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PATTERN OF BLUNT FORCE MECHANICAL INJURIES AMONG MEDICO-LEGAL CASES IN HYDERABAD

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Keywords

Blunt force injuries, contusions, lacerations, abrasions, forensic medicine, medicolegal trauma, Hyderabad.

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Abstract

Background: *Mechanical trauma of the blunt force type is one of the most frequent types of trauma that are met in the medico-legal practice and take up one of the largest shares of the cases that are studied in the emergency departments and police surgeon units. Such injuries are often linked with physical attacks, interpersonal violence, domestic conflicts, road accidents, workplace accidents and falls. Due to easy access to blunt objects in the environment, including sticks, iron rods, bricks, stones, and wooden objects, blunt trauma is a major public health and forensic issue because this technique is frequently applied in violent confrontations.In forensic medicine, the nature, mechanism, severity and the weapon that could be used to cause blunt force injury all depend on the accurate documentation and interpretation of such injuries. Some of the typical modes of common injury are abrasions, contusions, lacerations, fractures and mixed patterns of injury which have significant medico-legal implications. This pattern, distribution, and age of these injuries can assist in reconstructing the chain of events, distinguishing between accidental and intentional injuries, and matching the words said by victims with the physical evidence.Blunt force injuries are a significant problem in urban medico-legal centers like Police Surgeon Hyderabad, and Liaquat University Hospital because of the increased violence, traffic accidents, and workplace trauma. The forensic profile and epidemiological data of such injuries may be studied to offer useful local evidence on enhancing trauma management, medico-legal reporting and violence prevention measures.*

Objective: *The aim of the study is to examine the trend, frequency and forensic importance of blunt force injuries in medicolegal cases in Hyderabad. Methods: The study involved a retrospective cross-sectional study of 246 medicolegal cases that were reported in 2024 between January and December. The descriptive statistics were used to analyze the data on age, gender, injury type, and anatomical site.*

Findings: *The majority of the cases were female (83.7%), and male (16.3). The most affected age group was 18–35 years (68.3%). The most frequent type of injury was contusions (39.8%), then lacerations (30.1) and abrasions (21.1). The most common anatomical parts were the head and face (45.5%), upper limbs (27.6%).*

Conclusion: *Blunt force trauma affects young females most of the time and is likely to involve the face and head. These results indicate the significance of forensic records and specific prevention measures.*

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1. INTRODUCTION

Blunt force mechanical injuries constitute a significant group of trauma in forensic medicine and are usually related to interpersonal violence, road traffic accidents and domestic conflicts. They are blunt force injuries that occur when an individual is hit by some objects like sticks, rods, stones, or even body force which causes injuries to tissues but does not entail sharp cuts.Blunt injuries are usually presented by contusions, abrasions and lacerations. There are contusions caused by the breaking of blood vessels and abrasions caused by frictional injuries to the skin and lacerations caused by irregular tears, in which the tissue bridges. These are the distinguishing features that are crucial in the differentiation of the blunt force trauma and other forms of injuries.Forensically, blunt force injuries can give valuable evidence on the mode and cause of injury. The place, quantity, and dispersion of injuries aid in making the decision on whether the trauma is accidental, homicidal, or self-inflicted. Damage to exposed body parts, especially the head and face can be linked to assault, but a damage above the bony prominence can be linked to accidental falls.Injuries sustained by the upper limbs, particularly on the forearms and hands, are often perceived to be defense injuries and this implies that the victim is trying to defend them. These findings are essential to recreating the chronology of events and endorsing medicolegal opinion.Although blunt force injuries are very prevalent in Hyderabad, there is a paucity of organized studies examining the trends and forensic consequences. This research will address this gap by offering a thorough discussion of the blunt force wounds in the medicolegal cases.

2. Materials and Methods

2.1 Study Design and Setting

The study was a retrospective cross-sectional study carried out in the Department of Forensic Medicine, Hyderabad.

2.2 Study Duration

January 1, 2024 to December 31, 2024.

2.3 Sample Size

A total of 246 cases of medicolegal cases of blunt force injury were involved.

2.4 Inclusion Criteria

- All medicolegal cases with blunt force injuries
- Full demographic and injury history.

2.5 Exclusion Criteria

- Incomplete records
- Sharp force or firearm injuries only cases.

