

**PROFILING OF MEDICOLEGAL CASES OF MECHANICAL INJURIES TO HEAD AT TERTIARY CARE CENTER - A PROSPECTIVE STUDY**JASPINDER PRATAP SINGH<sup>1</sup>, AASHISH SHARMA<sup>1</sup>, KULDIP KUMAR<sup>1</sup>, CHETNA SHARMA<sup>2\*</sup><sup>1</sup>Department of Forensic Medicine and Toxicology, Government Medical College, Amritsar, Punjab, India. <sup>2</sup>Department of Pharmacology, Government Medical College, Amritsar, Punjab, India.

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**ABSTRACT****Objectives:** The study aims to profile the medicolegal cases of head injury in relation to its sociodemographic distribution, the type and nature of the injury, and the type of skull fractures reported.**Methods:** The present prospective study of 318 medicolegal assault cases for mechanical injuries exclusively to the head, including the face, which reported a total of 404 wounds on the head and face, who reported to the emergency, Guru Nanak Dev Hospital attached to Government Medical College, Amritsar was conducted November 1, 2018, to April 2020. The study was conducted after seeking permission from the Institutional Ethics Committee, Government Medical College, Amritsar.**Results:** Among the total of 318 cases, the majority of them, 289 (90.9%) were male and 29 (9.1%) were female. Two hundred and forty-four (76.7%) of the reported cases belonged to a rural background, whereas 74 (23.3%) were from an urban background. The most common was the cortical cut reported in 29 (37.2%) cases, followed by depressed fractures in 22 (28.2%) cases. The comminuted fractures were present in 18 (23.1%) cases, whereas there was a fissure fracture in 09 (11.5%) cases.**Conclusion:** It is observed that assault-related cases of medicolegal injuries on the head are much more common in the younger generation and rural population. Thus prevention of assault-related activities, the primary focus should be encouraging the young generation about rationalism and tolerance.**Keywords:** Head Injury, Medicolegal cases, Skull fracture, Grievous injury.© 2023 The Authors. Published by Innovare Academic Sciences Pvt Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>) DOI: <http://dx.doi.org/10.22159/ajpcr.2023v16i10.48104>. Journal homepage: <https://innovareacademics.in/journals/index.php/ajpcr>**INTRODUCTION**

The brain, one of the most vital parts of the body, is present in the head. Although it is well protected from all sides by the bony cranial cage, and it remains the most vulnerable part of the body. Head injury is a common term used for craniocerebral damage recognized for ages. Blunt head injuries are most commonly caused by a traffic accident, assault, fall from height, or train accident. The manner of injury can be homicidal, self-inflicted, or accidental. Accidental injuries are common in road traffic accidents, railway accidents, and falls from height. In forensic practice, among the regional injuries, the head and neck are the most common to be affected. Subsequently, cerebral injuries and skull fractures may develop [1].

Although clinical importance has been reported regarding skull fractures in literature, the prognostic value remains unclear. Simulation data revealed that skull fractures could usually reduce the risk of diffuse brain injury but sidewise increases the risk of brain contusions [2]. In moderate [3] or severe traumatic brain injury [4], unfavorable outcomes have been reported in skull fractures, and also, there is an increased risk of cerebrospinal fluid [5]. In addition, skull fractures are usually associated with a diffuse or local brain injury that includes seizures, injury to cranial nerves, and intracranial hemorrhage [6]. There has also been an association between neurologic deficit and other complications that are more common in the presence of skull fractures than in patients without skull fractures [7].

**Aims and objectives**

The study aims to profile the medicolegal cases of head injury in relation to its sociodemographic distribution, the type and nature of the injury, and the type of skull fractures reported.

**METHODS**

The present prospective study of 318 medicolegal assault cases for mechanical injuries exclusively to the head, including the face, which reported a total of 404 wounds on the head and face, who reported to the emergency, Guru Nanak Dev Hospital attached to Government Medical College, Amritsar was conducted from November 1, 2018, to April 2020. The study was conducted after seeking permission from the Institutional Ethics Committee, Government Medical College, Amritsar.

All the details related to the patient, i.e., name, age, sex, occupation, address, etc., and detailed history of violence, were mentioned in the attached pre-designed pro forma. The thorough examination of assault cases was done after taking written informed consent from the patient and one witness, mostly their relative or friend, after telling the purpose of the study in their vernacular language. The injuries were examined and documented in detail, and radiological findings and hospital record findings were incorporated for proper evaluation of injuries. The data collected from this study were organized by presenting it in appropriate tables and graphs, which are statistically analyzed for percentages and inferences.

