised. It is necessary to increase community awareness of the key problems and to provide opportunities for wider participation in decision-making if road safety is to obtain an adequate share of resources and if governments are to be encouraged to take difficult decisions.

- There is a public acknowledgement of the need for integrated efforts across traditional institutional boundaries. Although there seems to be no clear plan for implementing institutional accountability, hopeful signs exist. It has been suggested, for example, that there should be routine independent safety audits of road networks. This would bring accountability to the authorities responsible for road construction and maintenance. Another possibility would be to require safety impact statements in respect of major decisions on land-use planning and liquor licensing. It is now recognized that institutional fragmentation of responsibility has been the largest single barrier to progress in the safety field. Integration, cooperation and consultation are excellent first steps but may come to nothing if true institutional accountability is not achieved.

- Formal targets are being set as part of the new approach to planning. In the United Kingdom the goal is to reduce the number of casualties by a third by the year 2000 *(5)*. The European Community seeks to reduce the number of serious casualties by 20-30% by the same date *(4)*. In Australia, Victoria has set itself a target of a 30% reduction *(2)* and New South Wales aims to achieve a 25% reduction *(3)*, again by the year 2000. All of these targets have been expressed in terms of absolute numbers of deaths and serious injuries, which is what the public is most interested in. However, in the USA the target is given as a reduction in the fatality rate per 100 million vehicle-miles *(7)*; in other words, mobility is put first and the aim is to have the safest possible transport system on that basis. The Europeans, in contrast, are talking about limiting mobility as a means of improving safety. Target-setting is the first step towards achieving accountability. Thus in the United Kingdom the Department of Transport has to submit an annual report on progress in achieving the targets that have been laid down *(8)*. At present the institutions setting targets in various countries

(Contd. on page 76)

INDUSTRIAL ACCIDENTS —THEIR IMPACT ON PHYSICAL AND MENTAL HEALTH OF THE PEOPLE

Dr (Mrs) Rekha Thakre & Dr A. L. Aggarwal

The adverse health effects of industrialisation range from those caused by relatively high exposure of small populations within particular factories to those of the general public usually lower levels of exposure. The hazards can be acute or chronic depending on the levels of exposure and duration for which the humans are subjected. During accidental incidents the toxic containments are released in large quantities and the effects are drastic and instantaneous.

INDUSTRIALISATION has made many positive contributions to health, among them increased personal income, greater social wealth and improved services particularly transport and communication. But industrial activities carry the inherent risk of adverse health consequences for the workforce and the general population, either directly, through exposure to harmful agents or practices, or indirectly through environmental degradation. Industrial emissions and products also threaten the global environment.

The term industry covers a great range of activities, each with the potential to affect the health of workers, their families and the wider public. The industries can be classified according to the production capacity, processes involved or workforce involved. As per the international norms the classification of industries is shown in the *Table*-1.

Industrial Activities and Health Hazards

The health hazards associated with industrialization include not only those of the production process but also those of the raw materials, fuels and wastes as they are obtained, transported, handled and the effects on the health of the products and wastes.

The adverse health effects range from those caused by relatively high exposures of small populations within particular factories (or parts of factories) to those of the general public usually, lower levels of exposure. The hazards can be acute or chronic depending on the levels of exposure and duration for which the humans are subjected. During accidental incidents the toxic containments are released in large quantities and the effects are drastic and instantaneous.

Occupational Exposures

At the workplace, a variety of factors influence the level of risk for the working population.

Estimates based on the current occupation injury rates in a number of countries suggest that there are 32.7 million occupational disorders per year and 146,000 deaths (WHO 1990). Although no global estimate can be made at present, the prevalence of some common occupational diseases among exposed population is indicated in *Table*-2.

Accidental Releases

Accidental releases of toxic substances often result in health risks both at the workplace and in the wider environment. The industrial accident at Bhopal, methylisocynate emitted from Union Carbide Plant caused several thousand deaths and over fifty thousand injuries is one of the best known example (Rosencranz 1988). The accidental causes are not only restricted to accidental release of toxic chemicals in factories but also during the transport of the chemicals, while they are being stored as a result of explosion, fires, collision or human sabotage.

Toxic Chemicals and Hazardous waste

Certain industrial and institutional wastes are very deleterious and harmful to human beings and hence are categorised as hazardous and toxic. Special care is needed for their storage and disposal to ensure that they are isolated from human contact. Their storage and handling requires utmost precautionary measures to prevent them from contaminating the human environment. Most toxic wastes

TABLE : 1

Classification of Industries

Industry	Examples	Total workforce per ha	Nuisance produced		
			Air Pollution	Noise	Hazards
1. Heavy industry	Oil refineries, chemical works, fertilizers industries, metallurgical & seaport industries, nuclear reactors.	< 25	May be great SO_2, H_2S, H_2SO_4, HC, NH_3, SPM	Moderate	Explosion and fire risks
2. Heavy industry	Machine manufacturing, steel mills, ship building, big harbour industries, power stations, pulp & paper mills	50	May be rather less: CO, SO_2, CL_2, H_2S, Mercaptans, SPM	May be considerable includes traffic noise	Explosion & fire risk
3. Medium Heavy industry with air pollution	Manufacture of straw board, artificial fibres, ceramic products, glass industry, cement works, manufacture of cars, lamps, foods & textiles	100—200	Comparitively not much SO_2, HF, Cl_2, SPM, may include malodorous emissions	Considerable traffic noise	fire risk
4. Light industry	Tanneries, textiles & food processing industry	50—100	Not much but may include malodorous emissions	Moderate	fire risk
5. Service industry	Printing works, bakeries, film laboratories	10—50	Little	None	None
6. Work-shops, handicrafts	Fashion studio, photo printing shops, potteries	1—10	None	None	None

come from the chemical industry but other industries *viz.*, metal, petroleum, transport, pulp and paper mills, leather and tanning industries also produce significant quantities of hazardous waste.

The nature of hazardous wastes varies considerably depending on the origin and chemical constituents. The degree of toxicity is governed by the physical states they are being handled, the gaseous phase is the most toxic while solid phase comparatively is less. Some wastes are inflammable, as are many solvents used in chemical industry, some are highly reactive and explode or generate toxic gases on contact with water specially, water vapour in the ambient air or other chemicals. Some wastes are highly toxic, for instance cyanide, arsenic and many heavy metal compounds and many are carcinogenic, *i.e.*, potentially Cancer-producing.

Examples of careless disposal of industrial wastes with adverse impact on biosystem including humans are found all over the world. The discharge of mercury contaminated wastes into water, received much publicity through the hundreds of deaths and thousands of cases of disablement it caused at Minamata, Japan. Minamata disease is a chronic neurological disorder caused by methyl mercury. The disease first broke out around Minamata Bay in South-West Japan and was officially attributed by the Japanese Govt. to methyl mercury in 1968. Mercury oxide was used in the production of acetaldehyde by Chisso Co. and discharged in the plant's waste water as organic mercury. It was biologically concentrated in fish and shellfish consumed by people. Patients recorded in accordance with the Japanese Pollution Related Health Damage Compensation Law as suffering from Minamata disease tptalled 2248 around Minamata Bay as of March 1990. Of these, 1004 had died by that date (Our Planet Our Health 1992).

The industrial accidents occur at one corner of the world and its impacts are felt thousands of miles away.

Another example of industrial accident which is fresh in our minds is the Cheronobyl disaster. There is always a potential threat in certain industrial processes and a little act of careless ness can result in tremendous loss

of humans and other living components of ecosystem both instantly due to high levels of exposures and chronic due to cumulative effect of the pollutants recurring after certain lapse of time.

Health hazards can also arise from inadequate attention to the safe disposal of equipment containing dangerous materials, such as, polychlorinated biphenyls in transformers and heavy metals in batteries. An extreme example of this was recorded in Goiania, Brazil, when an abandoned cancer therapy machine was broken up and radioactive Caesium-137 was released. More than 240 people were contaminated, many died and those who survived will be at increased risk of developing cancer.

Once the industrial accident occurs and its impact is realised, the very opinion of general public to look to the industrial sectors get altered. This has been experienced in the recent soico-economic survey conducted by NEERI for establishing a new industrial unit in Haryana. The women folk and the old illiterate people strongly opposed to the new industrial activity saying that the offing chemical industry will result in accidents like Union Carbide at Bhopal and a constant feeling of danger will be looming in our hearts. Hence, the unit may not be allowed to come up. No one can deny the probability because to a certain extent this is true also.

How to avoid industrial accidents ?

It is essential to understand the root cause of the accidents if they are to be avoided. Industrial accidents are usually more common in countries with relatively small and undeveloped industrial base. The reasons can be enumerated as :

* Inadequate planning for safety
* Lack of skilled and experienced manpower to service and maintain industrial equipments
* Untrained plant operators

TABLE : 2

Industrial Diseases & Population Exposed : Global Estimates

Disease	% Population exposed
Silicosis	3.5—43.2
Coal Miners Pneumoconiasis	8.3—43.8
Byssinosis	5.0—30.0
Lead Poisoning	1.7—100
Mercury Poisoning	2.6—37.0
Noise induced hearing loss	1.7—17.0
Occupational Skin Disease	1.7—86.0
Low Back pain	2.0—5.0

These can be taken care of by the authorities by employing the proper personnel at least at the potentially accident prone points.

