

Accidents in childhood and adolescence

The role of research

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Foreword

When the subject of health is mentioned, people generally think first of all of the prevention and cure of diseases. However, the World Health Organization holds that health is not just the absence of disease but a state of complete physical, mental and social well-being. In this context, we do not always attach as much importance as we should to the close link between disease and infirmity.

The slogan “health for all by the year 2000” encapsulates WHO’s vigorous efforts to stimulate all countries to make substantial efforts to improve human health by the end of this century. While we realize that we shall by no means have vanquished all diseases by the year 2000, there are grounds for greater optimism about the second kind of health impairment, i.e. infirmity or disability. In contrast to the situation with many diseases, we already possess the theoretical means to fight disabilities effectively. This applies in particular to disabilities resulting from avoidable accidents, especially accidents to children.

We know a great deal about the circumstances in which such accidents occur, the factors conducive to their occurrence, and the precautions that should be taken to reduce the risk. We know enough about them, in theory at least, to act. But we do not know everything, and above all we do not know exactly *how* we should act for maximum effect. In other words, in this as in many other health fields, it is essential to conduct research, preferably before taking action or, failing that, in close conjunction with action.

Research and action—two words often seen together; one area where research and action are urgently needed is the field of accident studies. What *action* can we take, among the general public, to ensure that the concept of risk is better defined, better understood, dealt with effectively and not just labelled as a bad thing? What can we do to get individuals and communities to pay attention to risks as a matter of course?

On the initiative of WHO, a seminar was held in Paris to stress the need for specific research on accidents, as a basis for further progress in understanding, knowledge and mastery of the problem of accidents among children. I am pleased that the National Institute of Health and Medical Research was able to contribute to the success of that undertaking, which was crucial for making progress towards prevention, undoubtedly the most appealing way of safeguarding health. I thank WHO for giving us this opportunity to display our great interest in the subject. And I thank all the organizers, speakers and listeners who made the seminar so rich in substance and so cordial in

atmosphere; the very high quality of the exchanges between participants is sure to bear much fruit in future practice.

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Preface

This publication is intended to stimulate medical research and public health bodies to take an active interest in a health problem that costs the economy more than cardiovascular diseases or cancer, but which receives only a very tiny portion of the funds allocated to medical research in general. In the United States of America, for example, the amount devoted to research on accidental injuries in 1983 by the National Institutes of Health totalled around US\$ 35 million, less than 2% of the total research funds allocated to these Institutes. And although accidents in the USA are responsible for the loss of more years of productive life than cardiovascular diseases and cancers together, federal expenditure on accident research is only one-tenth of the research expenditure on cancer and less than one-fifth of research expenditure on diseases of the circulatory system.

Nevertheless, and contrary to many preconceived ideas, accidents or more precisely their sequelae, like any other health problem, can often be prevented if approached scientifically. There is every reason to believe that an increase in expenditure on accident research to take it well above the present levels, yet still below the amounts devoted to research on cancer and cardiovascular diseases, would lead to a substantial improvement in the situation.

There are a number of factors that give accidents a prominent position among public health problems. Analysis shows that there are few countries where accidents do not appear among the five leading causes of death. In the region of the Americas in particular, accidents are among the five leading causes of death in all countries, whatever their level of development.

The consequences for health are tremendous and greatly underestimated by the public and even by the top-level decision-makers. Indeed, accidents are a major cause of demands on the health system, whether at the primary health care level or the hospital level. On average in the industrialized countries, and also in many developing countries, one hospital bed in ten is occupied by an accident victim. In the public welfare hospitals in Paris, for example, road accidents, occupational accidents, domestic or sports accidents and suicides or other forms of physical violence are responsible for over 10% of all admissions of children, and injuries represent the third most common cause of admission, immediately after infectious diseases and malformations. Accidents are also responsible for significant mortality among young people; moreover, there is marked excess male mortality from accidents, a characteristic feature that appears right from the first year of life. Finally, accidents are often responsible for severe disability. In the United States of America, for example, almost 80 000 patients are disabled as a result of head injuries each year and will

remain disabled for the rest of their lives; similarly, about 6000 new cases of paraplegia or tetraplegia occur each year as a result of injury to the spinal column. Motor vehicle accidents are the leading cause of paraplegia in that country.

Traffic accidents are a major cause of severe injuries in most countries, whether developed or not, and are also the cause showing the most marked tendency to increase, particularly among young people because of accidents involving two-wheeled vehicles. The other major causes, such as drowning, falls, burns and poisoning, show a general downward trend, although their relative importance as causes of death and morbidity varies considerably according to region and country. Children, adolescents and young adults are among the target groups from which accidents take the heaviest toll and this is why WHO considers that action and research in this particular area are so important.