**Exclusion criteria**

This study did not include mechanical injuries on other body parts, firearm injuries, vehicular accident injuries, and sexual assault.

**RESULTS**

In the present study, 318 cases were reported of medicolegal cases of mechanical injuries of assault on the head and neck. Among the total of 318 patients, there were 404 injuries reported and they have been analysed as under:

In the present study, among the total 318 cases majority of them, 289 (90.9%) were male, followed by 29 (9.1%) females. Two hundred and forty-four (76.7%) of the reported cases belonged to a rural background, whereas 74 (23.3%) were from an urban background. The predominant religion of cases reported was Sikh in 156 (49.1%) cases, followed by 128 (40.2%) Hindus, and 32 (10.1%) Christians. The majority of cases reported that 158 (49.6%) were from the age group of 31–50 years, followed by 102 (32.1%) in the age group of 10–30 years (Table 1).

In the present study, 404 injuries were inflicted on the head and face of the cases. The majority of the injuries were a result of blunt weapon injuries that included lacerated wounds in 205 (50.7%), bruises in 66 (16.3%), and abrasions in 21 (5.3%) cases while incised wounds were present in 112 (27.7%) cases (Table 2).

**Table 1: Sociodemographic distribution of the medicolegal cases of head injury (n=318)**

Gender (n=318)	
Males	289 (90.9%)
Females	29 (9.1%)
Region (n=318)	
Rural	244 (76.7%)
Urban	74 (23.3%)
Religion (n=318)	
Sikh	156 (49.1%)
Hindu	128 (40.2%)
Muslim	02 (0.6%)
Christian	32 (10.1%)
Age (n=318)	
10–30	102 (32.1%)
31–50	158 (49.6%)
>50	58 (18.3%)

**Table 2: Distribution of cases on the basis of type of injury (n=404)**

Types of injury	Males Number (%age)	Female Number (%age)	Total (%age)
Incised wound	100 (24.6)	12 (3.1)	112 (27.7)
Lacerated wound	185 (45.8)	20 (4.9)	205 (50.7)
Bruise	55 (13.6)	11 (2.7)	66 (16.3)
Abrasion	14 (3.5)	07 (1.8)	21 (5.3)
Total	354 (87.6)	50 (12.4)	404 (100)

**Table 3: Distribution of cases on the basis of nature of injury (n=404)**

Nature of injury	Males Number (%age)	Females Number (%age)	Total
Simple	281 (69.6)	34 (8.37)	315 (77.97)
Grievous	73 (18.1)	16 (3.93)	89 (22.03)
Total	354 (87.6)	50 (12.4)	404 (100)

**Table 4: Distribution of cases on the basis of skull bone fractures**

Type of skull fractures	Number	Age %
No fracture present	326	80.7
Fracture present	78	19.3
Total	404	100
Type of fractures (n=78)		
Depressed fracture	22	28.2
Comminuted fracture	18	23.1
Fissure fracture	09	11.5
Cortical cut	29	37.2
Total	78	100

Among the 404 injuries, 281 (69.6%) injuries in males were simple, while 34 (8.37%) were simple in females. Seventy-three (18.1%) of total injuries were grievous among the males, and 16 (3.93%) were grievous among the females (Table 3).

Among all the 89 grievous injuries reported in the present study, skull fractures were reported in 78 cases. The most common was the cortical cut reported in 29 (37.2%) cases, followed by a depressed fracture in 22 (28.2%) cases. The comminuted fractures were present in 18 (23.1%) cases, while there was a fissure fracture in 09 (11.5%) cases (Table 4).

## DISCUSSION

In the present study, the majority of cases 289 (90.9%) were male, followed by 29 (9.1%) females. The results of the present study are more or less similar to the studies conducted by Zargar *et al.*, [8] and Thube *et al.* [9]. However, in contrast, to the present study increase in trend in relation to the occurrence of assault in female victims is observed in the studies conducted by Hofner *et al.* [10], Ranney *et al.* [11], and Fothergill and Hashemi [12]. The reason for this observation can be explained that the pattern of assault is different in developing countries like India as compared to the Western countries where the above said studies were conducted with different cultural and socioeconomic factors. Most Indian women are housewives and are more often involved at home, leading to less involvement in assault cases. It is also inference from the studies conducted by the authors mentioned above that male patients, in general, admitted as a result of assault-related injuries were more frequently than females suggesting that being a male is an avital demographic risk factor. The fact that males are, in general, more violent by nature than females and are more prone to get involved in violence can explain the findings.