Risk evaluation

To avoid the industrial accidents before setting up a new industry, risks involved in each unit process have to be assessed critically and the industrial authorities should be fully aware of the immediate steps to be taken in case the accidents occur. The already existing industrial units and complexes should also evaluate the risks involved in the operational processes and be prepared for fighting the disaster, if it takes place.

Green belts

Development of the green belts around the industry is one of the best control measures to avoid the further spread of accidental releases directly affecting the innocent public residing in the vicinity of the establishment. Width of green belts should be evaluated scentifically and systematically taking into consideration the pollution strength of the source, prevailing meteorological conditions and selection of effective plant species and their plantation pattern.

Siting of the industries

The industrial activity should be planned away from the commercial and residential zones which will automatically reduce its adverse impacts. However, in most of the Indian cities there are no such well defined zoning and all types of activities are either centred at one place or diffused throughout the cities. Accidents take great tolls of human lives and natural and personal properties. We must understand the risks involved, the potential accidental sites, the impact it can exert and the strategy to be adopted immediately if the accident engulf inadvertantly. Thus, we can at least minimise the accidents frequency and the losses due to the aftermath of industrial accidents.

TABLE : 3

Industrial Emissions and Human Diseases

Chronic lung diseases	:	Silicosis, Asbestosis, Byssinosis
Kidney diseases	:	Cadmium, Mercury Pollution
Central Nervous System disorders	:	Organic solvents, Lead, Mercury, Manganese
Malignant diseases of different organs	:	Asbestos, Arsenic, Nickel, Aromatic amines, Benzene

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AIR POLLUTION: A SERIOUS HEALTH RISK IN CITIES —How to Prevent It

DR A. L. AGGARWAL, DR A. KUMAR AND MS P. S .RAO

The presence of substances in ambient air, which are generally resulting from anthropogenic activities, in sufficient concentration, over a sufficient time, interfere, under certain circumstances, significantly with comforts, health or welfare of human population living around. However, use of various control measures can avoid this if followed rigorously.

IN most of the major Indian cities air pollutants, *viz.*, Sulphurdioxide, Oxides of Nitrogen, Carbon monoxide, Hydrocarbons etc. are emitted from fuel burning in industrial, automobile and domestic/commercial sources. These pollutants and many others are toxic in nature and can impart serious health risk, if exposed over a prolonged period. However, their emissions can be effectively brought down by adopting various control measures.

General characteristics of the individual air pollutants, their sources, effect on human health and control are described below:

Gaseous Pollutants

1. *Sulphur-dioxide (SO_2):* It is a colourless gas with pungent odour, oxidises to form SO_3, which reacts with water to form Sulphuric acid. It is emitted from combustion of fossil fuels, smelting of Sulphur bearing metal ores and natural events such as volcanic eruptions. Its effect on health include aggravation of respiratory diseases like asthma, chronic bronchitis and emphysema, reduced lung function, irritation of eyes and respiratory tract. However, use of low sulphur fuels or scrubbing of fuel gases with lime or caustic, catalytic conversion etc. are the various options for its control.

2. *Oxides of Nitrogen (NO_x):* NO_2 is brownish red gas often formed from oxidation of nitric oxide (NO). Various sources of its emission include motor vehicle exhaust, high temperature stationary combustion, etc. Its major effect on health include aggravation of respiratory diseases, cardiovascular illness, and chronic nephritis. However, catalytic control of automobile exhaust gases, modification of automobile engines or scrubbing the fuel gases with caustic substances or urea can effectively bring down the emission levels.

3. *Carbon-monoxide (CO):* It is a colourless gas with strong chemical affinity for haemoglobin in blood. It is primarily emitted from incomplete combustion of fuels and other carbon containing substances such as in motor vehicles exhaust, natural events like forest fires or decomposition of organic matter. It can impart reduced tolerance for exercise, impairment of mental function and foetal development, aggravation of cardiovascular diseases. Various methods to control CO emission from automobile exhaust include modification of automobile engines (proper tuning), redesign of combustion chamber, control of exhaust gases through

improved catalytic or thermal devises etc. Improved design, proper operation and maintenance of stationary furnaces effectively bring down the levels of CO emissions from industrial sources.

4. *Hydrocarbons (HC):* These are emitted from incomplete combustion of organic fuels, processing, distribution and use of petroleum compounds, forest fires and in nature through plant metabolism. Its prolonged exposure may lead to cancerous growth. However, it can be controlled through proper tuning of automobile engines, crankcase ventillation, exhaust gas recirculation, redesign of combustion chamber and catalytic or thermal control of automobile exhaust gases. Operation and maintenance of stationary furnaces, improved control procedures in processing and handling of petroleum compounds are exercised to contain emissions from such sources.

Particulate matter

Suspended Particulate Matter (SPM): Though natural events such as wind erosion and volcanic eruption raise the background dust, the anthropogenic activities such as combustion of solid fuels from stationary sources and construction activities etc. cause SPM emission. The health effects of particulates are classified according to their size causing aggravation of diseases like asthama, cough and cardiorespiratory diseases. However, it can be conrolled by cleaning of fuel gases with inertial separator, fabric filter,

3.5 Million die yearly Not from disease but from injury

An estimated 3.5 million die yearly throughout the globe, the World Health Organization (WHO) says, not from disease but from injuries that are sustained through accidents and violence.

Equally tragic, just as many may be totally disabled, and as many as ten times more partially disabled, through loss of limb or eyesight.

A million deaths linked to injury are estimated to be caused intentionally. They are the results of suicides and homicides, but are also the products of violence manifested through battered children and spouses, rape, gang-warfare, and crime.

The other 2.5 million deaths are unintentional, resulting from accidents on the road, in the home, in the workplace, on the playing fields; from fires, drownings, poisonings, falls; and from natural disaster.

"Too often accidents are perceived as acts of fate, as something in the cards, as unavoidable. That is not so. Accidents are neither unforeseeable nor unpredictable. However, very little, or not enough, is done to prevent them," says Dr Claude Romer, chief of WHO's injury prevention unit.

The following are estimates of yearly deaths for the major causes of injury-linked mortality based on reports to WHO:

Intentional Deaths

- Developed World: Suicides, 200,000; homicides, 60,000.
- Developing World: Suicides, 550,000; homicides, 215,000. China and India, the two countries with the world's largest populations, account for 370,000 suicides and 50,000 homicides combined.

According to the latest statistics available in WHO, Hungary has the highest age-standardized rate for suicides, 48.4 per 100,000 males, and 14.6, females.

Unintentional Deaths

- Developed World: Motor vehicle accidents, 210,000; other accidents 380,000.
- Developing World: Motor vehicle accidents, 515,000; other accidents 1,370,000. An estimated 290,000 motor vehicle accidents took place in China and India; plus 740,000 other accidents.

Young and Elderly

The young and the elderly are most commonly the victims of injury-linked deaths.

In the industrialized world:

- Injuries now rank only after heart diseases and cancer, and far ahead of infectious and parasitic diseases, as a cause of mortality. They are the main cause of death among males up to age 44, and females to age 34.
- In the United States of America, for instance, 63 per cent of mortality between ages 15 and 24 and 40 per cent between ages 25 and 44 are caused by injury, according to the country's National Centre for Health Statistics.

Furthermore, motor vehicles account for 45 per cent of all U.S. childhood deaths between the ages of 10 and 14; drowning for 12 per cent; and homicides for 8 per cent.

As well, U.S. domestic accidents, namely poisoning and falls, alone account for three quarter of injuries sustained by those over age 65.

In the developing world:

- Deaths from injury, though still a small part of total mortality, are nonetheless on the rise. As communicable diseases come under control, deaths from injury are already beginning to rank among the five top killers.

Trends show that in virtually all countries, injuries figure among the leading public health problems.

Nine out of the top ten countries with the highest overall mortality rates report more deaths from injuries, poisonings and violence than from infectious and parasitic diseases.

The former Soviet Union, for instance reported 105.2 deaths per 100,000, population, adjusted for age, from injuries, and 18.2 from infectious diseases. —WHO

scrubbers or Electrostatic Precipitator and safe disposal of solid waste.

Ambient Air Concentrations (Annual Average) of SO_2 NO_x and SPM for various metropolitan cities like Bombay, Calcutta, Madras and New Delhi are given in Table.

TABLE
Ambient Air Quality Status of Four Indian Metropolitan Cities: 1990

Location/ Metropolitan Cities	Annual Avg. Pollutant Concentration (ug/m³)		
	SPM	SO_2	NO_x
Bombay	201	42	30
Delhi	469	29	47
Calcutta	369	48	39
Madras	105	12	15

Ref: NEERI Report; Air Quality Status of Ten Cities : 1990.

