

**AN EPIDEMIOLOGICAL STUDY OF ACCIDENTS IN TEHERAN,
IRAN ★**

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Introduction.

Accidents are a major source of medical concern; they are steadily increasing throughout the world, and, as one of the prime causes of casualty and fatality, are of direct epidemiological concern.

In Iran, preliminary researches into this area have just begun. Research into this area of ecology is likely to be of considerable importance to preventive medicine in Iran and elsewhere, despite certain considerable difficulties.

Research method

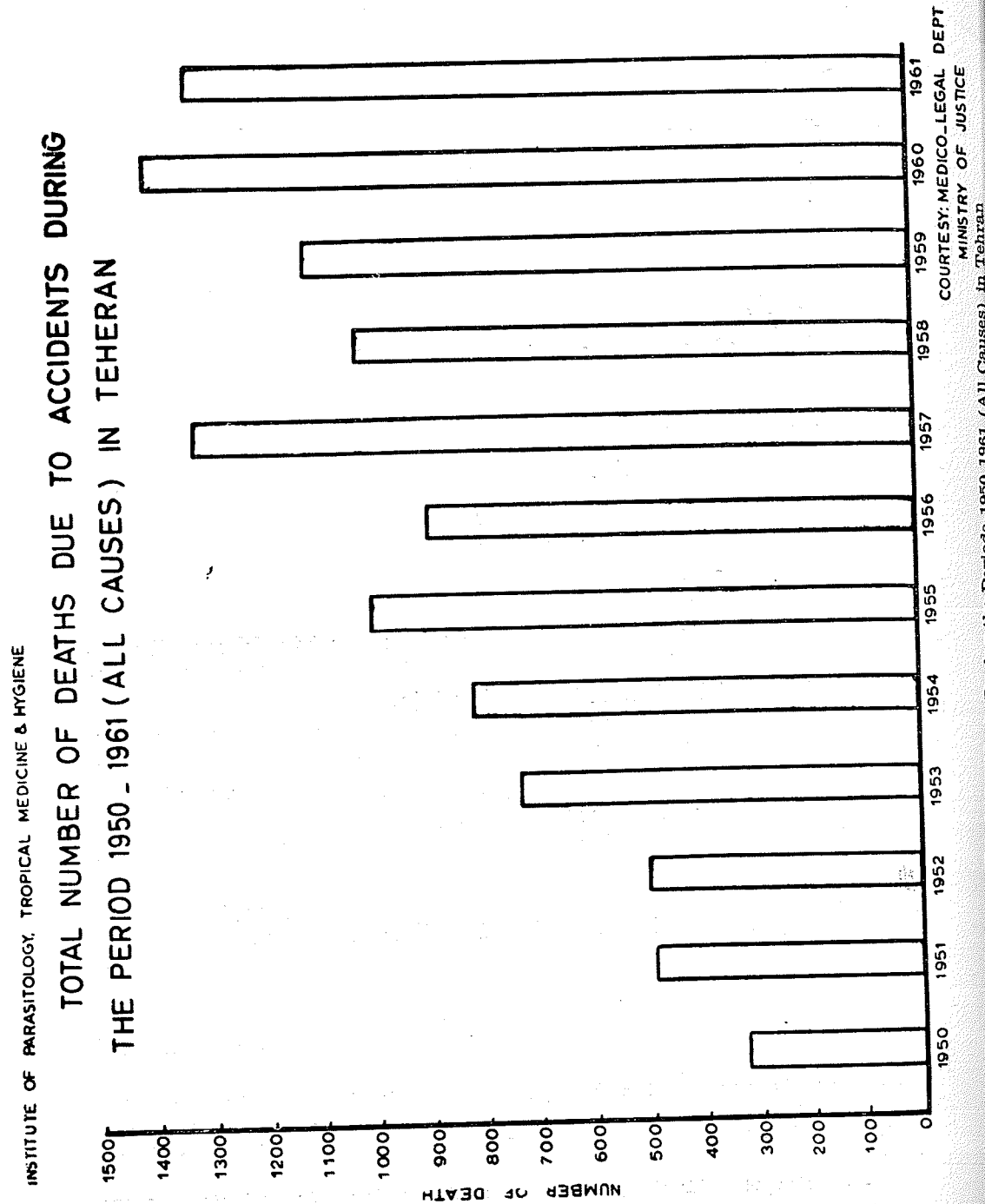
Clearly, a survey of this sort should desirably embrace both a statistical analysis and direct interrogation of families for a period of from 5 to 10 years. However, with respect to Tehran, all accessible statistics were investigated for the period (1960-1961). Attention is called to the partial nature of the ensuing data.

