

Original Article

Occupational Injury Patterns of Patients Presented to Trauma Centre Gujranwala Teaching Hospital Gujranwala.

Asif Yousaf^{1*}, Qudous Ul Hassan², Omer Farooq¹, Irfan Ullah³, Wajahat Saleem⁴, Syed Asif Ali Shah⁵, Tayyab Shoaib⁶, Mohammad Nauman Shahid⁷

¹Post Graduate Resident, Gujranwala Teaching Hospital Gujranwala Pakistan.

²Post Graduate Resident, DHQ Gujranwala Pakistan.

³Resident Orthopaedic, Khyber Teaching Hospital Pakistan.

⁴Resident Orthopaedics, Gujranwala Teaching Hospital/ Gujranwala Medical College Pakistan.

⁵Professor Of Orthopaedics, Gujranwala Medical College Gujranwala Pakistan.

⁶Assistant Professor, Gujranwala Medical College Gujranwala Pakistan.

⁷Consultant Orthopaedic Surgeon, Gujranwala Teaching Hospital Gujranwala Pakistan.

*Corresponding Author: Asif Yousaf; Post Graduate Resident; Email: asifusafmarwat@gmail.com

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ABSTRACT

Background: Occupational accidents and illnesses annually result in significant loss of life and disability. The study focuses on evaluating the sociodemographic characteristics, mechanisms, causes, regions of injury, and sectorial characteristics of occupational accidents in patients admitted to a trauma centre.

Objective: To analyse the patterns and factors associated with occupational injuries, including demographics, injury mechanisms, sectors affected, and the financial and healthcare implications of these incidents.

Methods: The study, approved by the local ethics committee, retrospectively examined patient records. Key parameters such as age, sex, injury mechanism, type, location, and educational background were analysed. Statistical significance was assessed using Kruskal-Wallis, Student's T, and Chi-Square tests, with a p-value < 0.05 considered significant.

Results: Among 181 patients, the mean age was 32.96±5.97 years, with 93.4% being male. Most injuries occurred in construction and industrial sectors, showing a significant sectoral distribution (p<0.05). There was a significant correlation between worker's sector and educational level (p<0.05). Penetrating injuries were most common (36.4%), while multiple traumas were least (0.5%). The average Injury Severity Score (ISS) was 9.79±8.1, and the mean cost of treatment was \$1729.57±8178.3, varying significantly across industries.

Conclusion: Occupational accidents predominantly affect young male workers, particularly those with primary school education, and tend to occur during daytime hours.

Keywords: Accident Analysis, Industrial Injuries, Occupational Health, Trauma Centre, Workplace Safety, Young Workers.

INTRODUCTION

The definition of an occupational accident, as provided by the World Health Organization (WHO), encompasses any unplanned event that frequently results in personal injury, damage to machinery and equipment, and a consequent pause in production (1). Such accidents are a significant global concern, with statistics indicating approximately 270 million work-related injuries each year, culminating in around 1.1 million deaths (2). These numbers are further compounded by the numerous individuals who suffer disability or death due to preventable workplace accidents or infections, a pressing issue highlighted in various studies (3-5). In the context of the United Kingdom, the Health and Safety Executive Statistics from 2011/12 reported by the European Agency for Safety and Health at Work reveal a concerning scenario: 173 workers succumbed to workplace injuries, equating to a fatality rate of 0.6 per 100,000 workers, alongside 111,164 reported non-fatal injuries to employees (7).

Located in proximity to industrial areas, the Gujranwala Teaching Hospital frequently admits patients who are victims of occupational accidents occurring in these zones. This situation has prompted an investigation into the specific patterns of these accidents. The research aimed to meticulously analyse various aspects of work-related accidents among patients admitted to our trauma centre.

This included an examination of sociodemographic profiles, mechanisms and causes of injuries, injury locations, and the sectoral characteristics of the accidents. By doing so, the study sought to uncover underlying patterns and factors contributing to these incidents, thereby offering insights that could guide preventive strategies and improve workplace safety.

The objective of this research was to provide a comprehensive understanding of the nature and dynamics of occupational injuries presented at the Gujranwala Teaching Hospital. Through this, it aimed to contribute valuable data to the field of occupational health and safety, ultimately aiding in the development of more effective measures to prevent such injuries and protect the workforce.

MATERIAL AND METHODS

This study was conducted at the trauma centre of Gujranwala Teaching Hospital, Gujranwala, focusing on patients admitted due to occupational accidents. The research spanned from September 1, 2011, to December 31, 2011, and included a cohort of 181 patients. Eligibility for the study was limited to those aged 18 and above who were hospitalized following an occupational injury within this timeframe.