The best available method to minimise air pollutants emission are:

— Use of raw material and fuels of low air pollution potential and

— Proper design of process and burning equipment involved in handling and processing the burning materials. □

(Road Safety—*Contd. from page 70)*

are monitoring their own performance. It would clearly be preferable, however, for targets to be set for each institution and for independent audits of performance to be conducted.

- There is clear evidence of improvement in the utilization of limited resources and of more effective management and coordination of safety programmes. The critical factor in the long term will be the degree to which accountability can be placed upon each institution.

* * *

Hope comes from the growing frequency with which safety measures are being selected scientifically. We are beginning to recognize that road safety does not exist in a vacuum and that pressures against it have to be countered. There is widespread acceptance of the critical role played by diverse public and private institutions and of the need for institutional cooperation, programme integration, and genuine accountability for performance.

What else could be done to improve road safety?

- Vehicle manufacturers could instal speed-limiting devices, ignition interlocks to prevent drink-drivers from starting their vehicles, and better occupant protection systems.
- Independent bodies could be established to conduct regular safety audits of the activities of the institutions involved in road construction, traffic management, traffic law enforcement, land-use planning, public health and education. This would allow pressure to be applied for the achievement of targets and for proper attention to be paid to institutional obligations.
- A systematic long-term programme could be implemented with a view to changing social attitudes on car use.

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Courtesy: World Health Forum Vol. 13, 1992. □

EYE INJURIES
—Their Impact on Community

DR P. K. KHOSLA

Most eye injuries can be prevented by taking adequate and simple precautions. People must realise that nation spends a huge amount on the rehabilitation of blind persons. The society also has to share the loss of revenue from the special facilities given to the visually handicapped persons.

THE modern civilization has given us lot of comforts, but at the same time it has added various factors which expose the eye to injuries by gross or subtle phenomenon. Eye injuries constitute 5-10 per cent of all ophthalmic patients in developed countries. In our country, a survey done by NSPB-ICMR team had revealed that of a total of 9 million blind (in 1972-73), 1.25 per cent were suffering blindness due to eye injuries.

The upkeep of blind costs the government Rs. 75 per month at 1972-73 figure to which you can add 20 years of inflation.. Add to this the costs of economic loss in term of manpower lost and one can see the fortune lost. The approximate cost in terms of loss of production is calculated @ Rs. 5 per man-day.

It is in this context that one must understand the causes and implication as well as the preventive measures that must be taken.

The injuries to eye could be due to pressure called as concussional injuries or they could be due to penetration of eye tissues.

Causes

Causes of Eye Injuries can be classified into the following :

1. *Festival-related injuries :*

During Dussehra, we have bow and arrow injuries and cracker injuries while in the Holi season eye injuries due to water baloons is common.

2. *Injuries specific to rural set-up :*

During Farm-related accidents, leaves or other organic material while hitting the eye usually result in corneal ulcers.

Animal-related accidents : Eye injuries caused by bull horns and tail flick of an animal are common. Games like *gulli danda* are popular in the rural set-up and are common causes of injuries.

3. *Injuries related to household substances :* Mostly children get eye injuries while playing sharp edged objects with knives, scissors, compass, pins and other sharp-edged toys and objects.

4. *Injuries related to road accidents* are also common specially when glass splinters enter the eyes.

5. *Injuries related to various sports :* The sportsmen receive eye injuries from hockey, cricket, golf and squash balls, besides various types of raquet, darts, airgun, and boxing. Also photophthalmia in snow sports.

6. *Occupational injuries :* Ammonia burns in printers; corneal and intraocular foreign bodies in metal grinding, stone breaking, persons working with chisel and hammer; cataract in glass blowers; photophthalmia in welders, and chemical injuries in students and scientists working in laboratories.

7. *Injuries during fights :* The eye-injuries also occur during fights

with fists, knives, gun shots and other explosives used during war.

8. *Retinal burns* due to solar eclipse.

Mild degree of blunt injuries may cause redness and vague discomfort in the eye. Severe blunt trauma can cause swelling of lids and surrounding area and black discoloration of the same, redness due to blood below the conjunctiva or the front white portion of the eye. There could be blood in the anterior chamber, displacement of lens. Development of glaucoma (Kala Motia), blood in vitreous and retina along with detachment of retina. There may also be injury to the optic nerve.

Prevention

The most important aspect of these injuries is that most of them are easily preventable by taking adequate and simple precautions. Thus children should be allowed to play only with blunt objects and avoid bow and arrow, *gulli danda* and such activities. Welders and lathe workers should be told to use protective appropriate glasses. Chemical injuries should be immediately treated by washing with copious amounts of water till all irritation subsides. Sports injuries can be avoided by wearing protective head and eye gear. Proper illumination should be carried out in industries. Bold display of measures for eye protection in various industries on the floor level should be done.

Health education programmes should be launched.

All injuries must be immediately seen by a ophthalmologist. Adequate and timely surgery of the eye is important and can avoid problems in the other eye and the sight-saving for the same eye as well.

Rehabilitation

One must realise that nation spends a huge amount on the rehabilitation of the blind persons. The Government runs 150 vocational training centres, 23 special employment exchanges, 17 vocational rehabilitation centres, 11 District rehabilitation centres, 6 Institutions for women blind, 2 Industrial Homes, 1 home for aged and blind, 3 Braille and SPL equipment production centres, 6 Braille printing houses and many other such Institutions. Educational facilities have been provided for up to 7% of visually handicapped children as against 84% of normal children.

It is the duty of all Government and non-government agencies to carry out eye health education specially related to prevention of eye injuries and then we will be able to take care of the menace of blindness due to eye injuries. □

Shows close up view of a childs eye who got a perforating injury while playing with bow and arrows.

A case of concussional Trauma with subhyaloid haemorrhage.

A case of iron particle within the eyeball while the person was working with chisel and hammer.

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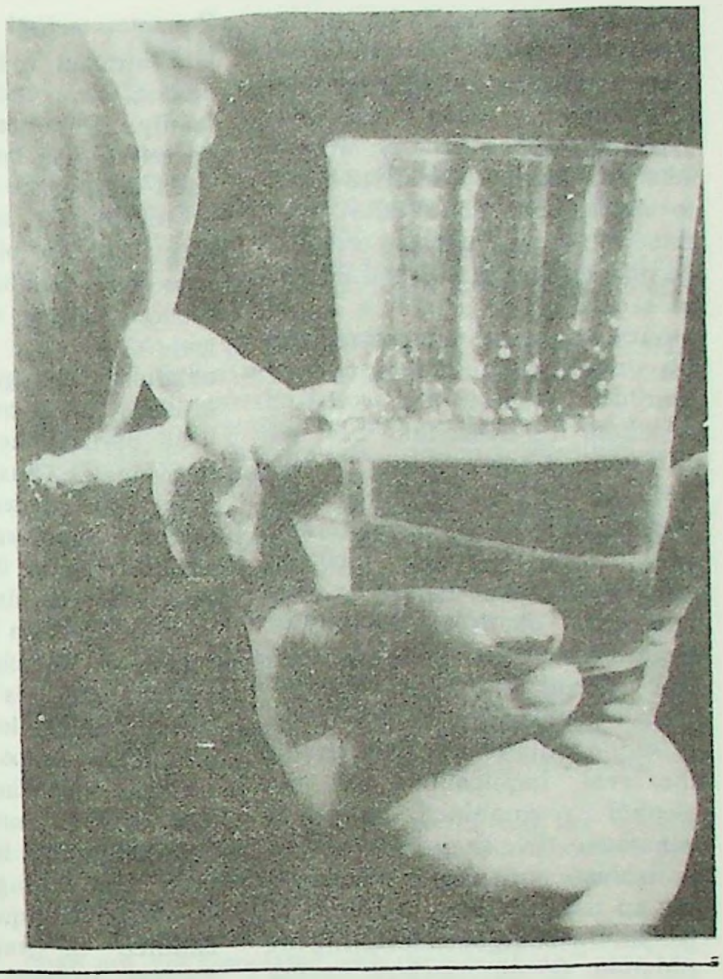
ALCOHOL CONSUMPTION AND VIOLENCE— THEIR IMPLICATIONS ON INDIVIDUAL AND FAMILY HEALTH

K. BALAN



Alcohol—a mood changing habit—is slowly and steadily becoming a health destroyer among the people. When they fall victim of alcohol dependence syndrome, the alcohol takes control of their health and life.

ALCOHOL is fast becoming a degenerating force in our society, particularly so when it is combined with violence. Violence is widely prevalent and alcohol, they say, is directly or indirectly supporting it by motivating the individual to resort to violent activities. As a result, the alcohol related health problems cause severe strain on the life of the individual and social fabric of the family and the community at large. Alcohol, when it is combined with tobacco and drug, as a trio, becomes a force to reckon with to achieve narrow goals. And the weaker sections, the unemployed youth, the students and other vulnerable groups are, knowingly or unknowingly, falling victims of alcohol combined violence resulting in serious setback not only to their own health but also to that of their family.

