

# Predisposing Factors and Pattern of Injuries in Industrial Trauma

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## ABSTRACT

Trauma is one of the leading cause of presentation to the surgical emergency and one of the increasingly common causes of trauma is industrial occupation. Industrial injuries are not only a constant threat to its workers but also constitute a considerable surgical emergency work load and such injuries pose a challenge to all surgeons. The objective is to enlist predisposing factors and pattern of injuries of industrial trauma. This descriptive study was carried out from Jan 2006 to Dec 2007 in the West Surgical Ward Mayo Hospital, Lahore. One hundred patients aged >12 years with industrial trauma were included. The patients injured in some previous accidents and having amputation or surgical procedure done, were excluded. The pattern of injuries such as musculoskeletal 59%, abdominal 19%, vascular 9%, eye 8%, chest 4% and head injury 1% were recorded. It is concluded that injuries sustained by workers may be prevented by proper working techniques and conditions together with wearing of protective gadgets.

**Key words:** Trauma, Industrial injury, Pattern, Predisposing

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## INTRODUCTION

While there is a growing body of research on the impact of work schedules on the risk of occupational injuries, there has been little investigation into the impact that the day of the week might have.<sup>1</sup> Injuries affect all human being and range from minor cuts and bruises to major catastrophes that take thousands of lives<sup>2</sup>. Modern life and industry have created many fresh hazards against which man's primitive instinct offers no protection. This natural behaviour may even increase his injuries<sup>3</sup>. Since the World War II the speed and technological innovation has altered the work place more profoundly than at any time since industrial revolution. The speed and technical complexity of change have generated more and more regulations aimed at maintaining a safe and healthy working environment<sup>4,5</sup>. Factories are still using primitive techniques and processes in production. Workers work for long hours, and without safety measures in the factories. Industrial hazards may be caused by human error or by physical or mechanical malfunctions, but it is very often possible to eliminate the worst consequences of human error by engineering medications<sup>6</sup>.

Industrial injuries are a common occurrence and contributes to a large segment of workers' morbidity.<sup>7</sup> In the developing countries, one of the increasingly common factors of trauma is industrial occupation. In Pakistan industrial development has taken place at the expense of safety precautions<sup>8-10</sup>. One of the important consequences of an occupational injury is

that the worker may be temporarily or permanently incapacitated. This in turn obvious financial effects upon that individual, his family and indeed the state<sup>11,12</sup>. The purpose of our study is to identify the predisposing factors and pattern of injuries, which can be used to improve management strategies of the injured workers and hence reducing the morbidity and mortality.

## PATIENTS AND METHODS

This descriptive study of 100 patients was admitted through Accident & Emergency Department of West Surgical Ward, Mayo Hospital, Lahore during Jan 2006 to Dec 2007. Which is tertiary care hospital attached to the King Edward Medical College, Lahore. Male patient age above 12 years with industrial trauma was included. Patients injured in some previous accidents and having amputation or surgical procedure done, were excluded from the study. All patients underwent detailed history and physical examination with special emphasis to determine the predisposing factors and pattern of injuries. Routine investigations and X-rays were done to assess the fitness for general anaesthesia and to localize the extent of injuries. Post-operative findings, recovery and discharge from the hospital were noted.

## RESULTS

The patients shown in table 1 were divided in six age groups. The first group had patients aged <20 years (n=10) 10%, in second group, patients aged 20-29 years (n=25) 25%, in third group, patients aged 30-39 years (n=15) 15%, in fourth group, patients aged 40-49 years (n=20) 20%, in fifth group, patients aged 50-

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60 years (n=25%) 25% and in the sixth group, patients aged >60 years (n=5) 5%. The mean age of all the study subjects was 37.7±12.3 years.

Table 2 showed the duration of job within injuries. Those within duration of job between 1-9 years had 1 (50%) major and 1 (50%) minor injuries. Between 10-19 years had 10 (31.25%) major and 22 (68.75% minor injuries. Those who had duration of

job 30 years and above had 6 (23.07) major and 20 (76.93%) minor injuries.

Table 3 showed the overall pattern of injuries in different industries. It is obvious that the leading injury involved musculoskeletal system 59%, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> being the abdominal, vascular, chest, eye and head injuries respectively.

Table 1: Frequency distribution of patients according to age (n = 100)

Age (years)	=n	%age
< 20	10	10.0
20 – 29	25	25.0
30 – 39	15	15.0
40 – 49	20	20.0
50 – 60	25	25.0
> 60	5	5.0

Table 2: Frequency distribution of injuries among job duration (n = 100)

Duration of job (years)	Total	Major Injuries		Minor Injuries	
		Frequency	Percentage	Frequency	Percentage
1 – 9	2	1	50.0	1	50.0
10 – 19	32	10	31.25	22	68.75
20 – 29	40	11	27.50	29	72.50
30 & above	26	6	23.07	20	76.93
Total	100	27	23.0	73	73.0

Table 3: Overall pattern of injuries (n = 100)

Industries	Pattern of Injuries					
	Musculoskeletal	Abdominal	Vascular	Chest	Eye	Head
Textile	15	5	2	3	-	-
Press	30	10	5	-	-	-
Welding	4	-	-	-	6	-
Agriculture	4	4	-	-	-	-
Mines	-	-	-	1	-	1
Metal cutting	6	-	2	-	2	-
Total	59	19	9	4	8	1

## DISCUSSION

The role of age of workers in industry has a great importance because working in industries can not be an easy job due to hard work, technical skill and physical exertion involved.<sup>13</sup> In the present study, the severity of injury was more in extreme ages i.e. below 20 years and above 60 years. Abdullah et al<sup>7</sup> reported that 79.52% of the injured workers were in the 40-59 age group. Our results are consistent with them. Thirteen patients of major injuries and 12 patients of minor injuries was 5<sup>th</sup> decade of life, followed by 2<sup>nd</sup> decade, 6 major injuries and 19 minor injuries.

Duration of the job has an effect on protection from injuries as well as performance of the worker. The longer the job length, the better work would be expected from the worker and safety measures adopted by him can also be considered directly proportional to the job length.<sup>14</sup> In the study of 100

workers, the minimum job length was one year to maximum 42 years. The duration of job of majority of workers was between 1-23 years. Those with duration of job between 1-9 years had 1 major and 1 minor injuries, between 10-19 years had 10 major and 22 minor injuries, between 20-29 years had 11 major and 29 minor injuries. Those who had duration of job 30 years and above had 6 major and 20 minor injuries.

Setting standards for each process at work place and strict implementation of these standards improves the working conditions and reduce the chances of injury.<sup>14,15</sup> In the present study the largest number of patients were related to press industry. The reason was that, in most industries workers had to handle the machines manually without any protective devices.

It was concluded that strict implementation of safety measures and Pakistani labour law, proper training of employees, and the development of

agencies for the prevention of occupational accidents would be important in the prevention of industrial injuries in Pakistan.

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