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MEDICO-LEGAL PATTERN OF MECHANICAL INJURIES AND BURN CASES AMONG MALE VICTIMS: A STUDY OF 100 CASES AT POLICE SURGEON HYDERABAD

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Abstract

Background:

The medico-legal work in Pakistan is largely made up of mechanical injuries and burn cases. Knowledge of their pattern can help in the interpretation of law, prevention of injuries and writing of forensic records.

INTRODUCTION

The scientific assessment and interpretation of injury are pivotal in the aspects of delivering justice in forensic medicine. Medico-legal examination is an interim between medicine and law, in which the results of clinical findings are converted into acts of legal testimony. Among the different type of traumas that are experienced in the medico-legal practice, there are mechanical injury and burns in which most cases are presented to the police surgeons and emergency departments in Pakistan. Such injuries can be caused by blunt force, sharp force, guns, or other mechanical sources. Mechanical injuries can be in the form of abrasions, contusions, lacerations, incised wounds, stab wounds, puncture wounds, fractures, or firearm wounds depending on the force used, type of causative object, etc. It is necessary to identify and categorize these injuries correctly since this helps to define the type of weapon used, the force in use and how it was inflicted (accidental, suicidal, and homicidal).Blunt force injury is one of the most commonly encountered injuries in the medico-legal cases. Abrasions, contusions, and lacerations are more often the result of hard and blunt objects like sticks, rods, stones, fists and clubs. These are often linked with interpersonal violence, family conflicts, fights on the street and local fights. The medico-legal rationale of blunt force injuries is that they give the information regarding the direction of force, the number of blows, andescapeless reconstruction of the incident.Sharp force injuries, conversely, are those inflicted by the weapon with cutting or piercing edges: knives,

Frontier in Medical & Health Research

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blades, or broken glass. Such injuries can be in the form of incised wounds, stab wounds, characterized as having clean edges and crisp lines. The distinction between blunt, and sharp force trauma is imperative in the comparison of medical findings with the reported history and the identification of the possible weapon used.Firearm injuries denote the next significant type of mechanical trauma. Over the past few decades, violence involving guns has been on the rise in most of the urban centers in Pakistan. Firearm wounds are peculiar to cranial wounds like entry wounds, exit wounds, blackening, tattooing, burning, and beveling of bone. Determination of range and ballistic analysis, which is crucial in determining criminal cases and court cases, is only possible through accurate documentation of firearm injuries that constitute a significant percentage of medico-legal cases. Dry heat (flames), moist heat (scalds), chemicals, electricity or radiation may cause burns. Medico-legal practice is one of the fields that death by flame burns is usually experienced, especially in the home and workplace. According to the severity of shallow burns, there are first-degree, second-degree, third-degree, and fourth-degree burns. Epidermis of the body and a part of the dermis is affected in second-degree burns, which is characterized by blisters, erythema, and excruciating pain. Medico-legal assessment of the burns in developing countries such as Pakistan encompasses percentage of body surface area involved, depth of the burn, inhalation injury, and potential mechanisms of occurrence of the burns (accidental, suicidal, or homicidal).In Pakistan, socio-economic conditions, overcrowding, industrial hazards, inadequate safety measures, ready availability of weapons, and interpersonal conflicts are the driving factors to mechanical and burn injuries. The imbalance is higher among male individuals since they are more exposed to the outdoors, they are exposed to occupational risk, they are involved in physical altercations and they are involved in social altercations. Medico-legal statistics are often dominated by young adult men especially in the age bracket that is economically viable (20-40 years).

Medico-legal investigation of injured individuals has a variety of functions. It provides:

1. Records of the injuries to be used in lawsuits.
2. Identification of the weaponry.
3. Magnitude of injury (easy or serious injury).
4. Injury-alleged history correlation.
5. Judicial Expert Evidence.