Sources of this study: A study of the accident pages and rapportage of newspapers in Iran during the year 1961 with all repetitions deleted, revealed 5363 accidents. Nine major Tehran hospitals were also investigated. The statistics of five of these were employed for study, survey and analysis. Altogether, 16,903 accidents were extracted from hospital records.

Data of deaths due to accidents were also obtained from the Forensic Medicine Department of the Ministry of Justice; as well as some statistics for the period (1950-1959) though different types of accidents not separable for these years utilized for extrapolative purposes. (See graph 1) The Office of Vital Statistics of the Ministry of Health also provided cause-of-death data for Tehran, 1961; and statistics relating to accidents to insured

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Graph 1. Deaths Due to Accidents During the Period 1950-1961 (All Causes) in Tehran

workers for all Iran during 1960 were obtained from the Labor's Insurance Organization.

In sum, more than 25,000 accidents cases for the period 1960-61 were studied. Data processing by IBM Mashines was carried out with the assistance of the General Statistical Department of the Ministry of Commerce. The effort was made to make the distribution of categories as complete as possible.

Discussion:

Despite the aforementioned difficulties and drawbacks and the insufficiency of the collected data, we believe the results of the study to be valid, intersting and useful.

It is to be hoped that the foundations have been laid for future detailed and multi-faceted studies.

A number of problems of direct and immdiate interest have been exposed and their nosology considered.

Accidents are significant to preventive medicine not only because of a large number of deaths, but also because of the even greater number of accident-induced injuries, with concomitant economic, social and psychological traumata and losses.

Approximately 1400 deaths and 17000 severe injuries have been accident-induced annually in Teheran in recent years. Accidents are in sixth place as causes of death in Teheran. (See table 1 and graph 2). They rank **first** as the cause of death for the age groups of five to 44 years, and **fourth** for ages one to 44 years. (It should be noted that these age groups embrace both the new generations and the active generations, sociologically speaking).*

Employing the general classification recommended by WHO, the distribution of accident types are the following:

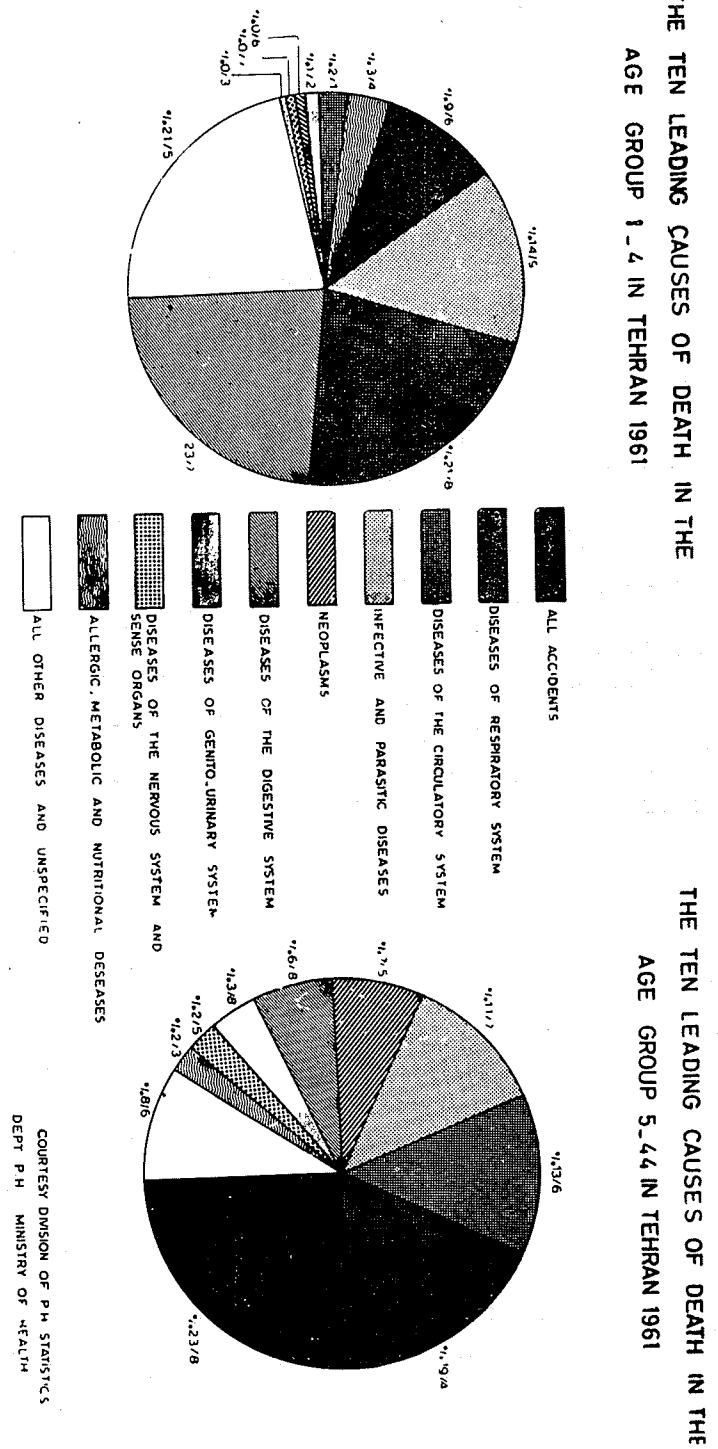
- | | |
|-----------------------------------|-------|
| 1. Motor vehicle accidents | 27.8% |
| 2. Other transport accidents | 3.7% |
| 3. Drowning | 19.6% |
| 4. Falls & bldg. collapse | 16.8% |
| 5. Burns (all sorts) | 12.4% |
| 6. Poisoning | 8.8% |
| 7. Accident caused by electricity | 2.6% |
| 8. All other accidents | 8.3% |

