

## EPIDEMIOLOGY OF WORK ACCIDENTS IN IRAN

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### SYNOPSIS

A survey on the epidemiology of work accidents in Iran notified for the period of one year (21st March 1973 to 21st March 1974) indicates that the incidence of work accidents is 24.94, and fatal rate per 1000 workers, 0.37. 90 per cent of accidents occurred inside the industrial plants. Human factor expressed in this survey as carelessness, is the main cause of work accidents. These findings emphasize the basic need for improving both the vocational and safety training of workers as well as strict implementation of safety regulations. In notifying and registering work accidents, Social Insurance and Ministry of Labour should implement the ILO Recommendation No. 97 on protection of worker's health. Work accidents in non-insured workers should also be notified.

### INTRODUCTION

Man's interference with his environment has often exposed him to hazards. Work accident results when the circumstances in which man develops his activities are beyond his capacity to control. With rapid progress of industrialisation, more attention must be paid to the health and safety programmes in industry, especially in a country with chronic skilled-labour shortage.

This paper reports the findings of an investigation on the epidemiology of work accidents as occurred in a group of insured workers in Iran.

### MATERIAL AND METHOD

According to the labour and social insurance law in Iran, the employer is obliged to report all work accidents. Special standardized forms have been produced by the Ministry of Labour and Social Insurance for this purpose. They include the name and address of the employer, name and address of injured worker, age, sex, occupation, nature of work being carried out at the time of the accident, how the accident happened, nature of the injury and other relevant information. The findings reported in this paper were obtained from analysing 27,997

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forms received by the Social Insurance during the period from 21st March 1973 to 21st March 1974. These data were compared with those reported by the National Insurance for 71/72 and 72/73 in respect of incidence rate and outcome of work accidents and the rate of fatal accidents. Accident incidence rate was calculated for one year according to the formula:

$$\text{Incidence rate} = \frac{\text{Total number of accidents} \times 1000}{\text{Average number of persons exposed}}$$

**RESULTS**

1. Incidence rate: In the period of 1971-1974 the incidence rate of industrial accidents among the insured workers varied between 26.06 and 24.94. As shown in Table 1 there is slight tendency for the rate to decrease.

**TABLE I. Incidence rate of work accidents in insured workers.**

YEAR		71/72	72/73	73/74
No. of insured workers		823933	1001328	1122393
Accidents	Number	21475	25830	27997
	Incidence rate	26.06	25.79	24.94

2. Distribution of accidents according to type of industry: Chemical, construction and metal industries have the highest rate of accidents as shown in Table II. Chemical industry had an incidence rate of 63.71 per cent, construction industry 44.35 per cent and metal industry 39.10

**TABLE II. Accidents according to the industry — 73/74**

INDUSTRIES	No. of workers.	No. of accidents	Incidence rate
Agriculture, forestry, hunting	22837	471	20.62
Mining	62043	1130	10.34
Food	85976	1166	13.56
Textile, clothing	169889	3035	17.86
Lumbering	30911	1064	34.42
Chemical	52475	3343	63.71
Metal	205383	8031	39.10
Construction	158597	7033	44.35
Water, Power	45196	639	14.14
Trade, insurance	22538	100	4.44
Transportation	63126	941	14.91
Public Services	192157	630	3.27
Others	11265	406	36.04
<b>TOTAL</b>	<b>1122393</b>	<b>27997</b>	<b>24.94</b>

per cent. These three industries involve hazardous operations to which large numbers of people are exposed.

3. Accident rate related to the age groups: Workers below the age of 19 years had the highest incidence rate. As shown in Table III there is a definite decrease in the incidence rate with increasing age.

**TABLE III. Accidents according to the age groups\*\***

Age groups	-19	20-29	30-39	40-49	50-59	60-69	70+	TOTAL
No. of Workers	91025	329085	345697	219539	91026	30192	15828	1122393
No. of Accidents	3770	11196	6594	3545	1040	137	48	26331
Incidence rate	41.42	34.02	19.15	16.15	11.42	4.54	3.03	23.46

\*\*In 1666 cases, the age was not reported.

