

Injury Control: A Challenge for Health Professionals
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I am honored to have an opportunity to address this distinguished group. The topic of injuries is crucially important and deserves the attention of preventive medicine specialists such as yourselves. My own familiarity with Korea's injury problems is limited by the fact that I have been in Korea for less than a week, but Dr. Sung-Hum Yu has kindly provided me with Korean mortality data for 1985.

Three major points will be addressed in my paper: 1) the size of the injury problem; 2) the need to emphasize injuries and their prevention rather than human behavior, fault, and carelessness; and 3) the effectiveness of preventive measures that automatically protect people rather than relying on the cooperation of everyone who must be protected from injury.

The Size of the Problem

Injuries are clearly a leading health problem of Korea. For all ages combined, accidental injuries are the fourth leading cause of death. Among males, accidental injuries rank third after cerebrovascular disease and hyperten-

sive disease, with suicide ranking tenth. In addition to deaths, the morbidity and permanent disability from injuries represent a tremendous loss of productivity, as well as suffering for the injured and high costs to society.

Injuries are the leading cause of death in Korea for ages 1-44. This is true not only in Korea but also in the United States and most western countries(1). Even in developing countries, injuries kill more members of the population than any disease from early childhood until sometime in the fifth decade of life.

As a result of their importance in children and young adults as a cause of premature mortality, the potential years of life lost because of injury in Korea are more than double the loss because of any disease.

Table 1. Causes of Death in Korea, Age 1-4, 1985

# 1	Accidents	1,356
# 2	Pneumonia	559
# 3	Congenital anomalies	224
# 4	Tuberculosis	123

Among children age 1 to 4, 1,356(29%) of the 4,050 deaths in 1985 were due to accidental injury(Table 1). Thus, almost one out of three deaths in this age group

was due to injury—about 2 1/2 times the number of deaths from pneumonia, the second leading cause.

The most important categories of fatal injury in children are transport (primarily road traffic deaths), falls, and poisoning. In Figure 1, the numbers of deaths are converted to rates per 100,000 in order to compare age groups up to age 34. Rates from all three causes are lowest at ages 5–14, after which the rates rise steeply for both transport and poisoning.

Not shown in Figure 1 are the rates for suicide: 11.2 per 100,000 for ages 15–24 and 12.2 for ages 24–34. Additional suicides are probably “disguised” under other causes. For example, it is likely that a large proportion of the poisonings coded as “accidental” in this age group (and perhaps many of the falls) are in fact suicides. Throughout the world, suicides are often misclassified as accidents because families do not wish the true circumstance to be known. Therefore, I believe the suicide rate in the 15–24 year age group is likely to be at least 20 per 100,000. If so, then out of every 500 15–year olds, one will commit suicide before age 25! In addition to being the leading cause of death in this age group, suicide attempts have important physical and psychological sequelae. A health worker in Kanghwa told me that herbicide ingestion was the most common means of attempts suicide, and that most attempts were not fatal. This means that there are many survivors in need of attention if further (potentially successful) attempts are to be avoided.

Table 2. Deaths from Falls, Ages 1–4

	Number	Rate
Korea	180	5.5/100,000
U. S.	97	0.7/100,000

While there are many differences among countries in their patterns of injury mortality, the high death rate from falls in Korean children (Table 2) seems to be especially worthy of note and concern. Compared to the U.S., the actual number of deaths from falls is almost twice as high and the rate per 100,000 is about 8 times as high. It may be that much of this difference results from patterns of medical care, since far more Korean

children live in rural areas without easy access to good trauma care. The specific circumstances of these falls, however, should be investigated with the objective of developing preventive measures, such as making sure that windows are designed so that children are not likely to fall from them.

Transport death rates also show a very different pattern from the U.S., where death rates peak sharply in the 15–24 year age group—about 66/100,000 for males and 21 for females, several times the corresponding rates for Korea, shown in Figure 2. In Korea, on the other hand, motor vehicle death rates for males are almost twice as high at age 25–34 as at age 15–24. For both countries, rates for males are several times the female rates.