The proper recording of injuries is important since medico-legal reports are usually used as key evidence during a criminal case trial. The miscarriage of justice can occur in case of errors or omissions. Thus, the large city of Hyderabad, the capital of Sindh province, has many cases of medico-legal trauma every year, which can be reasonably analyzed in the benchmark of forensic documentation and increase medico-legal expertise. Medico-legal examination Designation The offices of Police Surgeon are the main point of medico-legal examinations of injured people in case of references by the law enforcement agencies. Nevertheless not much of the published information specifically analyses the pattern of mechanical injuries and burns of the male population in this region.Epidemiological analysis of pattern of injuries in a specified population can offer a good insight. It assists in determining current trends in violence, weapons mostly in use, and age groups at risk, and new issues in health of the people. These data can be used by forensic experts and law enforcement agencies as well as policy makers, community leaders and health care bodies who aspire to establish preventive measures.To this end, the present study was carried out to review 100 cases on medico-legal cases that were being studied at Police Surgeon Hyderabad. Through the analysis of the nature of cases, types of injuries, types of weapons used, and age distribution, this study will identify the current medico-legal tendencies in the area. Knowledge of these patterns will help in better injury prevention intervention mechanisms, superior medico-legal documentation procedures, and provision of improved support to the criminal justice system.

2. Objectives

1. To establish the spread of the nature of cases (assault, burn, firearm, RTA).

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2. To determine typical kinds of injuries.
3. To establish the frequently used weapons.
4. To examine age of victims.
5. To determine medico-legal trends of male victims.

3. Materials and Methods

Study Design

Descriptive cross-sectional research.

Study Setting

Hyderabad, Police Surgeon Office.

Sample Size

100 male medico-legal cases.

Inclusion Criteria

- Male victims
- Full medico-legal paperwork.
- Mechanical injuries and burns cases.
-

Exclusion Criteria

- Incomplete records
- Female victims
- Lacking injuries or you have been poisoned.
-

Data Collection

The medico-legal register was used to extract the necessary data and collate the data using Excel. Variables included:

- Age
- Nature of case
- Type of injury
- Injury site
- Kind of weapon

Data Analysis

Python was used to analyze the data. Graphical representation and frequency distribution were created.

4. Results

4.1 Distribution According to Nature of Cases

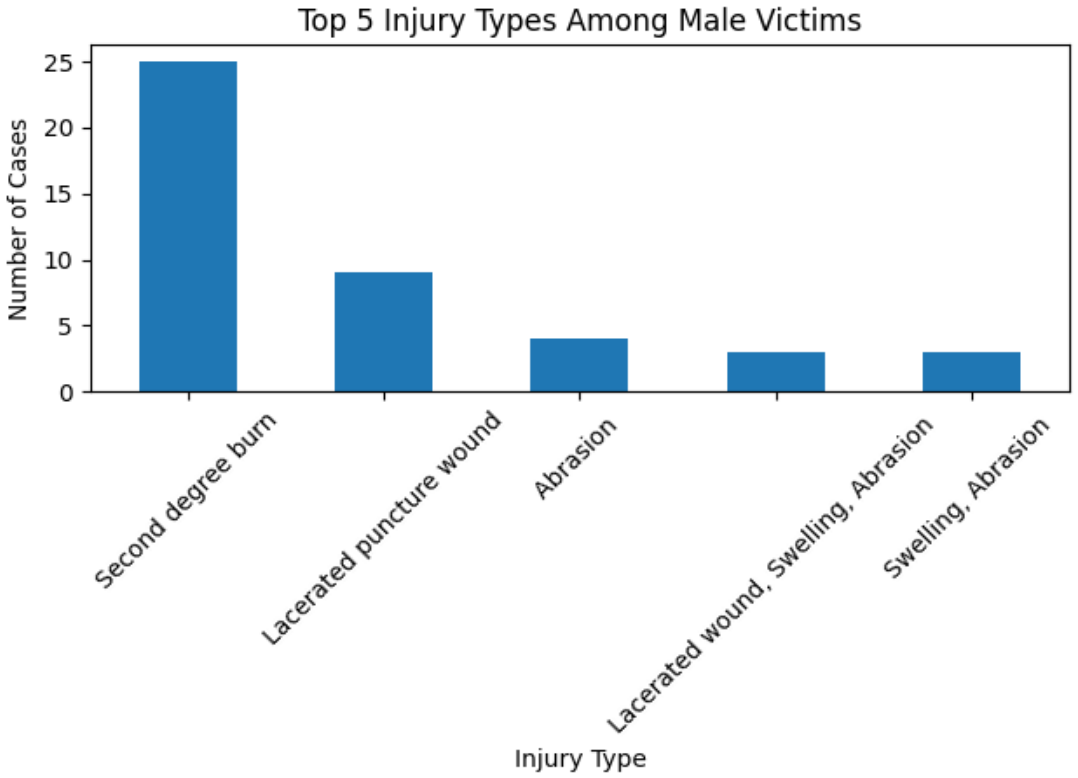
Nature of Case	Frequency	Percentage
Assault	62	62%
Burn	25	25%
Firearm injury	11	11%
RTA	1	1%