According to the World Health Organization, the problems relating to alcohol rank among the major health problems of the world. Some years ago, an official of the World Health Organization corroborated that the alcohol related problems even constitute an important obstacle for socio-economic development and will threaten to overwhelm health services unless appropriate measures are taken at the right time. Research studies have revealed that a high proportion of the hospital beds are occupied, year after year, by physically and mentally, derailed victims of alcohol and violence. To these should be added the uncountable thousands who are victims of accidents caused by drinking and driving.

Implications

The implications of alcohol combined violence on the

individual and family health are many and varied. The individual loses the direction and purpose of life. Here is the real life experience of a factory worker, who was taught by his friend how to drink beer. The habit continued as a time passing one and he bought new varieties of liquors to satisfy his urge and a lot of money was spent in company with his friends. The habit robbed him off his desire to work, he neglected his household, beat his wife and children often. It was not long before the children went hungry, suffered malnutrition and could no longer attend school. This has created a orisis and social chaos in his family. Due to continued absenteeism, he was dismissed from employment. And finally, he fell victim of serious ailments. This reveals the real implications of the alcohol combined violent behaviour in the life of an individual and family. This is not an isolated case. Millions of people are facing such torturing life situation in our society having fallen victim of "alcohol dependence syndrome". And again, thousands of youngsters are compelled or fancied to acquire the habit of alcohol and led into the violent activities bringing serious injury to their health and that of their family.

Research studies have brought to light that alcohol consumption and the consequent violence coupled with rash and negligence caused a third and a half of all road deaths. The drinking habit causes three out of ten accidents at work and results in loss of production. In many cities and rural areas, it is the chief cause of crimes, which is alarmingly increasing day by day.

Promotes quarrel and poverty

Uncontrolled drinking habit among the bread earners of the family promotes quarrel and poverty in the family. Wife and child beating are common scenes in rural areas and slums. The mental health of the individual goes down in alcoholic drain and life-long severe emotional scars are left on spouse and children. The growing habit of drinking takes away the full or good part of the income of the individual. Thus he is unable to provide the needed support to give essential food and other necessities of life to the family members. The children of alcoholic parents are often in a pitiable life situation. The children caught in between quarrels of parents and social conflicts, lose all interest in life. They also lose proper guidance and direction. Unbearable of such torturing situation, children in such families run away from home falling victims of child labour or delinquency. Thus the children of parents who are habitual drinkers are living under a number of risks. The risks being beaten, neglected or undernourished. But beyond that they may risk long-term harm from memory of terrible or even tragic scenes. In a nutshell, the individual as well as the family members suffer serious psychological and physiological problems affecting their health and life.

Negative attitude

Large-scale flow of poor quality alcohol into the slums and rural areas make the life of the people not only miserable and horrible but also easily susceptible to all sorts of diseases. Thus alcohol today is a rising tide eroding the health of the individual and the family, and consequently that of the society. Apart from the risk of being attacked by diseases affecting the heart, liver, lungs and other vital organs of the body, the children and youth in their family sometimes face discrimination by other people. They suffer development of their personal, family, professional and civic attitude and qualities of life. They are often misled and driven into anti-social and violent activities. In the absence of proper guidance at home, they grow in an unfavourable living environment and develop negative attitude and violent behaviour, as being widely witnessed now. Thus the French slogan "where parents drink, it is children who pay" is most relevant and true in our society.

The children and youth who are forced into the habit of drinking are long-term sufferers. Research has revealed that drinking habit among the children and younger people below certain age cripples their future health, as it affects the formation and growth of vital (nervous) systems in the body. That a good percentage of youth in our country are acquiring this habit for one reason or the other is a matter of serious concern to the nation.

Crimes

Today we are living in an environment where violence and crimes are increasing alarmingly; crime against girls and women, weaker sections; so on and so forth. We are also frequently hearing about wife and children committing suicide due to unbearable living conditions at home. All these violent activities can be linked to alcohol, which is overtedly or covertedly, playing a role in promoting these crimes and anti-national activities.

The number of girls and women acquiring the habit of drinking is

also increasing. In women, alcohol brings about serious psychological and social consequences, particularly so when they are in the child-bearing age. Alcohol affects not only the health of the mother but also that of the child.

Thus it can be seen that the alcohol—a mood changing habit—is slowly and steadily becoming a health destroyer among the people. When they fall victim of alcohol dependence syndrome, the alcohol takes control of their health and life. In our society, the alcohol combined violent behaviour promotes death in the streets and on the roads—in thousands; ruins one's own earning capacity, lower the socio-economic status of the individual, motivate the individual to neglect wife and children, and acts as a stimulator of quarrels, murders, rapes, assaults, thefts, burglary, hooliganism and so on. All these activities, erode the health and degenerate the moral, social and other values of life and often destroy the family culture itself.

The first aim of the World Health Organization's alcohol Programme is to alert the world to the devastating spread of alcohol related health problems. The World Health Assembly on more than one occasion recognised the problems relating to alcohol, particularly the excessive consumption, are one of the world's major public health challenges.

No nation may be willing to lose the health and power of the people, particularly youth. Several nations have already come forward with concrete plans to fight the alcohol menace and save time, health and energy of the youth. The World Health Organization has set clear-cut guidelines for the purpose.

Alcohol and Violence: Not only on the roads

THE connection between drunken driving and road disaster is amply supported by police reports and hospital records. But the influence of alcohol on injury and deaths extends much beyond the havoc on the roads with which drink is commonly associated.

The kind of alcohol-inflicted injuries that take place at home, at work, in schools and even on recreation fields, are poorly, if at all, documented. Yet there is enough information to indicate that it is too much drink that often triggers acts of violence, World Health Organization (WHO) experts state.

Though patchy, information from Africa, Europe, North America, and Australia, shows adequately that alcohol-related accidents are not only a significant cause of human misery, but also represent major economic losses for all countries.

Because they over-drink, the imbibers are more likely to hurt themselves by falls, by burns or scalds, more likely to over-dose on medicines, more likely to drown, or to commit homicide or suicide—in short, those under the influence are at greater risk of injury.

Both in the United Kingdom and the United States of America, experts estimate that about 45 per cent of all alcohol-related deaths are linked to accidental injuries and poisoning.

"Domestic and occupational injuries, more often than not, are associated with over-drinking," says Mr Marcus Grant, technical officer of WHO's programme on substance abuse.

"But because of little documentation, not much has been done anywhere in the world against these alcohol-related injuries," he adds in calling for better record keeping as a much-needed first step for preventive programmes.

There are as well a range of social problems caused by excessive drinking: marital discord spouse and child neglect, absenteeism, and, when pay goes to drink instead of groceries and rent, even poverty.

Over the last three decades, production of alcohol has increased world-wide, in some developing countries even out-pacing population growth. Supply has created demand for wine, spirits, and particularly, beer.

While in the developed world, trends show drinking levelling out or even decreasing, in the developing, world, trends are on the upswing—jumping, according to WHO estimates, over recent decades by at least 500 per cent in Asia, 400 per cent in Africa and 200 per cent in Latin America.

Along with this increase, there has been a corresponding rise in alcohol-related injury, some of it intentionally inflicted, some unintentionally. And the up-trend is expected to accelerate in the years ahead. —WHO

There is imperative need to provide education on alcohol combined violence from the school stage itself. There should also be brain storming sessions meant for youth and other vulnerable sections. This should also be included in the National Literacy Mission Programme. The role of media, particularly TV, films. Radio and Newspapers are very important in this direction. Panchayat Raj institutions, social clubs, voluntary organisations, educational institutions, hospitals and even educated individuals can play a positive role in preventing abuse of alcohol and saving the health of the people. There should also be intensive counselling and treatment programmes to the victims of alcohol dependence syndrome. Legislative measures prohibiting sale of alcohol to younger people, restricting the timings of sale of alcohol, introduction of prohibition, discouraging establishing brewing/distillery industries etc. are measures that will help in achieving positive results.

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Baby-Friendly Hospitals

FIVE years from now, thousands of hospitals throughout the world could have a plaque by the front entrance designating them as 'baby-friendly'. To qualify for baby-friendly status, hospitals will have to comply with a new code of practice drawn up by UNICEF and the World Health Organization. The code is designed to ensure that all maternity units give babies the best possible start in life by encouraging their mothers to breastfeed.

Decline in breastfeeding

The 'baby-friendly' idea is the latest advance in a ten year campaign to reverse the trend towards the bottle-feeding of infants.

The reason for the decline in breastfeeding, says UNICEF's 1992 State of the World's Children report, is that more families are living in cities, more women are going out to work, and more advertisements are persuading mothers that bottle-feeding is more modern and sophisticated.

In fact, breastmilk is the world's most sophisticated food, says UNICEF. It is so nutritionally complete that an infant normally needs no other food or drink for the first four to six months of life. It is hygienic and inexpensive. It immunizes infants against common infections. It can protect mothers against pregnancy. And it reduces the risk of breast and ovarian cancer

Apart from being inferior in quality, powdered milk mixes badly with poverty. Without enough money to buy adequate quantities of powder, and without enough education to read the instructions on the tin, many families overdilute commercial milk powders. And without clean water or sterilizing equipment, fridges or fuel, the milk powder is often mixed with contaminated water and fed to babies from unsterile bottles.