As far as the most common age group is concerned in the present study, out of a total of 318 medicolegal cases, the majority of cases reported, 158 (49.6%) were from the age group of 31–50 years, followed by 102 (32.1%) in the age group of 10–30 years and 58 (18.3%) were in the age group of >50 years. Mittal *et al.* [13], Tajammul *et al.* [14], Bhullar and Aggarwal [15], Akdur [16], Oberoi [17], Rao and Sudhakar [18], Trangadia *et al.* [19], Thube *et al.* [9], and Sharma *et al.* [20] have observed that the maximum number of victims involved in assault is of the young age group of 30–50 years which is similar with the findings observed in the present study. The probable reason is that the young age group is the most active phase of one's life, which is more commonly involved in outdoor activities. This phase is also characterized by aggressive and short-tempered behavior, which increases the incidence of assault among this age group.

In the present study, 244 (76.7%) of the reported cases belonged to a rural background, while 74 (23.3%) were from an urban background. This present study is comparable to the study conducted by Sharma *et al.* [20], where majority of the cases, 68.3%, were from the rural region, and the remaining were from the urban area with 31.7%.

In the present study, the predominant religion of cases reported was Sikh in 156 (49.1%) cases, followed by 128 (40.2%) Hindus, and 32 (10.1%) Christians. However, in their study, Trangadia *et al.* [19] reported that Hindus constituted 79.6% of the total medicolegal cases, followed by Muslims, who comprised 19%. The only reason for the higher incidence of occurrence of assault among Sikhs in the present study is the fact that Punjab is a Sikh-majority state.

Regarding the nature of mechanical injuries is concerned in among the total 404 injuries, 281 (69.6%) injuries in males were simple, while 34 (8.37%) were simple in females. Seventy-three (18.1%) of total injuries were grievous among the males, and 16 (3.93%) were grievous among the females. These findings are similar to the studies conducted by Bhullar and Aggarwal [15], where 80% of total injuries were declared simple and only 10% were declared as grievous hurt. Another study by Thube *et al.* [9] was in concurrence with the present study, where 73%

of injuries were declared simple, and 24.7% were declared grievous. This trend regarding grievous hurt was on the higher side compared to the present study. The findings of the study of Sharma *et al.* [20] were slightly different from the present study, where the incidence of simple injuries was 57.9% and grievous injuries were 42.1%. This variation could be because of differences in regional conditions that are political and social, as well as other law and order problems.

Among all the 89 grievous injuries reported in the present study, skull fractures were reported in 78 cases. The most common was the cortical cut reported in 29 (37.2%) cases, followed by a depressed fracture in 22 (28.2%) cases. The comminuted fractures were present in 18 (23.1%) cases, while there was a fissure fracture in 09 (11.5%) cases. The presence of cortical cuts can be the use of sharp weapons or could indicate the presence of self-suffered or fabricated injuries, which could be better subjected to correlate with the circumstantial evidence. This study is in concurrence with the findings observed by with available literature by Reddy and Murty [21], Tamuli [22], and Krishan [23] in which most common fractures of the skull are depressed and comminuted fractures.

### CONCLUSION

It is observed that assault-related cases of medicolegal injuries on the head are much more common in the younger generation and rural population. Thus prevention of assault-related activities, the primary focus should be encouraging the young generation about rationalism and tolerance. Head injuries are much more on the rise during the scuffle, a matter of concern for law enforcement agencies. The casualty department not only caters to the treatment needs but also carries out the various legal responsibilities regarding the medicolegal reporting of the patient.

Ethical consideration from the institutional ethical committee.

### AUTHORS CONTRIBUTION

Dr. Jaspinder Pratap Singh: data collection applying statistics, rechecking data and validation, and helping prepare the manuscript. Dr. Chetna Sharma: rechecking data and validation and helping prepare the manuscript. Dr. Aashish Sharma: literature search and help in preparing the manuscript.

### CONFLICTS OF INTERESTS

None.

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