2.6 Variables Studied

- Age
- Gender
- Type of injury
- Anatomical site

2.7 Statistical Analysis

- Descriptive statistics in the form of frequencies and percentages were used to analyze data. The findings were presented in tables and graphical formats.
- **3. Results**

3.1 Demographic Distribution

- Out of 246 cases:
- Females: 206 (83.7%)
- Males: 40 (16.3%)

Age distribution:

- 0–17 years: 12 (4.9%)
- 18–35 years: 168 (68.3%)
- 36–55 years: 50 (20.3%)
- ≥56 years: 16 (6.5%)

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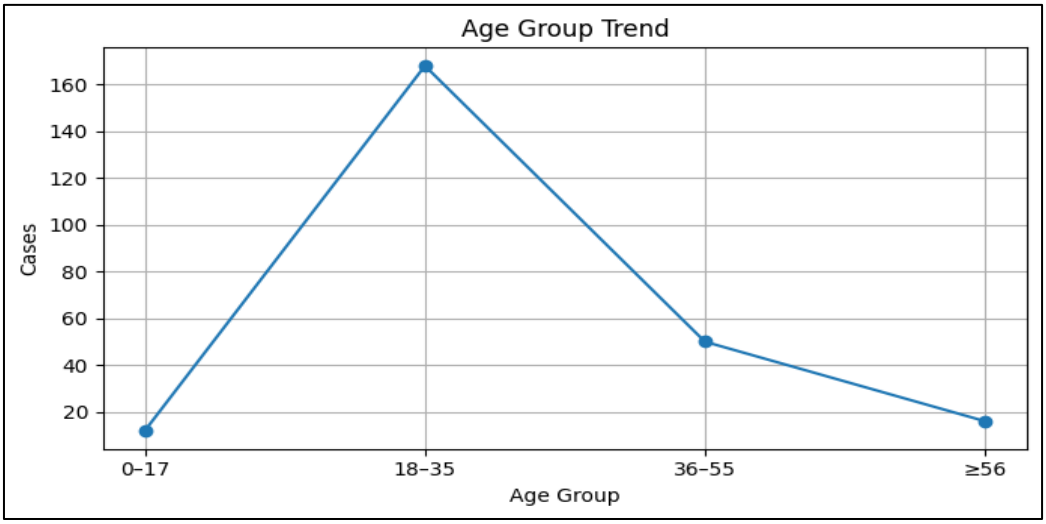


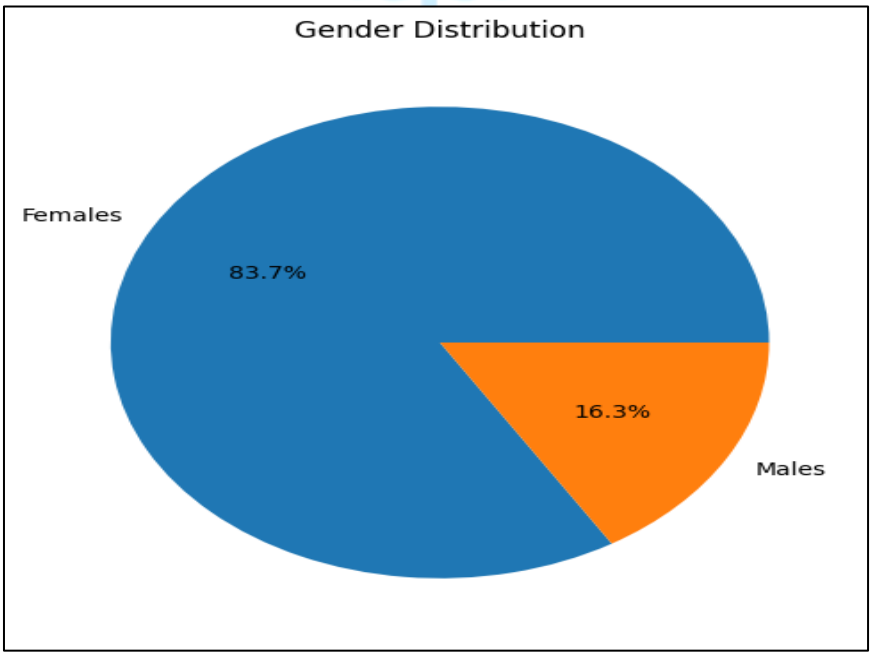
3.2 Gender-wise Age Distribution

Among females (n=206):

- 18–35 years: 142 (68.9%)

Among males (n=40):

- 18–35 years: 26 (65%)



3.3 Injury Type Distribution

- Contusions: 98 (39.8%)
- Lacerations: 74 (30.1%)
- Abrasions: 52 (21.1%)
- Incised wounds: 12 (4.9%)
- Others: 10 (4.1%)

3.4 Anatomical Distribution

- Head/Face: 112 (45.5%)