The seminar in Paris was the fourth meeting held since the establishment of the paediatric component of WHO's Injury Prevention Programme. Three previous meetings were held in Ankara, Manila and Havana, leading to the formulation of a master plan for the promotion of epidemiological research in a number of countries, particularly in the WHO Region of the Americas, where Brazil, Chile, Colombia, Cuba and Venezuela have decided to take part in this project. Four countries in the South-East Asia Region—India, Indonesia, Nepal and Sri Lanka—are in the process of joining this group and it is hoped that in the next few years all WHO regions will become involved.

This child/adolescent component of the WHO Programme has two main objectives:

- to promote epidemiological research on accidents to young people, particularly in countries where such research is negligible, in order to collect sufficient information on the nature and extent of the problem to establish prevention policies;
- to evaluate these policies periodically and make the evaluations available to the Member States of WHO so as to provide them with useful information on various national experiences and thus assist them in formulating their own policy and defining their priorities.

These two objectives are included in the general description of WHO's medium-term programme for the periods 1984–1989 and 1990–1994. The “accidents component” of this programme sets out to facilitate the implementation of national policies and strategies aimed

at reducing the risks of accidents or minimizing their consequences from the public health viewpoint, by carrying out situation analyses, disseminating information, supporting research on safety technologies, and encouraging the application of techniques of proven efficacy.

This publication relates to the second of the stated objectives, in the particular area of research, and its aim is to contribute to an evaluation of policies for research on accidents among young people, to review the present state of knowledge provided by such research, to define the priority sectors needing a special effort, and to evaluate the application and utilization of such research.

There is a need to define strategies that will assign to accident research a more appropriate dimension, in terms of both quality and quantity, within public health research in general. It is equally important to devise mechanisms for the management of such research so as to give it an essentially multidisciplinary and intersectoral character. Accordingly the collaboration of research bodies such as INSERM can only strengthen the value and impact of WHO's programmes, and such collaboration is both vital and appreciated.

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Accidents in childhood and adolescence: a priority problem worldwide

C. J. ROMER & M. MANCIAUX

The problem

A priority problem

Any problem in public health can be considered a priority problem if it occurs frequently and/or is serious, and is amenable to measures for its treatment or, better still, its prevention.

Accidents are a frequent problem, although our knowledge of their frequency is poor and biased. They have potentially serious consequences in terms of mortality, morbidity and disabling sequelae. But there are real possibilities for treatment and also for prevention. Witness the reduction in mortality from accidents in a number of countries—mainly developed countries—at a time when the risks (in terms of total vehicle mileage, number of toxic substances and drugs on the market, etc.) are increasing year by year. It is not clear what this reduction in accident mortality can be attributed to, and the relative contributions of preventive measures and of improved treatment procedures are difficult to determine with accuracy.

The socioeconomic cost of the problem must also be taken into account when determining priorities. Accidents are expensive, certainly much more expensive than their prevention, even though the cost of prevention is generally greatly underestimated. But a large number of preventive and educational activities have been developed in various parts of the world without ever being evaluated, and it is to be feared that much money has been spent in vain on programmes of doubtful efficacy.

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. The reasons for this are related to:

- living conditions in rural settings, where there are many dangers associated with an ill-controlled and frequently hostile environment;

- living conditions in or around vast urban areas with explosive and uncontrolled population growth;
- rapid socioeconomic changes: motorization, introduction of manufactured goods and technology;
- inadequate maintenance of machinery, equipment, roads, vehicles, etc.;
- inadequacy of specialized services (police, health) to take responsibility for, treat, and rehabilitate the injured.

But are accidents really a priority problem for the Third World? The answer depends partly on the level of development of the individual country and the success achieved in the control of other major causes of disease and death in children. Wherever such control is successful, injuries from accidents become a priority: this was the case during the 1970s in the oil-producing developing countries, and the same thing is happening in the countries currently undergoing rapid industrialization; it is better not to delay too long in introducing preventive measures (1).

A better-known problem

Our knowledge of the “accident phenomenon” is certainly advancing rapidly, largely because of mortality statistics, national and international. The European Communities, the Organisation for Economic Co-operation and Development, and the World Health Organization have made large contributions, particularly from the epidemiological viewpoint, to this greater awareness and to the resulting progress.

The situation is less satisfactory as regards accident morbidity: the few surveys available come mainly from developed countries and the majority are hospital-based and therefore biased. They are usually descriptive, rarely explanatory and almost never evaluative. Exceptions are a few studies (1–8) and several documents arising out of the Global Programme for Accident Prevention set up by WHO in 1978 (9–12).