4. Place of occurrence: 90.16 per cent of the total accidents occurred in the industrial plants, as shown in Table IV, and 9.59 per cent of accidents occurred outside the plant during travel to or from the work.

**TABLE IV. Accidents according to the place of occurrence**

Place Accident	In the Plant	Out of Plant	Unknown	TOTAL
Number	25242	2686	69	27997
Percentage	90.16	9.59	0.25	100

**TABLE V. Accidents according to the cause.**

Cause	Number	%
Improper protective equipment	606	2.17
Defective equipment	835	2.98
Carelessness	19910	71.12
Defective illumination	84	0.30
Improper ventilation	18	0.06
Improper clothing equipment	88	0.31
Unskilled	2019	7.21
Other causes	4437	15.85
<b>TOTAL</b>	<b>27999</b>	<b>100</b>

5. Causes of the accidents: The data were based

on special accident reports completed by the foremen, safety officers or factory inspectors. As shown in Table V, 71.12 per cent of accidents are caused by carelessness of the workers. Environmental factors appear relatively unimportant (0.36 per cent), while only 0.31 per cent of accidents were registered as caused by inadequate clothing equipment.

6. Topography of the injuries: Most of the accidents occurred in the extremities (Table VI). There is an approximately equal incidence for the head, the eyes and the body.

TABLE VI. Accidents according to the injured organ

Injured Organ	Head & Neck	Eye	Hands & Arms	Feet	Body	Unknown	TOTAL
No. of Accidents	2302	2440	12092	7755	2588	722	27997
Percentage	8.22	8.72	43.19	27.70	9.24	2.58	100

7. The final outcome of the accidents (Table VII): The assessment of the outcome was made over a period of three years. Death due to industrial accidents occurred in 1.45 to 1.86 per cent of the total number of accidents. The incidence of temporary disablement ranged from 97.68 to 98.21 per cent. The rate of fatal accidents per 1,000 workers appears to decrease progressively from 1971, as shown in Table VIII. Table IX compares the rate of fatal accidents for different countries (Hellen, 1974).

TABLE VII. Accidents according to the results

Year		Death due to accident	Permanent Disablement	Temporary Disablement	TOTAL
71/72	No.	400	98	20977	21475
	%	1.86	0.46	97.68	100
72/73	No.	378	86	25366	25830
	%	1.46	0.33	98.21	100
73/74	No.	420	122	27455	27997
	%	1.50	0.44	98.06	100

TABLE VIII. Rate of fatal accidents per 1000 workers

Year	Rate
71/72	0.48
72/73	0.38
73/74	0.37

TABLE IX. Rate of fatal accidents per 1000 workers in different countries in the year 1971.

Country	1971
United Kingdom	0.039 (1972)
Ireland	0.04 (1972)
Bangladesh	0.07
Nigeria	0.10
Canada	0.14
Switzerland	0.17
Hong Kong	0.19
Austria	0.23
Guatemala	0.20
Iran	0.48
Zambia	0.92

DISCUSSION AND CONCLUSION

The intention of reporting the epidemiological features of work accidents in Iran is to provide a base line for further assessments of the problem. This investigation also reveals the need for an improvement in the notification of work accidents as well as in the elaboration of safety and educational programme aimed at controlling those circumstances that cause accidents. Toward these aims, the following is suggested:

1. A complete and correct evaluation and notification of work accidents according to the ILO Recommendation No. 97 on Protection of Workers' Health (International Labour Organisation, 1953).
2. Work accidents in non-insured workers should also be notified.

The findings suggest that presently in Iran, human factor is the main cause of industrial accidents. This means that suitable planning and implementation of safety rules in the industrial plants could diminish the number of industrial accidents. Training of workers on safety procedures and strict implementation of these procedures are also important. It is doubtful that environmental conditions of work cause only 0.36 per cent of total work accidents, and it is suggested that the safety committees in the industrial plants should focus attention on detection and control of noxious agents in the work environment.

The high rate of fatal accidents in Iran as reported here could be partly attributed to the more efficient system of notification in that country.

**REFERENCES**

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