Prior to the commencement of the research, approval was sought and obtained from the local ethics committee. This ethical clearance facilitated the retrospective analysis of a variety of sources. Data was meticulously gathered from several repositories including patient files in the hospital records system, patient evaluation forms, and judicial case reports formulated in the emergency department.

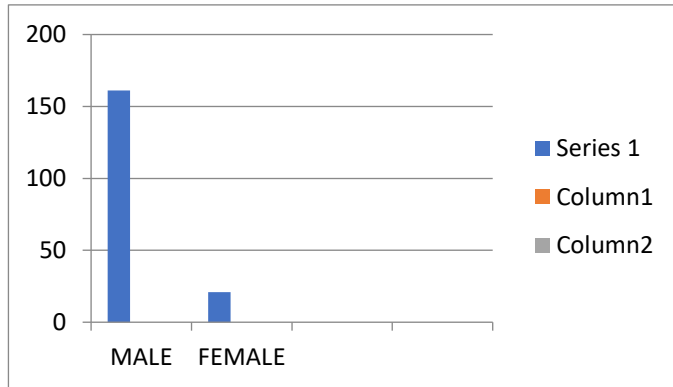
The study was comprehensive in its scope, examining a wide array of variables. These encompassed the age and sex of the patients, the mechanisms and causes of their injuries, and the circumstances necessitating emergency room admissions. Further, the educational backgrounds of the workers, the industries they were employed in, and their work hours were scrutinized. Additional factors such as the month and hour of the day when the accidents occurred, the social security status of the workers, and the specifics of the injured organ were also considered. The study went beyond mere injury analysis to explore the state of preventive measures in place, the status of workers who became disabled as a result of their injuries, and the Injury Severity Score (ISS). Finally, the financial aspect was addressed by examining the hospital costs associated with treating these occupational injuries, as well as the site and healing status of the injuries sustained by the workers.

RESULTS

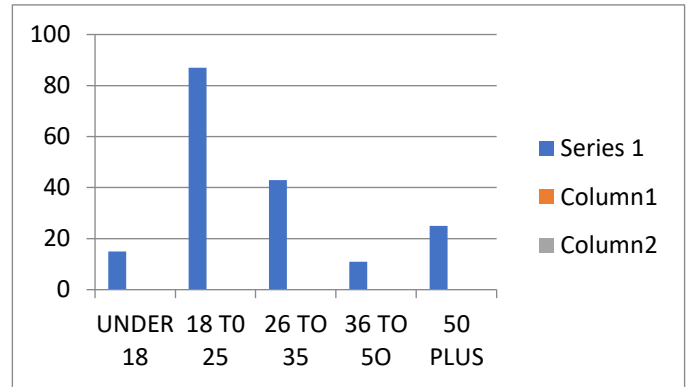
The study conducted at the Gujranwala Teaching Hospital Trauma Centre revealed significant findings regarding occupational injuries. Of the 181 patients admitted due to occupational accidents, a predominant majority, 161 (88.95%), were men, as indicated in Graph 1. The average age of the patients, irrespective of gender, was closely aligned, with males averaging 32.9 ± 9.7 years and females at 32.8 ± 9 years. Statistical analysis showed no significant difference in age between the sexes ($p > 0.05$), as detailed in Graph 2. Notably, the 18-25 age group experienced a 48% increase in occupational accidents, demonstrating a significant difference in accident rates among different age groups ($p < 0.05$).

The manufacturing industry emerged as the sector most affected by occupational injuries, accounting for 66.85% of the cases. The sectoral distribution of these accidents, as shown in Graph 3, was found to be statistically significant ($p < 0.05$). A closer look at the educational background of the victims revealed that 140 (77.34%) had completed high school, highlighting an important demographic characteristic of the affected population.