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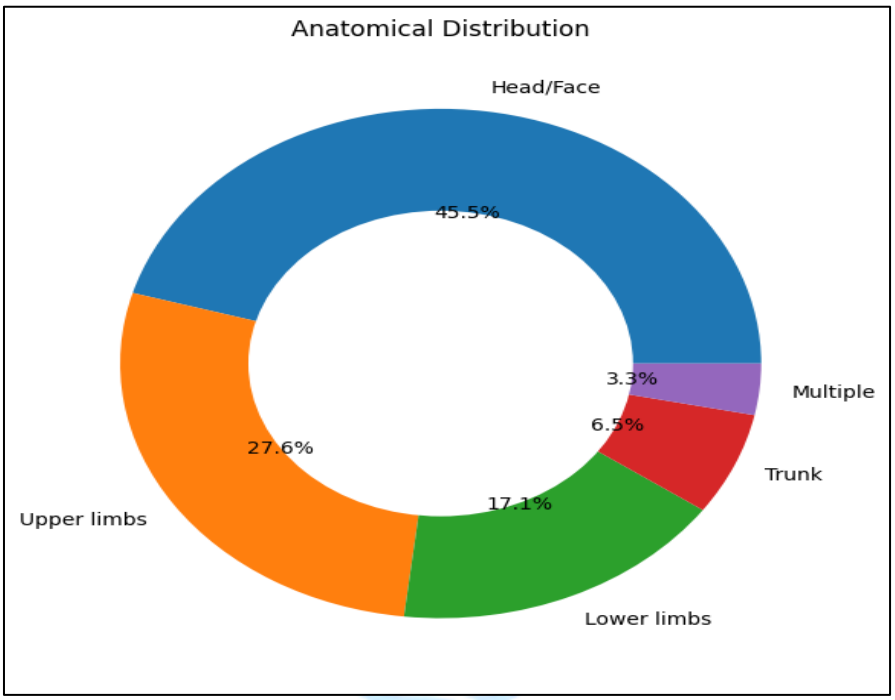
- Upper limbs: 68 (27.6%)
- Lower limbs: 42 (17.1%)
- Trunk: 16 (6.5%)
- Multiple regions: 8 (3.3%)



3.5 Gender-Specific Injury Patterns

Contusions and abrasions of the head, face, and upper limbs were mostly manifested in females. The rate of lacerations and occasionally incised wounds of the head and limbs was more frequent in males.

4. Discussion

The current research has shown that female victims are dominant, which could indicate the excessive prevalence of domestic and interpersonal violence in the area. The same has been documented in research carried out in South Asia where women are more susceptible to domestic violence.Most of the cases were also found within the age group of 1835 years of age which is the most socially and economically active group. This is the age group that is more exposed to inter personal conflicts and occupational hazards.Contusions were predominant in type of injury, which means that blunt objects or use of body force were often used in attacks. Lacerations and abrasions were also frequent, indicating different levels of severity of impacts.Head and facial injuries are predominant implying that there is targeted violence that is mostly linked with assault. The interpersonal violence hypothesis is supported by the fact that upper limb injuries, especially on forearms and hands, are a symptom of defense injuries.The results of this study demonstrate the need to be cautious with forensic documentation because injury patterns are critical in identifying how and when trauma occurred.

5. Medicolegal Importance

- Assistance in determining the nature and pathogenesis of injury.
- Helps in reconstruction of events.
- Distinguishes between accidental and homicidal injuries.
- Helps in court legal evidence.
- Helps to find out violence trends.

6. Limitations

- Single-center study
- Retrospective design
- Little data regarding causative factors.
- The minor injuries could be underreported.

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7. Conclusion

Mechanical injuries of blunt force are a significant share of the medicolegal trauma cases in Hyderabad, which fundamentally reflects their large impact on the social health of the population and forensic significance. The results of this paper confirm the evident dominance of female victims indicating that they are closely related to domestic violence, interpersonal conflicts, and gender vulnerability in the local sociocultural setting.

The rates of injuries were the highest among the age group 1835 years of age and it means that young adults, who are socially and economically active, are at risk of being exposed to violence and trauma. This trend conforms to the world trend and highlights the necessity of specific preventive measures in this age.The most frequency types of injuries were contusions, which demonstrated the popularity of blunt objects or physical power in attacks. Cuts and bruises were also common meaning that there were different levels of forces and injury causes. The fact that head and facial injuries are the most common implies that they were deliberately aimed at, which can be linked to aggression, intimidation, or the desire to inflict visible injuries.Moreover, the fact that upper limbs are involved in such significant percentage of cases suggests that there are defensive injuries which support the probability of interpersonal violence. These patterns of injury are useful forensic data on how and under what conditions the trauma occurred and contribute to event reconstruction and medicolegal opinions.Forensically, the characteristics of injuries, such as size, shape, location, and distribution, should be well documented to be interpreted and evaluated in legal terms. Blunt force injuries are a significant problem to properly evaluate not only to identify the mechanism and way of injury but also enhance the value of the evidence in court.The paper identifies the gap in the medicolegal documentation practice, training of the medical personnel on forensic examination and the adoption of standardized injury reporting procedures as urgent requirements. Also, the intervention strategies such as community-based intervention, education and policy changes that will help to mitigate interpersonal and domestic violence are essential.Multi-center studies of larger sample sizes and inclusion of causative factors as well as correlation and legal outcomes would be the key to future studies to give a more effective picture on the patterns of the blunt force trauma.Finally, blunt force injuries are a relevant issue in medicolegal practice in Hyderabad, and the multifaceted approach of clinical management, forensic and the application of the health sector is crucial to proper prevention and the delivery of justice.

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