*) Despite notable improvements in hygiene and health education, mortality among children in Teheran is still very high; 36.7% of total mortality in Teheran is of infants under the age of one year; 51.0% of the total mortality is taken up by children between 0 - 4 years of age. In other words, if we eliminate child-mortality (4 and under) from the general mortality figures, accidents would rise from sixth to thrid place as a cause of death.

Table I. The ten leading causes of death, all ages, Tehran (1961)

Code No.	Causes of death	No. of deaths	% of each cause to all causes	Death rates Per 100,000 population
BI-BE50	All causes	20432	100.0	1133.6
B30-B32	Diseases of respiratory system	3606	17.7	200.1
B33-B37	Diseases of the digestive system	2842	13.9	157.7
B24-B29	Diseases of the circulatory system	2330	11.4	129.3
BI-B17	Infective and parasitic diseases	1775	8.7	98.5
B42.	Congenital Malformations and certain diseases of early infancy	1457	7.1	80.8
BE47-BE48	All Accidents *	1367	6.7	75.8
B18	Neoplasms	1007	4.9	55.9
B20	Allergic, Metabolic, and Nutritional diseases	772	3.8	42.8
B38	Diseases of Genito-urinary system	680	3.3	37.7
B22	Diseases of the Nervous system and sense organs	396	1.9	22
	All other diseases and unspecified	4200	20.6	233

* Suicides and homicides are included



Graph 2. Ten Leading Causes of Death in the Age Groups 1-4 and 5-44, Tehran, 1961

Within these 8 categories (subdividable to 33 subcategories) of accidents, the fact that traffic accidents have attained top place is of interest. (See graph 3)

The ratio of vehicles to population in Teheran is less than in the United States: Tehran has one motor vehicle per 20 persons, the U.S. has one for every three. Yet the proportion of fatal accidents is about the same in the two places. Out of each 100,000 persons in Teheran, approximately 23 die in auto accidents. (see table 2)

Age distribution for different types of accidents and causes of death are shown in tables 3 and 4.

In the U.S. (and elsewhere), the proportion out of 40 accidents is about one fatality to 6-8 serious injuries, and 20-30 slight injuries. In Teheran, of 9 injured persons, one dies. This datum is ambiguous as to cause: it may result from insufficient care: from insufficient recording of the slighter injuries; or from inadequate and, or delayed treatment of injuries leading to more severe consequences.

21% of deaths due to accidents is among infants (age-0-4.) Of these, 65% are due to drowning; 19% to burns and falls; 16% to poisoning and other accidents. This contrasts with the age-group 25-44 where the major cause of death is auto accidents (36%), followed by falls and building collapse ("aavaar") (17%), burns (11.5%), poisoning (13.0%) - of which 6.5% food and alcohol poisoning and 6.5% carbon monoxide and other poisonings-and other accidents (22.5%).