Focus on Injuries, not Carelessness

Even the limited information presented above makes it obvious that in Korea, as elsewhere, there are great differences among various segments of the population in their rates of fatal injury. Undoubtedly, other differences in rates will reflect economic, geographic, and urban/rural variation. Clearly, injuries do not occur at random. In many respects they are predictable—for example, if children play where there is the potential to fall from a height, one can predict there will be falls, some of them fatal.

Injuries also are largely preventable, provided we focus on injuries and modify the physical environments in which they occur, the structures, products, and relevant patterns of use. Unfortunately, too often attention is focused on the behaviors of the injured person or the parents, with undue emphasis or carelessness and fault. The result can be an unwarranted belief that injuries can be prevented through education alone: “If children are poisoned because parents leave medicines within their reach, then parents should be taught to be more careful.” This sounds logical and in fact is true; but the majority of people will not make major changes in their behavior just because they know it will make

DEATHS PER 100,000

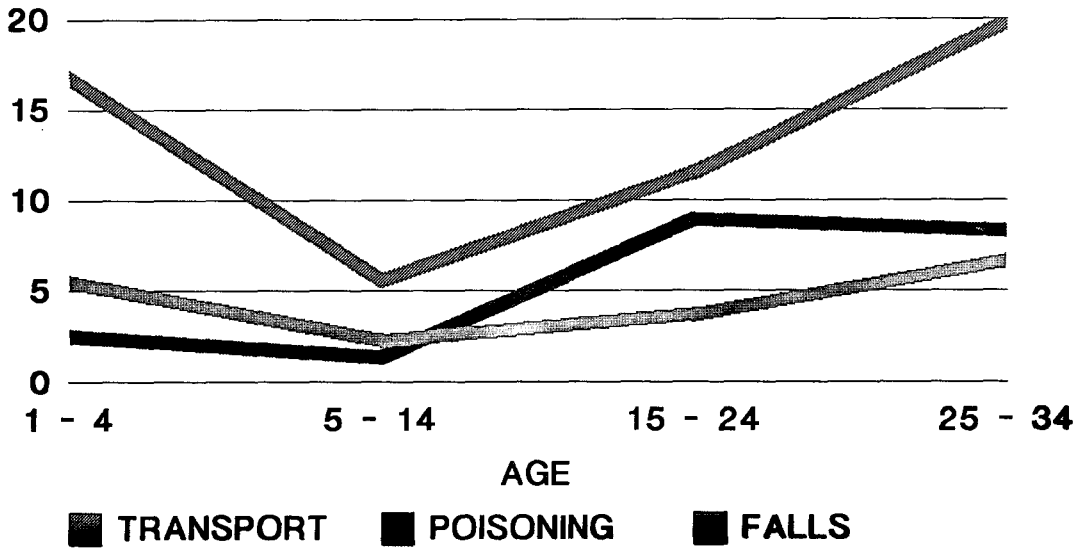


Fig. 1. Accidental deaths-Korea, 1985

RATE PER 100,000

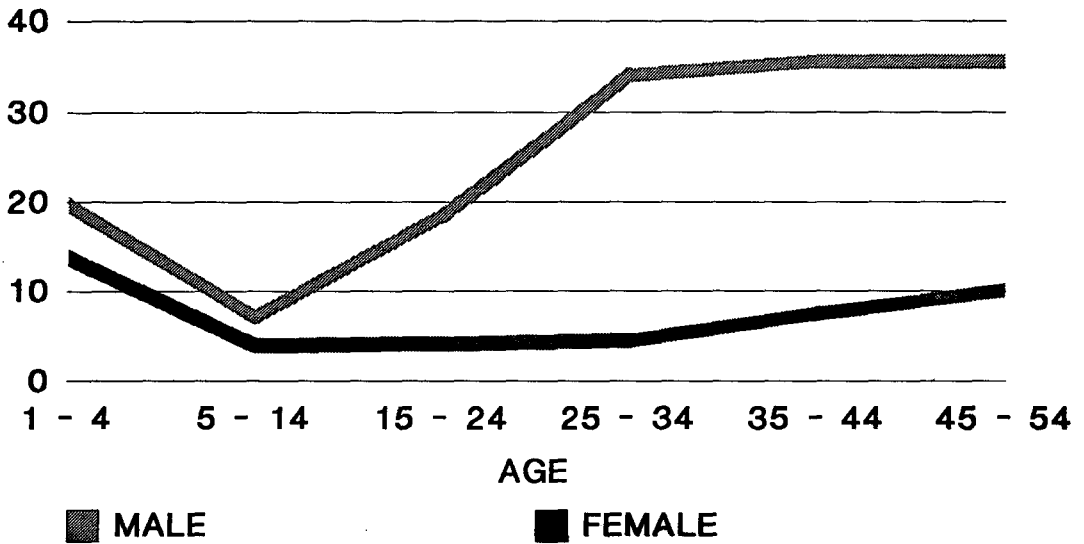


Fig. 2. Transport deaths-Korea, 1985

others or themselves “safer”.

Effective Injury Prevention

Education is an essential component of most injury prevention programs, but usually is ineffective unless accompanied by substantial changes that make it easier to be safe, give people incentives, or provide automatic protection against injury. Examples follow:

Making it easier to be safe. Pedestrian injuries and deaths are often the result of pedestrians choosing what appears to be the easiest way to cross the street. In Rio de Janeiro, in the early 1970s, there were more than 100 deaths each year on a single stretch of a major highway where pedestrians found it too hard to walk an extra half mile or so to an overpass and carry their children and bicycles up and down the stairs; they preferred to take a much easier way directly across many lanes of traffic, even though it meant climbing over the concrete barrier in the middle(2). In Seoul’s central plaza, on the other hand, it is clearly easier and quicker for pedestrians to take the pedestrian walkways under the plaza and so they choose that route. Too often, however, city planners give priority to people in cars, without providing ways that pedestrians can cross streets easily and safely.

Providing Incentives. A few days ago, we talked with a village woman who had had her ondol heating system redesigned so that the floor was heated by hot water passing through pipes, rather than by circulating hot air under the floor. She had been able to do this because the government subsidized the change. Perhaps more important, she liked the new system because the heat was much more evenly distributed. Such an incentive is important when you want people to make a change in established practices. Too often, the desire to be safer is not, by itself, a strong enough incentive to outweigh factors such as cost, trouble, and habits.