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Interpretation:

Assault was the most common nature of medico-legal presentation (62%).



4.2 Distribution of Weapon Type

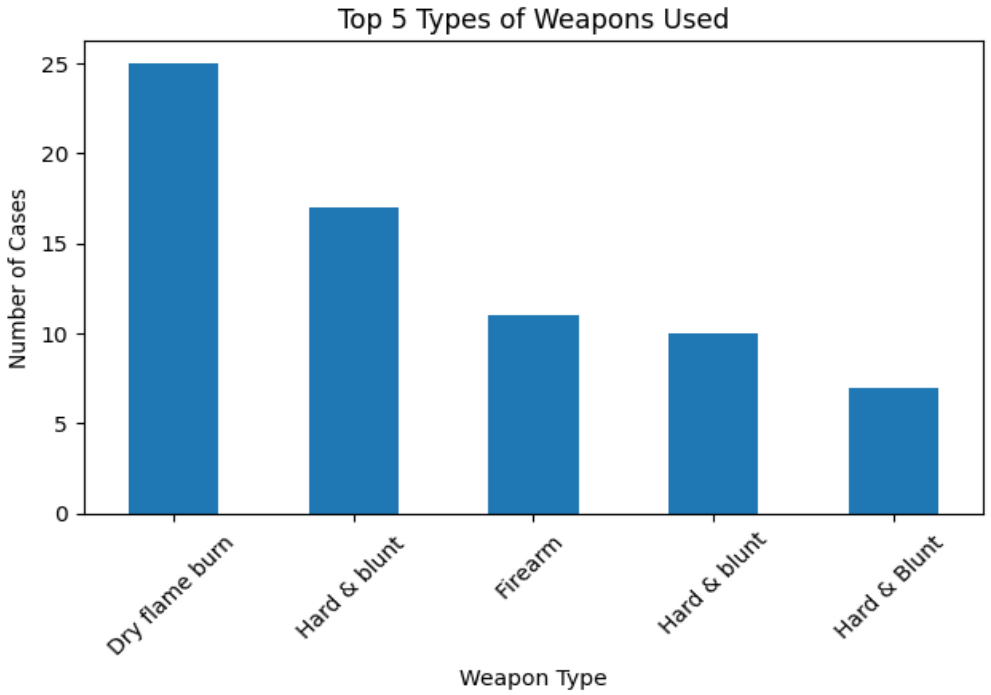
Most common weapons identified:

- Dry flame burn – 25 cases
- Hard and blunt objects- most of the assaults.
- Firearms – 11 cases
- Hand cutting tools- lesser ratio.

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Hard and blunt weapons were the most frequent cause of mechanical injuries.



4.3 Distribution of Injury Types

Top injury patterns:

1. Second-degree burns – 25%
2. Lacerated puncture wounds – 9%
3. Abrasions – 4%
4. Swelling and abrasions of the lacerated wounds - widespread complex.
5. Incised wounds- sharp weapon cases.
6.