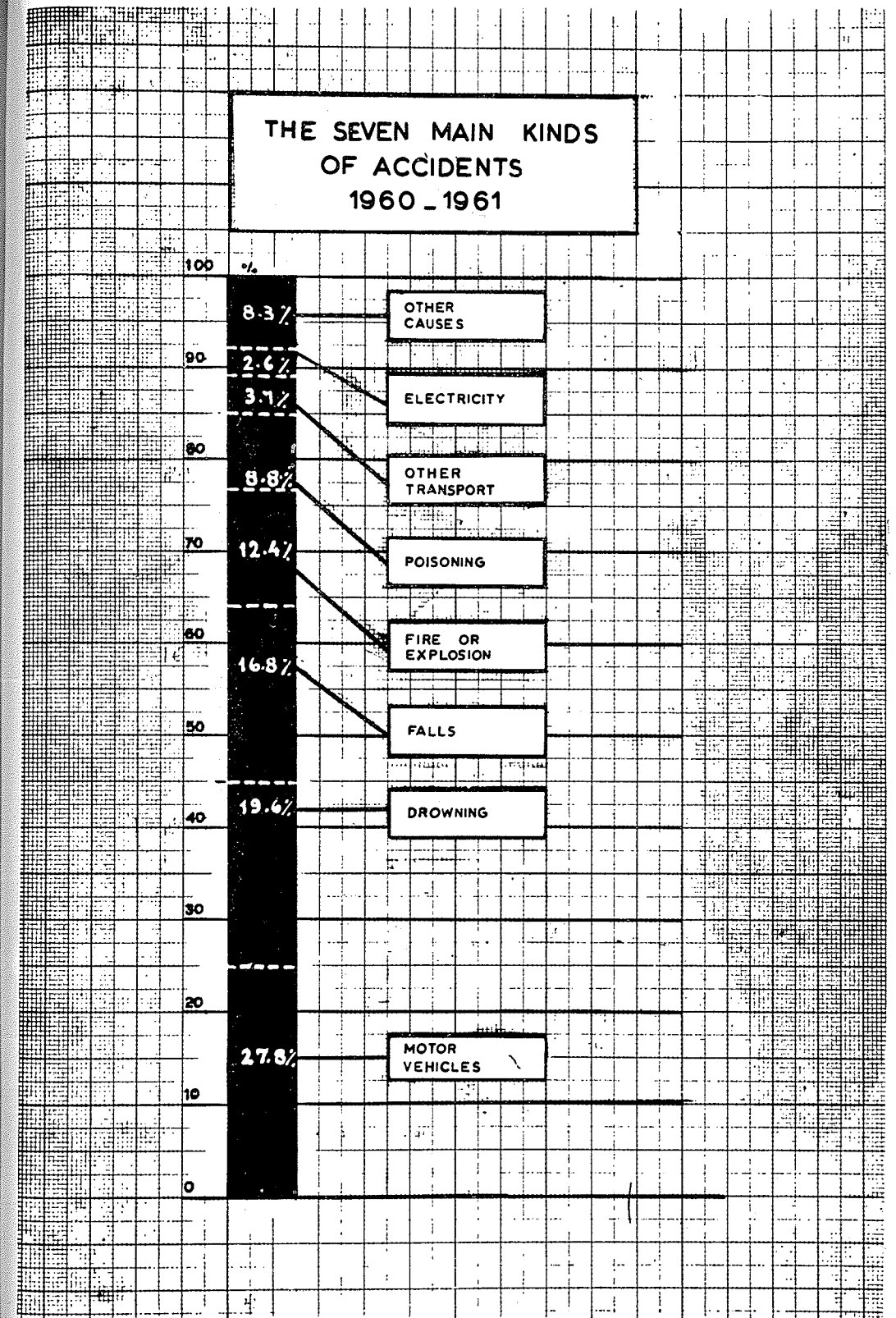
The analysis of 5363 records of accidents extracted from newspapers for the year (1961) has shown that the proportion of accidents is, expectably, greater in Teheran (Tehran: 57%; other part of the country: 43%). The greatest number of accidents occur in the summer. The level of casualties due to accidents has risen steadily since 1950. In 1950, there were 370 accident-deaths in Teheran of which 237 were caused by autos; in 1961, total deaths reached 1367 with 396 auto deaths (1).

With the exception of deaths due to burning, the ratio by sex is one woman killed for every three men. Thus, in 1961, 12,340 men were involved in accidents in which 960 deaths resulted (7.7%). 4434 women had accidents, with 407 deaths (9.1%).