The problem of carbon monoxide poisoning from ondol heaters is far from solved, especially in rural areas of Korea. Not only are many old-style systems in use,

but the venting of fumes near the fire and near the exhaust pipe is often inadequate. Research documenting the specific etiology of carbon monoxide poisoning cases should be undertaken, and followed by government action to eliminate the problem.

Providing automatic protection. Farm machinery is associated with devastating injuries, and with death rates that are out of all proportion to the numbers of machines being used. In the United States, in the past 50 years the death rate from farm machinery went up by 44%—at the same time that the death rate from non-farm machinery went down by 79%(1). A major reason for the differences was that the government did not require farm machinery to provide any sort of automatic protection to the worker. Non-farm machinery, on the other hand, has been required to have shields that automatically keep the worker from getting his or her hands, feet, hair, or clothing caught in moving parts. As mechanization becomes increasingly prevalent in Korea, its benefits will be outweighed by death and disability unless the government takes steps to require that all machinery sold in Korea be designed to minimize the possibility that workers will be injured.

An example of successful automatic protection is the “airbag,” an automotive restraint system that inflates so quickly in a frontal crash that it protects the driver from injury. Even seat belts do not give complete protection, so that the combination of airbags plus seatbelts is the ideal situation. Unfortunately, seat belt use is uncommon in Korea. Even in countries that enforce seat belt laws, the people who are most likely to be involved in crashes—those who speed, fail to stop for traffic lights, or drive while intoxicated—are unlikely to be wearing seat belts. This makes it extra important that cars be designed to give maximum built-in protection to passengers through side impact protection, better windshields, padded instrument panels, airbags, etc.

At the same time, seat belt usage should be required. Korea is outstanding in the degree to which rear seat occupants are provided with “three-point” restraints or combined lap and shoulder belt systems. I wish we were

this progressive in the U.S.!

In closing, let me say that I have found much to admire in Korea. In particular, your bright and dedicated physicians, nurses, and other health professionals are a great resource. I hope that all of you will take advantage of your opportunities—through research, teaching, and working with the government, media, schools, and other leaders—to attack the problems that lead to unnecessary injury.

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