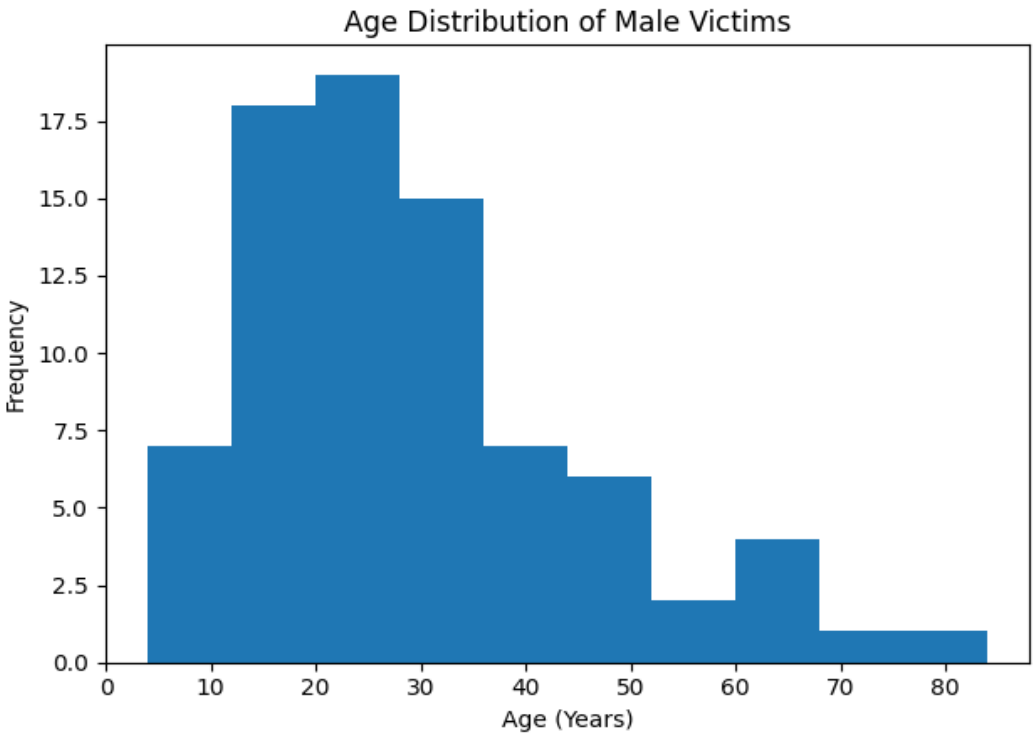
The highest category of injuries was second-degree burns.

4.4 Age Distribution

- Majority of the victims were those between the age of 20-40 years.
- The majority was is made up of young adults.
- Few cases above 60 years.
- Age of maximum record: a bit at most 10 developmental years.
- Maximum age: above 70 years.

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Interpretation:
Young adult males are the most vulnerable demographic group.

5. Discussion

The current paper singles out assault as the major cause of medico-legal investigation among men (62%). The result is aligned with the trends in urban medico-legal centers in Pakistan in which interpersonal violence is a major cause of forensic workloads.

Assault Cases

The most common were hard and blunt weapons. Injuries of this type normally result in:

- Abrasions
- Contusions
- Lacerations
- Swelling

The injuries are also common in the fights in the streets, in the domestic violence and in the property conflicts.

Burn Cases

Burns comprised a quarter of total cases with all the burns being dry flame burns with the highest prevalence being on the second degree burns.

- Second-degree burns involve:
- Epidermis and part of dermis
- Blister formation
- Severe pain
- Redness

Male cases of burns are generally incidental (industrial or domestic).