As a result, bottle-fed babies in poor communities have been found to be approximately 15 times more likely to die from diarrhoeal disease and 4 times more likely to die from pneumonia than babies who are exclusively breastfed.

Overall, the World Health Organization estimates that more than a million children's lives could be saved every year if all mothers gave their babies nothing but breastmilk for the first four to six months of life.

The poorer the circumstances the greater the risks of bottle-feeding. But breastfeeding is best for all babies, says UNICEF. One study has shown that babies in New York are three times more likely to be hospitalized if they are bottle-fed.

DRUG ABUSE
Its Impact on Violence and Public Health

H. K. SHARMA

The alcohol/drug related violence and its adverse health consequences has manifold implications. The changing drug scenario calls for drug abuse monitoring system and constant surveillance against alien drugs. There is an urgent need to strengthen social control mechanisms and networks to deal with family violence, child abuse and aggressive behaviour.

IN the last few decades at the national level, the pattern and prevalence of drug abuse has undergone rapid and significant changes in the choice of drugs and socio-demographic characteristics of users. Within the 80's a new potent drug, heroin (brown sugar/smack) was introduced in the illicit drug market due to geo-political developments around the country. The social and chronic users of other drugs turned to brown sugar without realising its dependence potentiality and adverse consequences and this took an epidemic form in major cities.

The consumption of ethanol and nicotine in the urban and rural areas cannot be oversighted in the wake of steady rise in the production of alcoholic beverages and tobacco products. (1-2) The steep rise in O—T—C (over the counter) drugs like tranquillisers and designer drugs in the urban population make this phenomenon more complex. The profile of drug users emerging from current drug scene is that of a male prerogative, early age of onset (between 10—14 years) and a large majority of them being experimental/recreational users. The problematic users are in the range of 4-5 per cent of alcohol users and about 90 per cent of opiate users. Projecting these figures at the national level, about 3 million alcohol users and between 3—5 lakh heroin users need public health intervention. The steady increase in alcohol/drug abuse has its own implications on the socio-cultural fabric of society and adverse public health including violence, crime, etc.

Drug abuse and violence

Violence incorporates a wide range of human activities and events which can be characterised by great physical force, impetuosity, passion or simply injury to individuals. 'Alcohol' out of wide spectrum of drugs available and consumed ranks first in a variety of violent behaviours; felony, criminal homicide, violence within family sexual assault, suicide and violent accidents. The elevated blood alcohol concentrations (BAC) have been linked with petty crime, quarrels and fights at home and outside. The prison studies in the West have shown that between 30 to 77 per cent of the individuals accused of murder have been presumed to have been drinking before the offence and likewise 42 per cent of victims drank before being murdered. (3) It corroborates the concept of 'battered alcoholic syndrome'. The role of alcohol has also been documented in sexual assault and rape. The violent acts and risks are more in the families with alcohol related problems and in this respect women, children and elderly are the silent sufferers. The role of alcohol could be traced in 17 to 25 per cent of cases of spouse and child abuse.

Besides alcohol, other drugs (heroin, barbiturates, amphetamines, cannabis and other hallucinogens) also seem to potentiate aggressive behaviour and occasional violence. (4) These may be due to direct pharmacological effects, income generating crimes and drug trafficking and other effects. The drug trafficking in narcotic (mainly heroin) in the 80's has opened a new chapter on violence

in the country. The narco-terrorism link and its security implications at the state and national level often appear as headlines in the print media. Drugs are ideal commodities for perpetuating organised crime across national boundaries. The operators of these organised crimes are well disciplined but weaponary confrontation with law enforcement agencies and street level violence in peddling of illicit drugs are frequent. The ethnographic observations of a drug peddling area of Delhi by the author over the last five years noticed many major incidences of violence, including murder of a youth, heroin users on noncompliance of 'street rules' and an open confrontation between street peddlers and their associates with a 'vigilant' youth group of the affected community. The organised drug peddling stigmatised the whole community and the innocent people bore the wrath of neighbouring communities, resulting into social tension and disruptive behaviour. This is a case study of only one out of hundred drug affected communities.

Drug abuse and public health

The impact of drug abuse on public health can be reflected in terms of morbidity and mortality. Besides narcotics, socially sanctioned drugs like tobacco and alcohol are emerging as the major public health issues. It has been amply demonstrated that tobacco use is a major factor in causation of many diseases and deaths that estimate between 6—10 lakhs in a year. The relative risk among tobacco users increases to many folds for respiratory disorders, cardio-vascular heart diseases and cancer in different parts of the body. Tobacco use during pregnancy increases the risk of abortions and health of unborn child (premature, less birth-weight) etc. According to ICMR report (5) there were about 9 million smokers in the country and the government was bearing Rs. 1204 million per year on treatment of respiratory and other diseases.

Consumption of alcoholic beverages and its associated physical and social problems are equally burdening the health care system. The cause of concern is a steady increase in *per-capita* consumption of ethanol and proportionate rise of problematic users/alcoholics. (One out of 25 in comparison to one out of 300 alcohol users in 60's). The excessive alcohol use has significant association with diseases/disorders of liver, pancreas, digestive tract, respiratory and cardiovascular systems. They are at risk of mental disorders, injuries, accidental poisoning, overdose and road traffic accidents. The data of Road Research Institute showed that alcohol was one of the causes in one-third of 50,000 RTA deaths and disabilities. The mortality/morbidity risks are high among heroin users, as well as other drugs like amphetamine, hallucinogens. The combination of sedatives and alcohol could prove fatal. The poly drug use has its toll in respiratory depression fatalities.

Implications

The above description shows clearly that alcohol/drug related violence and its adverse health consequences has manifold implications. The gambit of prevention of these problems lies to a great extent within the realms of decision makers, planners and programme implementers. In recent years alcohol and tobacco are synonimised with economic development programmes and sources of revenue. Prohibition of these may not be a practical solution. However, pragmatic approaches are to be adopted in formulating 'pricing' policy, enforcement of excise laws, sales regulations and effective implementations of stringent laws like Narcotic Drugs and Psychotropic Acts, 1985. The health sector needs further strengthening towards management of alcohol/drug related crisis situations (poisoning, suicide attempts, accidents etc), and adequate provision for treatment services and after care. The changing drug scenario calls for drug abuse monitoring system and constant surveillance against alien drugs.

The health education programmes and public campaigns against drug/alcohol abuse must incorporate messages on association of violence with drugs. The risk situations and settings must be identified. There is an urgent need to strengthen social control mechanisms and networks to deal with family violence, child abuse and aggressive behaviour.

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HOUSING AND SETTLEMENTS

DR BHAKT PRAKASH

A well-planned, low-cost housing improve the health of the community not so much because of better accommodation but because of the amenities and facilities—water supply, employment and education.

APPROXIMATELY a billion people lack adequate dwellings to protect them and provide basic amenities and space for family functions, and about a hundred million people lack any kind of dwelling at all. Makeshift structures almost invariably fail to guard them against extremes of heat and cold; they are highly vulnerable to flood, wind and storms, and offer no defence against noise, dust, insects and rodents.

The shortage of shelter in Rural India is less visible and harder to assess than in urban area. Estimates indicate that in 1981, the total number of households were 125 million, while the "acceptable housing stock" was less than 102 million resulting in a shortage of 23 million for both rural and urban areas (*Table I*). This gap (which should be considered an under-estimate in view of the very low "norm" adopted for acceptable housing) is expected to have increased to 41 million by 2001 AD. Roughly two-thirds of this shortage represent the very poor shelterless and rest one-third by low-income groups. Presently, they are living with some or other kind of temporary housing.

Several factors have been identified for achieving a substantial increase in shelter for the poor. As the cost of the land is out of the reach of the poor, alternative means of providing sites as well as services need to be found. Conventional building materials should be made available at low cost, innovative alternatives need to be promoted using traditional materials and modern technology.

Million Houses Programme in Sri Lanka is the classical example in helping socially and economically neglected people to have decent houses. The government of Sri Lanka is providing financial aid to each family. This is possible due to self-help, community participation and strong political will. In 1984 alone, 42,213 rural families were given shelter comprising of upgraded houses with latrines in 50% of cases and new houses with latrines in 31% cases. The cost to the government is US $ 202-212 per family (Tennakon, S. 1988).

Million Houses Programme has demonstrated that it can bring progress and development, and create a friendly and wholesome living environment.

Yet while studying 6 cities of South-East Asia it is concluded that it is unrealistic for large countries to expect to solve the housing problems in present decade because of alarming rate of population growth and rapid increase in slum and squatter areas.

In India, some ill-conceived slum upgrading and slum improvement programmes have left the poor in a worst state than before. Forced movement to a different site means social disruption, and often greater distances from work places and higher transport cost and waste of time.

This is not to deny the contribution that housing can make. A well-planned, low-cost housing improve the health of the community not so much because of better accommodation but because of the amenities and facilities—water supply, sanitation, employment and education.