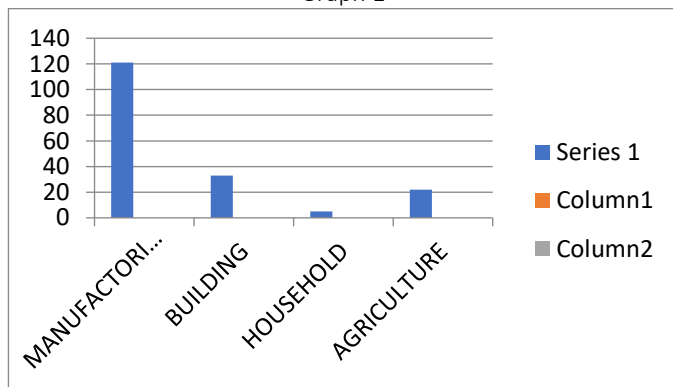
In terms of the nature of injuries, cuts were the predominant cause, leading to 42.54% of the admissions. This finding, as illustrated in Graph 4, suggests a significant variation in the distribution of occupational accidents based on the type of injury ($p < 0.05$). When examining the regions of the body affected, the upper extremities were most frequently involved, accounting for 76.8% of the cases ($n = 139$). The lower extremities were the second most common injury site, comprising 23.20% of cases ($n = 42$). However, the data showed no statistically significant gender-based differences in the regions of trauma ($p > 0.05$).



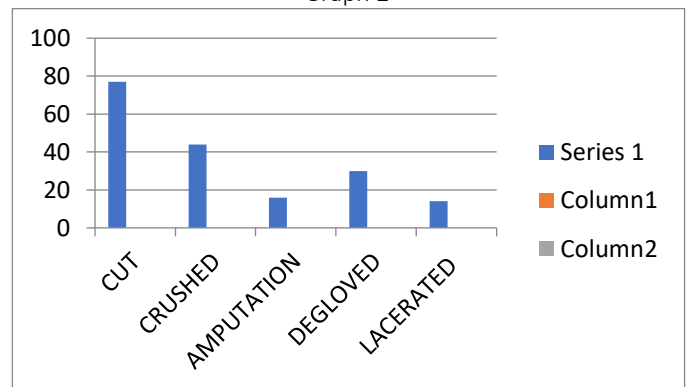
Graph 1



Graph 2



Graph 3



Graph 4

DISCUSSION

The study's findings align with the broader patterns observed in workplace accidents as recorded by the Social Security Institution. Over the years, a substantial number of workplace accidents have led to fatalities: 80,602 in 2007 with 1,043 deaths, 72,693 in 2008 with 865 deaths, 64,316 in 2009 with 1,171 deaths, and 62,903 in 2010 with 1,444 deaths, alongside numerous disability cases each year (9). These statistics underscore the critical importance of addressing workplace hazards.

Consistent with existing literature (10–13), our study found that males were more frequently victims of occupational accidents, a trend that could be attributed to the higher proportion of men in the workforce. Furthermore, the age group of 25–34 was identified as being particularly vulnerable to occupational accidents (9, 10, 12, 14), a finding mirrored in our study's demographic profile. This susceptibility might be explained by the involvement of this age group in more hazardous and physically demanding jobs, as well as their significant representation in the workforce.

The sectoral distribution of occupational accidents in our study showed a noteworthy emphasis on the manufacturing and construction industries, aligning with findings by Ozkan et al. (2), where 60% and 24% of accidents occurred in these sectors, respectively. In our context, 10.2% of occupational accident cases were in manufacturing, while 28.7% involved construction. These sectoral differences may be influenced by regional variations in industry prominence.

In terms of the nature of injuries, our findings were somewhat divergent from existing studies. While Serinken et al. (18) and Ozkan et al. (2) reported cuts and fractures-dislocations as the most common injuries, our study found cuts and soft tissue trauma to be predominant. This discrepancy might be attributed to the specific industrial context of our study area, where certain sectors like transportation and construction have a relatively small proportion of female employees, potentially influencing the prevalence of certain types of injuries.

The predominance of upper extremity injuries, observed at a rate of 53.7% in our study, resonates with prior research conducted in the country (2-4). The frequent involvement of hands in work-related activities likely contributes to this trend. Injuries to lower extremities and head and neck followed in prevalence, at 15.9% and 9.5%, respectively.

A notable strength of this study is its comprehensive examination of various factors contributing to occupational accidents, including demographic profiles, industry sectors, and types of injuries. However, it is important to acknowledge the limitations inherent in a single-centre study, which may not fully capture the diversity of occupational accidents across different regions and industries. Additionally, the retrospective nature of the study may limit the accuracy and completeness of the data collected.

CONCLUSION

The study at Gujranwala Teaching Hospital highlights that occupational accidents primarily affect young male workers, especially in the 18-25 age range with high school education, working in manufacturing and construction industries. These accidents frequently occur during daytime hours, leading to injuries like cuts and soft tissue traumas, predominantly in the upper extremities. The findings emphasize the necessity of targeted safety education and strict adherence to safety measures to reduce these incidents. Although insightful, the study's single-centre, retrospective nature suggests the need for broader, multi-centre research to develop more effective prevention strategies and alleviate healthcare burdens.

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