Firearm Injuries

0.11% were due to gun injunctions. The injuries are medico-legally relevant because:

- The nature of entry and exit wounds.
- Blackening, tattooing
- Range determination

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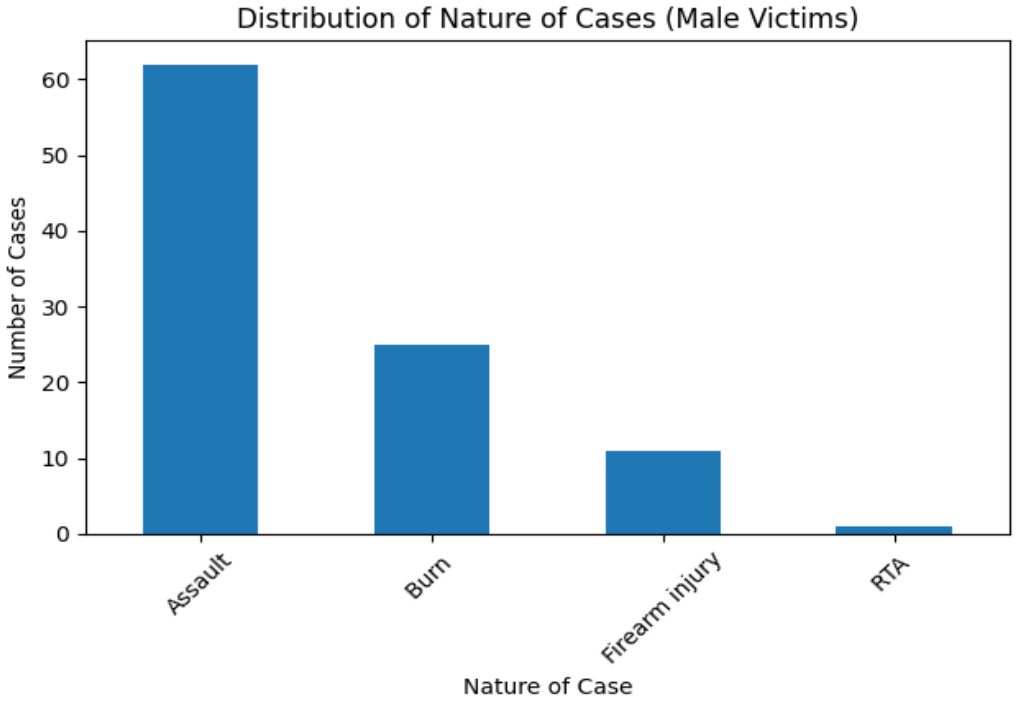
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Firearm injuries indicate rising violence and firearm availability.

Age Factor

The age group of 20-40 years is predominated as it is a result of:

- Greater outdoor exposure
- Occupational hazards
- Greater engagements in conflicts.
- Elderly individuals were minimally represented.



6. Medico-Legal Importance

The knowledge of injury patterns will help in:

1. Ascertaining description of weapon.
2. Matching injuries with supposed history.
3. Determining the seriousness of pain.
4. Helping courts in the classification of law.
5. Developing prevention plans of violence.

7. Comparison with Other Studies

Past regional researches also indicate:

- Assault as a paramount cause of medico-legal cases.
- Most commonly, hard blunt weapons are used.
- Males, especially the young ones are mostly affected.
- The presence of burns is a considerable percentage of the urban environments.

The results of this research are in agreement with the national trends..

8. Limitations

- Single center study.
- Male victims only were taken into consideration.
- No follow-up of outcomes.
- Limited socio-economic data.

9. Recommendations

1. Community education to minimize personal violence.
2. Control of weapon availability.
3. Burn prevention education.
4. Better medico-legal record systems.
5. Females in multicenter studies.

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10. Conclusion

This study concludes that:

- The most prevalent case of medico-legal presentation is assault (62%).
- The most common cause of mechanical injuries is hard and blunt weapons.
- The most typical specific injury (25%), is second-degree burns.
- Injuries involving firearms take 11% cases.
- The most common affected young adult males (20140 years) are the most affected.

In Hyderabad mechanical injuries and cases of burns have remained a significant public health and forensic issue. The burden needs to be minimized by preventive measures and provided by stringent enforcement of the law.

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