Shelter, water and sanitation are fundamental to health

Shelter, clean water and sanitation are fundamental to health. According to Government of India estimates, in 1981, only 25.1 per cent of urban population and only 0.5 per cent of the rural population had access to basic sanitary facilities. Even though, the septic tank was introduced in India

about 200 years ago and sewage some 50 years later, relatively few houses even in the urban areas have benefited from those systems.

Studies by the All India Institute of Hygiene and Public Health (AIIHPH), Calcutta have revealed that age specific death rates due to gastro-intestinal disorders showed a mark decline with the introduction of water-flush latrines with safe disposal of excreta. While safe disposal of waste water and garbage are major sanitary problems yet to be tackled, proper disposal of excreta deserves the first attention in view of the human and health implications.

In the Indian context, another experience of relevance to the poor has been community toilets complexes with bathing and washing facilities—for the use by those who do not have space for individual household latrines. These have functioned on a "pay and use" basis, helping proper maintenance and continuous operation.

Shortage in shelter

S. No.		1981	1986	1991	1996	2001
		in million				
(i)	Total households (Rural+adjusted urban)	124.8	141.4	160.6	183.0	209.2
(ii)	Total housing stock	116.7	131.5	148.8	168.8	192.6
(iii)	Acceptable housing stock	101.5	114.4	129.6	147.1	168.2
(iv)	Housing gap	23.3	27.0	31.0	35.9	41.0

Source: National Building Organization.

What can be done?

The objective of the health-for-all could be powerfully served if health values were integrated into the efforts of families and communities to improve the conditions and use of their houses.

The health sector cannot by itself solve the problem of inadequate housing. But its mission requires it to serve as adequate norm setter, teacher, and agent for development actions that will help to meet people's needs. □

Health and development: inseparable partners

Health is an essential objective of development. The capacity to develop is itself dependent on health. These two aspects of health and its links with development are now emerging with greater force and clarity. Health status cannot be traded off against economic gain. There is a better understanding of the crucial contribution of health to economic activity, to improvement of the human condition and, through these, to all the processes of development. The achievement of appropriate health objectives is therefore an important measure of the effectiveness of development strategies.

—*Health dimensions of economic reforms.* Geneva, World Health Organization, 1992, p. vii.

ACCIDENT PREVENTION —Role of the Community

DR MANJIT SINGH

A safe life is the basic right of everyone. Safe life leads to a longer and more productive safe community. Safe community can participate in injury reduction programme.

THE theme for the World Health Day—7 April 1993 is : "Accident Prevention".

The slogan is :

"Handle Life With Care : Prevent Violence and Negligence".

There occurs a death every fifty seconds and injury due to accidents every two seconds in the world as per records. Accident is becoming one of the major causes of death after communicable diseases, cancer and cardiac diseases.

"Life is precious, save it" is a common saying.

World Health Day is observed on 7th April every year to make people aware of one of the existing health problems, mobilise the community for their own problem and they take part in removing/minimizing the problem. It holds true in the case of accidents, too.

'Accident' literally means an "event without a cause". Accidents recurrence can be minimised by learning more about it.

Accidents can take place at house, workplace or community places. Household accidents are mainly due to electric appliances, stoves, falls, poisons, fires, suffocations and chemicals.

Preventive Measures

Most of the household accidents can be minimised/prevented. How?

(a) Use good quality shock proof electric appliances;

(b) Use closed stove cooking;

(c) Old people and children should be escorted to minimize the risk of meeting accidents in the form of falls/ suffocations or poisons.

(d) Chemicals should be stored and kept in special containers so that children do not have access to these products.

(e) Medicines should be stored in child resistant containers and kept away from the reach of children.

Accidental poisoning in children is 100% preventable. Accidents occur only when child is unattended/unsupervised even for a moment. Toddlers are at risk of accidental poisoning as anything they come across they put it in their mouth; they should therefore never be left unsupervised even for a moment.

The household poisoning may be intentional, too. It is commonly seen in the adults in the form of suicides by swallowing pesticides and equally toxic substances. In the case of children this may be unintentional. The common household products, for example, are detergents/bleaches, pharmaceuticals, and paints which are less toxic than the chemicals. Chemicals have been developed to be used in the form of preservatives, manures to increase food supply, or to store food products. These may lead to illness or even death, if used improperly.

Chemicals in the form of pharmaceuticals stocked at home increases the risk of exposure to these chemicals. Negligence in their use can lead to accidental poisoning.

Safety of Each is the Responsibility of All

In India, lives lost as a result of accidents are four ties more than that of cancer deaths. Accidents taking place at workplaces may be in industrial set-ups or agricultural sector.

(i) **Industrial Sector :** Accidents at workplaces can be minimized by

"conscious, careful colleague" practising and adopting, the maxim, "Safety is first". Possible hazards that could take place should be displayed at prominent places in the industrial house. Safety manuals/literature related to equipment/machines used at workplace should be known to every worker. Location of emergency exit/fire fighting equipment should be displayed and made available in case of the eventuality taking place. Worker must be aware of the alert signal/all clear signal. Accidents at workplaces can be minimized by :

(a) Knowing the work habits/ practice of the employees;

(b) Knowing the work environment/conditions in or around workplaces and making the workers to use safety measures and footwears.

(c) Protecting eyes and respiratory tract by using mask and glasses. Many accidents take place due to ignorance/ inadequate knowledge about disposal of or handling the industrial wastes.

In the event of an accident, the first consideration should be towards the comfort and treatment of the injured. Questions should only be asked after the injured has received treatment and is comfortable. There should be an attempt to fact-finding and *not* fault-finding. Sarcasm or any attempt to blame people leads to withdrawal of community support and a setback in the preventive measures. Pertinent facts should be secured from the witness at the accident site. Discuss accident with the injured only after treatment and favourable circumstances. Encourage him to contribute ideas to prevent accidents.

(ii) **Agriculture :** Accidents at agriculture workplaces are common. Chemicals used in agricultural sector are mainly pesticides which are neurotoxic and result in most of the deaths taking place as a result of mishandling or intentional suicides. Ignorance or negligence in the use of electrical appliances or automobiles also add to deaths taking place in the agricultural sector.

(iii) **Community :** 12 to 22% of hospital admissions are linked to injuries and most of these injuries are as result of accidents taking place on the roads, play grounds, religious places, fair (melas)/ bandhs/rallies.

Road accidents during night have a direct relation to alcohol consumption. Driving mixed with drinking, is directly proportional to road accidents. Level of alcohol in the blood has direct relation with the risk of injuries. One gram increase of alcohol in blood increase the risk of injuries to 23 times.

Alcohol production has increased manifolds all over the world in the last three decades. Over-drinking induces a drunkard to hurt himself by having a fall, sustaining injuries by developing over-confidence. Social problems related to over-drinking are marital discords, hurting, spouse, neglecting children, absenteeism leading to poverty and other complications. Alcoholics may develop cirrhosis of liver, which results in 20% alcoholic deaths.

Violence in Societies

Violence is on the increase in the society and has become a blot on the humanity. Teen-agers have more inclination towards the materialistic side of the society and have not much of access to the resources. They attempt theft/ stab/poison or murder a person to meet their demands.

Urbanization, drugs, crimes, overcrowding, unemployment are the contributing factors towards increase in violence. Violence is a public health problem. According to Dr. Mark Rosenberg, a U.S. epidemiologist:

(a) Family violence is becoming a problem which is resulting towards increase in homicides, suicides, acts of violence and induced deaths.

(b) Child abuse reflected through suicides, murder, rape, bullying in the schools is another alarming sign which should be taken care.

(c) Sexual abuse—another form of childhood violence can be prevented. It is seen that a child abused turns into a child abuser which should be stopped.

Conclusion

A safe life is the basic right of everyone. Safe life leads to a longer and more productive safe community. Safe community can participate in injury reduction programmes. Community participation can be sought at :

(i) Workplaces through labour unions minimizing or preventing hazards at workplaces by providing better amenities to the workers.

(ii) Academic institutions, students and faculty participations through curricular development and providing safer environment.

(iii) Religious functions through free talks by religious leaders and people to come forwrd and participate in safety programme in day-to-day life supported by media in the form of newspapers, radio, T.V. and published material.

For prevention of road accidents

1. Do not mix driving with drinking. This slogan should be displayed all along the highways.
2. Avoid too long a stay on wheels without rest.
3. Badly disigned/badly lit/ badly managed/badly designed roads lead to more road accidents. This should be given due care/proper attention. □

NEWS

UK TRIALS FOR FIRST ANTI-CANCER VACCINE

The first vaccine designed to protect people against cancer is expected to be ready for clinical trials in a year's time.

Scientists at the Paterson Institute in Manchester, north-west England, have developed the vaccine against the common Epstein Barr virus (EBV), which is strongly linked to at least three types of cancer—Hodgkin's lymph gland cancer, nasopharyngeal throat cancer and Burkitt's lymphoma, a cancer of the jaw in children. Glandular fever could also be climinated bacause it too is caused by EBV.