Certain accidents are necessarily seasonal: deaths from carbon monoxide suffocation occur almost exclusively in winter; death by drowning is of course greatest in summer.

Falls and injuries suffered in the collapse (in whole or part) of buildings accounted for 2325 hospitalizations in 1961. Of these, 1818 were male and 507 female. 572 were between 1 and 4 years of age. In general, 8.6% of

1. Attention is once drawn to the incomplete nature of the data.



Graph 3. Seven Main Kinds of Accidents, Tehran 1960-1961

**Table 2. Number of deaths and % of deaths from various types of accidents to total deaths due to accidents and ratio per 100,000 population
Teheran (average of years 1960-61)**

Type of Accident	No. of death	% of each accident to all accidents	Death Rate per. 100,000 population
All accidents *	1273	100	71.5
Motor vehicle accidents	401	31.5	22.5
Drowning	249	19.6	14.0
Falls	214	16.8	12.1
Fire and burns	158	12.4	8.9
Poisoning	112	8.8	6.2
Deaths by electricity Accident Caused by electricity	33	2.6	1.8
Other accidents	106	8.3	6.9

* Suicides and homicides are not included

Table 3. Deaths due to different types of accidents, by sex and age. Teheran (1961)

Code No.	Type of Accident	All Ages	Age groups in years						
			-1	1-4	5-14	15-24	25-44	45-64	65+
BE47-BE48	All accidents	M 1067 F 351	29	156	130	161	365	169	57
AE 138	Motor vehicle accidents	M 307 F 59	—	12	43	44	114	64	30
AE 139	Other transport accidents	M 29 F 12	—	4	16	4	8	16	11
AE 146	Accidental drowning and Submersion	M 29 F 12	—	1	3	6	6	6	4
AE 141	Accidental falls	M 147 F 97	2	97	26	7	10	5	—
AE143-AE144	Accident caused by fire, explosion and hot substance	M 177 F 49	6	74	11	2	4	—	—
AE 140	Accidental poisoning	M 106 F 59	1	14	14	13	48	16	—
E 914	Accident caused by electricity	M 78 F 16	—	10	18	9	15	4	3
BE49-50	Suicide and homicide	M 37 F 2	—	—	5	1	12	6	—
AE 147	All other accidental causes	M 100 F 26	1	1	2	2	57	18	1
		M 86 F 31	24	7	5	10	27	11	2
			14	—	—	1	13	2	1

Table 4. Deaths due to different types of accidents by sex and age. Tehran (1960)

Code No.	Type of Accident	All ages	Age groups in years								Not stated
			1	1-4	5-14	15-24	25-44	45-64	65+		
B1-BE50	All Causes	M 11689 F 8743	4248 3263	1587 1406	401 317	385 236	1182 665	2268 1369	1583 1455	35 32	
BE47-BE48	All Accidents	M 960 F 407	23 20	152 135	97 70	140 43	349 59	152 45	47 35	— —	
AE138	Motor Vehicle Accidents	M 272 F 71	— —	15 7	34 11	49 2	105 15	55 21	14 15	— —	
AE139	Other transport accidents	M 47 F 6	— —	— —	3 2	11 —	19 3	9 1	5 —	— —	
AE146	Accidental drowning and submersion	M 138 F 116	1 —	97 90	18 20	6 1	9 3	4 —	3 2	— —	
AE141	Accidental falls	M 149 F 53	— —	17 15	14 12	20 4	65 5	27 9	6 6	— —	
AE143-AE144	Accident caused by fire, and explosion and hot substance	M 81 F 70	1 1	14 12	12 23	6 10	36 12	9 6	3 6	— —	
AE140	Accidental poisoning	M 100 F 31	1 1	7 5	7 1	21 14	46 7	15 1	3 2	— —	
E914	Accident caused by electricity	M 25 F 2	— —	— —	— —	4 1	15 —	— —	— —	— —	
BE49-50	Suicide and Homicide	M 87 F 26	— —	1 4	5 —	17 6	41 10	16 3	8 2	— —	
AE147	All other accidental causes	M 61 F 32	20 15	1 1	1 1	6 5	13 4	15 4	5 2	— —	

these casualties died immediately or shortly after hospital admission. The greatest mortality in this category is that of infants below 1; as age increases from 1 to 19, the rate of mortality decreases to 2.6%; thereafter, as age increases, mortality increases in direct ratio (from 45 to 64, 16.5%. At 65 and year over 21.5%).