The situation regarding the sequelae of accidental injuries is even worse; for example, it is impossible to tell whether or not the reduction in accident mortality observed in most industrialized countries is accompanied by an increase in sequelae. Yet the reply to this question is of crucial importance.

A particularly important problem in childhood

Accidents are important first of all in terms of *morbidity*; for various reasons (e.g. exposure, inexperience, immaturity, behaviour) they take

a heavy toll of young people. Each year, 1 child in 10 suffers an accident for which it is necessary to call upon the health services at some level. This is a source of considerable expenditure.

Accidental injuries are just as worrying in terms of *mortality*; from the age of one year up to adulthood, accidents are the leading cause of death in all the industrialized countries and in a growing number of developing countries. Their importance becomes clear if we look at the indicator, number of potential years of life lost: this is over 665 000 annually in the United States of America as a result of traffic accidents to children and adolescents (13).

However, the choice of an indicator is not neutral. This indicator can be made positive by converting it into number of potential years of life gained as a result, for example, of preventive activities; alternatively, it could be extended into expectation of life free of disabilities to take into account the risk of sequelae and the successes in restoration.

A neglected area

The facts

Although a priority problem, accidents remain a neglected area in health policies. They occupy only a small place in national and international programmes, regardless of whether the programmes concern health activities proper or research. WHO itself only recently took an interest in accident prevention and management, while at INSERM there is very little research on this crucial problem. Many other similar examples could be given.

The same comment applies to training. According to an unpublished survey by the International Paediatric Association, there is scarcely any teaching on accidents in medical faculties and schools for allied health personnel, and what teaching there is practically always concentrates on the nature of the consequences of an accident (traumatology) and rarely on the epidemiological and preventive aspects.

Why is this?

There are many reasons for this:

- Many factors are involved in accidents and it is difficult to master all the aspects.
- There is widespread confusion in people's minds between the accident (event) and the injuries that result from it (consequence).

The people who observe the event and its circumstances are not the people who observe the consequences (injuries). There is a lack of tie-ups and coordination between people, services, record systems, etc.

- Follow-up studies are difficult to conduct. As a result there is a lack of reliable data on the medium-term and long-term consequences of accidents.
- There may also be psychological reasons arising out of a genuine ambivalence that is undoubtedly very widespread. Faced with the risk of accident everyone feels threatened and vulnerable; so it is better not to think about it and not to talk about it, so as not to tempt fate. Does the well-known individual reflex “accidents only happen to other people” exist at the collective level? At all events, conflicting interests operate at this level (the cost of safety, the motives of motor car manufacturers and advertisers). This may account for a kind of “law of silence” regarding this scourge of modern times.

Pointers to solutions

General

Better information—objective and not giving rise to anxiety—concerning accident risks and the available preventive measures is a prerequisite for creating the individual and collective awareness essential for any action.

Research on accident epidemiology, on the factors—environmental and psychosocial—involved, and on the means of prevention should make it easier to decide what measures need to be taken. These measures include preventive programmes that combine education, safety techniques and regulations, and which need to be evaluated. Just as important, however, is the formulation of a policy that combines all these activities in an integrated approach (including primary health care).

In a word, everything that can advance knowledge of the danger of accidents and help to develop attitudes and behaviour that will bring the risk under control should be encouraged from early childhood.

This is the context in which this book has been written, the outcome of several years’ work by the WHO Global Programme for Accident Prevention (later the Injury Prevention Programme) and by a number of experts from France (particularly INSERM) and other countries.

This publication is concerned with the age group 1–19 years. These arbitrarily selected limits make it possible to eliminate:

- at the lower end of the age range, incorrect diagnoses of non-accidental injuries and cot deaths;
- at the upper end of the range, occupational accidents which raise different problems, though there are confounding factors, particularly some overlapping of age. However, the problem of suicides remains unsolved, especially in adolescence, and the borderline between suicide and accident is not always clear.

The book deals with three different but complementary approaches:

- the epidemiological approach, which specifies the available data in terms of mortality, morbidity, sequelae of accidental injuries and the methodological problems presented by collection and processing of the data;
- the psychosociological approach, which attempts to catalogue the psychological and social factors, whether endogenous or exogenous, conducive or decisive, that play a role in the origin of accidental injuries. The relationship of these factors with the child's level of development is a particularly interesting topic for study and can be used to guide preventive measures;
- the technological approach, obviously with different considerations for industrialized countries and developing countries.

In Part IV these sectoral approaches are integrated into activities for prevention (planning and evaluation), teaching and research. An attempt is made in the conclusion to point to possible future directions for the policies of countries that wish to take steps to counter the dangers and consequences of accidents.

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^a A limited number of copies of this document are available from: Injury Prevention Programme, World Health Organization, 1211 Geneva 27, Switzerland.