The new vaccine, produced by the Manchester institute's Drs John Arrand and Mike Mackett in collaboration with scientists in two other UK centres, is based on a protein found on the membrane that surrounds the EBV virus. This can stimulate the body's natural defence system and enables it to recognise infection by the virus proper and destroy it.

The two doctors have devised a way to produce the protein both efficiently and safely by using genetic engineering techniques. Experiments have shown that injection with the purified protein produces antibodies against EBV.

The first trials will check the vaccine's safety, using about 20 volunteers, and will be followed by a larger clinical trial to test the vaccine's effectiveness.

Dr Arrand, a molecular biologist, commented: "If the patient trials repeat the success of the laboratory work, this vaccine has the potential to protect millions of people throughout the world from often fatal EBV-related cancers."—*Medical News From Britain*

TRIALS CALL FOR MALE BREAST CANCER

Doctors in London are calling for an investigation into breast cancer in men.

Until now, breast cancer has been regarded as a traditional female problem, but there is evidence that men are also becoming victims of the disease. In Britain, 170 men a year are diagnosed as having this form of cancer while in countries such as Egypt it has become relatively common.

The UK Imperial Cancer Research Fund (ICRF) says men with breast cancer may not be receiving the best treatment because there has never been any clinical trials for the male version.

The fund's breast cancer unit at Guy's Hospital in London now believes there is a need for male breast cancer to be studied seriously with a trial to find the most effective form of treatment.

The survival rate of men suffering this cancer is currently 60 per cent, but ICRF says more could be saved if they had not waited for an average of 18 months after finding a lump before seeking help. Men are said to wait so long because they are unaware they can get breast cancer or are embarrassed at having what is normally a female disease.

Men are treated in much the same way as women with a variety of surgery, radiotherapy and/or drugs. However, they mostly have a mastectomy because the tumours usually appear near or under the nipple, and because there is less breast tissue.—*Medical News From Britain*

£1 MILLION BRITISH AID FOR CANCER CARE IN INDIA

LONDON, March 1—A cancer care project in Gujarat, India is to receive £1 million in aid from the Overseas Development Administration. The project aims to provide access to cancer care for 4.5 million women and nearly 5 million men in five districts by 1996-97.

The three-year project will focus on improving the performance of the Gujarat Cancer Research Institute in Ahmedabad. It will enhance its community outreach programme for providing cancer care services for the prevention, early diagnosis and effective treatment of cancer.

The institute is the only large cancer centre in the State of Gujarat, which has a population of 43 million. The incidence of breast and cervical cancers in women and oropharyngeal (mouth and throat) cancer in both sexes is rising, particularly among rural and tribal populations. The emphasis of the community outreach programme will be on prevention and early detection in the most disadvantaged districts.—*BIS.*

COMMUNITY MANAGEMENT IS AN APPROACH, NOT A FORMULA

Communities have a role to play in the management of improved water supply systems, but community management is an approach, not a formula. This was one of the key findings from an international workshop held at IRC from 4-10 November 1992, which reviewed community management experiences from the field.

Community management can take many forms, and can reflect a wide range of "balances" between community and agency contributions. Whatever the balance, however, it requires in all cases a substantial resource input from the community. It also requires a continuing partnership between communities and agencies, and communities and other supporting partners (including the private sector and, very importantly, other communities).

The workshop brought together field-based professionals and representatives from UNICEF, WHO, the Water Supply and Sanitation Collaborative Council, the Directorate-General for International Cooperation (DGIS) of the Netherlands, and IRC. Nine of the participants are working in projects and programmes in the field which are seeking to develop strong elements of community management.

Seven community management case studies were reviewed at the workshop, and additional background papers were provided by IRC and the UNDP/World Bank Water and Sanitation Program. Case studies were presented from: Aqua del Pueblo, Guatemala/Unit for Marginal Barrios of the National Water and Sanitation Agency (UEBM/SANAA), Honduras/Aga Khan Rural Support Programme, Pakistan/Pan African Institute for Development (PAID), Cameroon/CARE, Indonesia/UNICEF, Uganda/Support Rural Water Supply Department Project, Yemen.

KEY FINDINGS

Community management means "putting the community in charge".

The workshop avoided an over-specific definition as this was considered to be too limiting. Community management is an approach which has certain defining characteristics which distinguishes it from other approaches, including a relationship based on partnership between the community and agency.

Community management is something new and different.

While it has important continuities with, and builds upon, approaches based on community participation, it has new and wide-reaching implications for both communities and agencies. Supporting community management certainly will not mean less work for agencies. It means a different direction, moving from provision to facilitation, and demands work of higher quality.

Many communities are demonstrating a genuine willingness and capacity to take on management roles.

Under the right conditions, community management works very well. Many communities have considerable capacity,if properly supported, motivated, and assisted, to develop suitable tools and methods.

Community management not only helps to solve water and sanitation problems but can also create an environment for broader development benefits.

Putting the community in charge can help solve problems such as the covering of recurrent costs and sustaining system reliability. It can also build capacity and confidence for wider development efforts, both within and beyond the water sector.

Community management not only addresses issues of sustainability but can also be a way to involve more communities in water and sanitation improvement programmes.

The taking up of a larger share of responsibility by communities frees supporting agencies to move forward in supporting more communities, without having to constantly go back to maintain older systems.

In building up the community management approach, new indicators are required to recognize and reward the "process" inputs and outputs which are essential to its success.

Many agencies in the field are trying to set in motion process-based approaches which are less easy to measure than technical outputs, like numbers of wells installed and so on. Governments and funding agencies may contradict these efforts if they continue to confine themselves to conventional progress indicators, and do not reward efforts towards building capacity through less tangible processes. New tools and methods are required to monitor, measure, recognize, and reward such work.

Advocacy at all levels is required to support the further development of the community management approach.

The full meaning and implications of taking up and supporting a community management approach must be clearly spelled out and communicated at all levels, from the community to global levels. This is essential to allay fears and misconceptions, and also to support the establishment of appropriate policy and legal frameworks necessary to create an "enabling environment" in which community management can flourish. □ *—IRC Newsletter Nov. 1992*

MORE THAN HALF OF ALL PREGNANT WOMEN SUFFER FROM ANAEMIA

More than half of all pregnant women suffer from anaemia and so do a third of non-pregnant women of reproductive age according to a WHO report released during March in Geneva. On the evidence of more than 500 studies worldwide, the report reveals that anaemia is one of the most widespread, and most neglected, nutritional deficiency diseases in the world today. Anaemia affects mainly women, especially during their reproductive years, and is particularly severe in those who are pregnant or breast-feeding. In parts of the developing world such as Southern Asia, three quarters of pregnant women are anaemic, compared with 17% in Northern America and Europe, the report, *"The prevalence of anaemia in women"* says.

In worst affected parts of the world, 5% of women suffer from severe anaemia, and may die of heart failure. As many as four women in ten are less severely affected but have chronic fatigue. They face higher risks of death during pregnancy and delivery. Anaemia is a contributory factor in many of the 500,000 deaths which occur each year due to complications of pregnancy and childbirth, according to WHO. While a normal healthy woman can survive a blood loss of one litre or more during childbirth, for anaemic woman even the normal blood loss of 250 cc can be fatal. Anaemic women have lowered resistance to infection and are at greater risk of complications as result of anaesthesia and surgery.

"No woman should approach the end of pregnancy with a haemoglobin level below 11 g/dl," states Dr Tomris Türmen, Director of the WHO Division of Family Health. "In practice, not only do many women start their reproductive years with inadequate iron stores, but also, because of closely spaced pregnancies they have little time to build up their haemoglobin levels." Each pregnancy makes them more vulnerable to serious ill health and death.

Even mild anaemia is a debilitating condition that reduces resistance to infection and leaves the woman weak and breathless after slight exertion. Where women face the daily task of carrying water and fuel, and taking goods to market, and where they are the mainstay of the family, anaemia puts a break on social and economic development.

In anaemia, the haemoglobin content of the blood, which carries oxygen to the body's cells is less than 11g/dl. In the early stages there may be no symptoms but as haemoglobin concentration continues to fall oxygen supply to vital organs declines and there is a feeling of general weakness, tiredness, dizziness and headaches. Eventually the tissues of the body become starved of oxygen. The common belief that anaemic women are pale is only partly true. In fact noticeable pallor is not apparent until the anaemia is severe, at less than 7 g/dl.

Most anaemia is a result of shortage of one or more vital nutrients, iron, folic acid, vitamins, trace elements and protein. This can arise from low intake, poor absorption, chronic blood loss or increased demands. In many cases nutrient intake is low simply because food intake is low. In addition to those who go hungry, millions more suffer a lack of specific nutrients. Women are particularly vulnerable where their status is low and throughout their lives they eat last and eat least.

Women are more vulnerable to anaemia because their needs for iron are greater. From puberty until the menopause they have a high demand for blood forming nutrients. An adult man needs a daily amount of 1.1 mg of iron, compared with over twice as much for a woman, even when she is not pregnant. During pregnancy, growth of the fetus and placenta, and the larger amount of circulating blood in the expectant mother, lead to an increase in the need for nutrients, especially iron and folic acid.