With respect to poisoning, 5009 persons (3098 male 1911 female, of which 1016 children under 4 years of age) were hospitalized in 1961. Food and alcohol poisoning caused a substantial number of death. The mortality of poisoned persons is 2.5 percent. Among 1016 children, most were poisoned by the ingestion of kerosene and petrol taken in place of water, or consumption of over dose of medicine or excessive opium given as a tranquilizer. 12 children died from poisoning in 1961; the number of death due to poisoning among children (0-4) in 1960, was 17, but the total number of poisoned children is not known for this year.

Trauma, entrance of foreign bodies and burns of the Eyes caused 3434 persons mostly males to suffer in 1961, 76% of the above figure was occupational accidents, and 24% by fighting and through children's play. Unfortunately it is not possible to give the percentage of blindness caused by eye accidents.

During the years (1960-1961) there were 27 deaths caused by medical accidents; 17 cases caused by penicilline injection shock and the rest criminal abortion and haemorrhagia or retention of placenta.

Fights, Suicides and Murders

Fights, murders and suicides have not been included in the above rubrics and call for separate discussion.

Suicide: The number of suicides has increased from (1950) to (1961). In 1950, there were three recorded cases; in 1960, there were 52; in 1961 there were 40. (Also 17 adults workers of both sexes died from poisoning with insecticides, Luminal tablets or some other poisons, not recorded as suicide.)

For 1961, the reported distribution was:

	ATTEMPTS	SUCCESSES	PERCENTAGE
Total	707	40	5.6%
Male	376	33	8.7%
Female	331	7	2.1%

The most prevalent method of suicide was taking of opium (90%). Other methods included the ingestion of indigenous depilatories containing lime ("vadjibi" and "zarnikh"), barbiturates and other narcotics, vegetable poisons, hanging, slashing of veins and arteries. The greatest number of suicide attempts occur in spring.

Fights and Murders

In both 1960 and 1961, there was an average of one murder every five days, or six per month.

There were 1034 instances of assault and battery; 521 stabbings, 485 fistfights and 28 shootings. 120 of these involved women. 7% of these resulted in deaths; 15% in the case of women fights, 6% in the case of men.

The greatest number of deaths due to these causes occur in the Iranian month of Ordibehesht (i.e., ca. April).

Summary

In order to study the epidemiology of accidents in Tehran City, the author has collected and analysed records of more than 25,000 accident cases for the period 1960-61 from all available sources such as newspaper rapportages, nine major hospitals of Tehran, Forensic Medicine Department of Ministry of Justice, Vital Statistics Department of Ministry of Health, Labors' Insurance Organization, etc.

Approximately 1400 deaths and 17000 severe injuries are accident-induced annually in Tehran and accidents are in the sixth place, as causes of death (=6.7%). They rank first as the cause of deaths for the age group 5-45 years (=23.8%) and fourth for the age group 1-44. (=9.6%).

The distribution of accident types is as follows:—

1. Motor vehicle accidents	27.8%
2. Other transport accidents	3.7%
3. Drowning	19.6%
4. Falls and building collapses	16.8%
5. Burns (all sorts)	12.4%
6. Poisoning	8.8%
7. Accident caused by electricity	2.6%
8. All other accidents	8.3%

Various epidemiological aspects of these accidents and an analysis of fights, suicides and murders are given in the body of the paper.

Sommaire

L'auteur a réuni et analysé les records de plus de 25,000 cas d'accidents à Tehran pour la période 1960-61.

Approximativement 1400 morts et 17000 cas de blessures sévères sont produits par les accidents chaque an à Tehran.

Ces accidents occupent la place No. 6 dans la série des causes de décès (=6.7%). Ils rangent le premier parmi les causes de décès pour le groupe d'âge 5-44 ans (=27.8%) et le quatrième pour le groupe l'âge 1-44 (=9.6%). La distribution des types d'accidents est donné ci-dessous:

1. Accidents de vehicule a moteur	27.8%
2. Autres accidents de transport	3.7%
3. Noyade	19.6%
4. Chutes et collapses de batiments	16.8%
5. Brûlure (Toute sortes)	12.4%
6. Empoisonnement	8.8%
7. Accidents causé par l'électricité	2.6%
8. Autres accidents	8.3%

Différent aspects épidémiologiques de ces accidents ainsi qu'une analyse des cas de luttés et assauts, suicides et crimes sont décrit dans cet article.

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