Iron absorption is hindered where unrefined cereals form a large proportion of the diet and by drinking tea or coffee with the meal. The problem of nutritional anaemia is compounded in many areas by tropical diseases such as malaria, and parasitic infestations such as hookworm, which increase both the incidence and severity of anaemia.

"The situation is all the more alarming because anaemia is almost entirely preventable" says Dr Türmen. The long term solution is to ensure adequate nutrition for girls and young women before they become pregnant. Women need to eat red meats or dark green leafy vegetables and dried beans together with tubers or fresh fruits. *They should avoid tea or coffee with meals.* But it will take a long time to get this message through to all the women in the world, and their menfolk, and to change entrenched dietary habits.

A more immediate and cost-effective solution is to give all pregnant and lactating women oral iron supplements. Research is under way to identify effective ways of so doing and to overcome problems of unpleasant side effects which iron tablets may cause. WHO is working with its many international partners to support such research, to intensify health education and community involvement in preventing, detecting, and managing anaemia. Fortification of various foods with iron is an alternative approach. Equally important is the need to ensure that women eat a varied diet, rich in essential nutrients.

Women who have many children, too early and too closely spaced are at particular risk. Providing access to family planning methods can help to prevent anaemia and contribute greatly to improving women's health.

"Women hold up half the sky" a Chinese proverb says. Working to combat anaemia is an essential support that the world community can offer them. □

—WHO

Book Review

Hospitals and the Health Care Revolution

In nine chapters, this book provides a lively and compelling account of several major events that are beginning to revolutionize the way the world looks after the health of its people. Focused on the place of hospitals in this health care revolution, the book uses numerous examples and case studies—from hospitals in New York City to health units in Bangkok—to illustrate how changing times and changing circumstances are revolutionizing the ways in which doctors relate to patients and hospitals treat their customers. Throughout the book, an effort is made to help readers understand how certain specific changes, whether introduced by design or by force of circumstance, are now converging to form a noble, humanitarian, and momentous revolution in health care and world over.

The opening chapters characterize the main features of this health care revolution and track its historical origins. Readers are then introduced to the ideology of the revolution, with chapters explaining how hospital and primary health care services are becoming increasingly interrelated and why a system of care based in health districts needed to be established. Using anecdotes, examples, and striking illustrations, the authors portray the role and functions of the hospital at the first referral level, discuss health programme coordination, education and training, and outline requirements for management and administrative support. A chapter devoted to the district health system explains exactly what constitutes such a system and why it should be considered as essential to the sort of health care revolution that can make sustained improvements in the health of humanity. Arguing that the new type of hospital is a complex venture requiring good organization, the remaining chapters tackle the practical problems of implementation, discussing the organizational and functional integration of services, questions of attitudes, orientation and training, and the need for information, financing and referral systems. The book concludes with a summary of the aims of the health care revolution, the extent to which these aims have been achieved, and a guess at where the future will lead.

As inspiring as it is instructive, as readable as it is convincing, the book will make fascinating reading for anyone interested in seeing how mankind's desire for social equity, its hatred of injustice, and its wish to help the sick and disadvantaged are finding expression in an exciting movement to which hospitals the world over are making a major contribution.

Hospitals and the Health Care Revolution
by *L.H.W. Paine* and *F. Siem Tjam*
World Health Organization, 1988
iv+114 pages, (available in English; French and Spanish in preparation)
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(Contributed by Dr. S. K. Satija and Dr. Manjit Singh)

ESSENTIAL DRUGS: ACTION PROGRAMME A PRIORITY

Meeting at WHO in Geneva on 23 and 24 February 1993, the Management Advisory Committee of the WHO Action Programme on Essential Drugs reviewed the activities of 1992 and approved a US $ 28 million budget for 1994-1995. The members, representing 25 countries, a dozen international and nongovernmental organizations and the pharmaceutical industry, applauded WHO's reaffirmed commitment to the promotion of essential drugs as a means of improving health care and establishing greater social equity.

Half the inhabitants of our planet have no access to the most basic drugs and 75% of the world's population consumes less than 20% of the drugs on a market recently valued at around 170 thousand million US dollars. The Action Programme on Essential Drugs was set up a decade ago in the wake of the Alma-Ata Conference and in the light of the health-for-all strategy, which is still the cornerstone of the activities of WHO, notwithstanding certain adjustments dictated by global upheavals. The Programme is intended to help countries improve access to essential drugs for their people, and to ensure the rational use of such products.

In his opening address, Dr Hiroshi Nakajima, Director-General of WHO, recalled that 16 years ago he was personally involved in developing the concept of essential drugs. He praised the donors who had contributed to the development of the Programme.

Sixty-four developing countries now have their own essential drugs programmes, and 28 others are in the process of developing such programmes.

Dr Fernando Antezana, Director of the Action Programme on Essential Drugs, pointed out: Since its establishment, the Action Programme has prepared a Model List of Essential Drugs, which now contains nearly 270 products, covering most health needs. Since many of those products are no longer under patent, they can now be produced by different manufacturers, with due regard for quality control and at reasonable cost. This is essential if they are to be accessible to the greatest possible number of people.—**WHO Press**

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HANDLE LIFE WITH CARE
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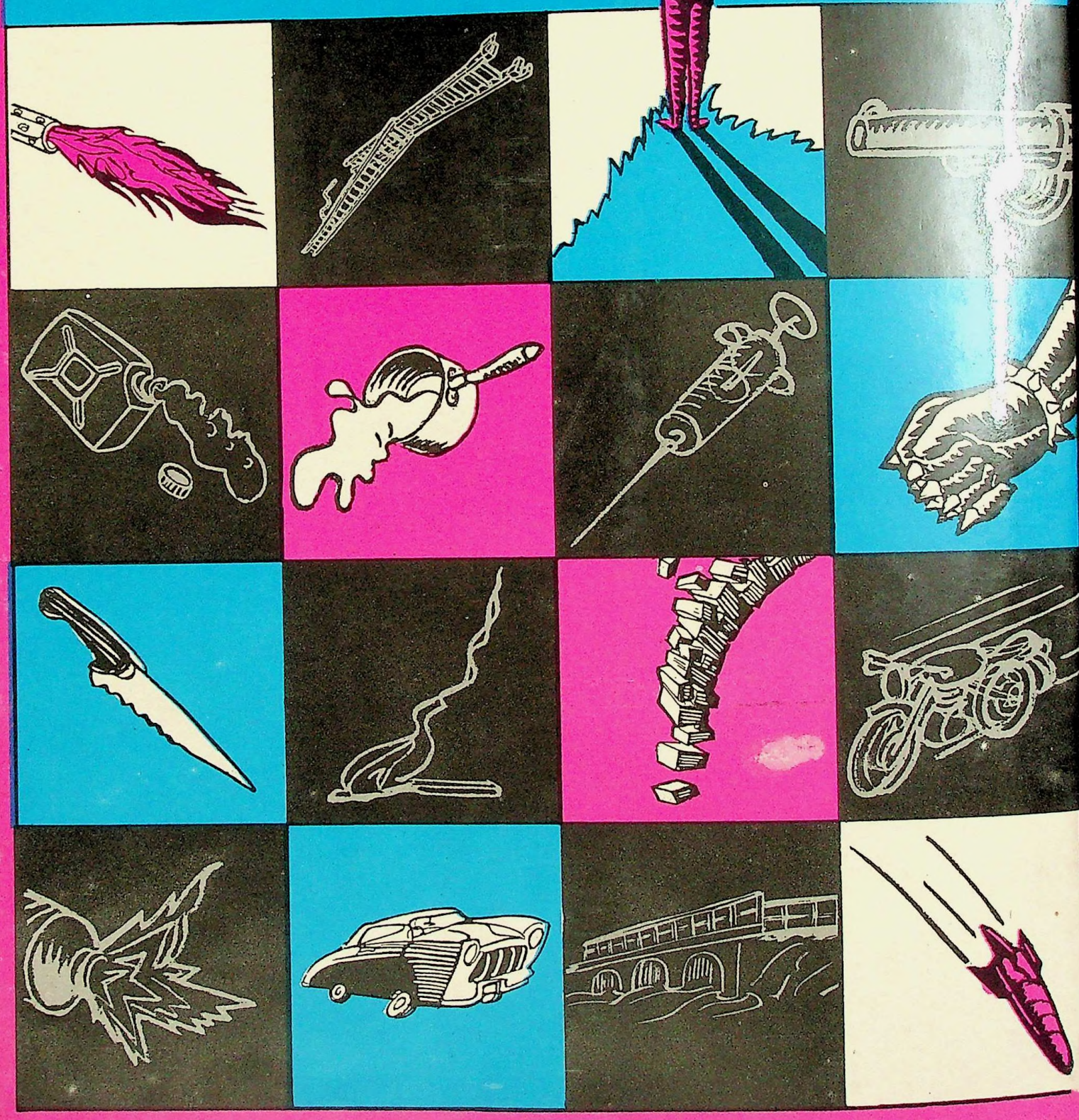

WORLD HEALTH DAY: 7 APRIL, 1993