

# A study on profile of assault cases presenting to the casualty of tertiary care hospital

Venkatesaprasanna J<sup>1</sup>, Prasanna Parthasarathy<sup>2</sup>, Thumma Amar<sup>3</sup>, Vijayakumar Nair G<sup>4</sup>, Shilpa T Patil<sup>5</sup>

<sup>1</sup>Assistant Professor, Department of Forensic Medicine & Toxicology, Government Medical College and Hospital, Virudhunagar, Tamil Nadu, India

<sup>2</sup>Assistant Professor, Department of Forensic Medicine & Toxicology, Tirunelveli Medical College and Hospital, Tirunelveli, Tamil Nadu, India

<sup>3</sup>Assistant Professor, Department of Forensic Medicine & Toxicology, Vinayaka Mission's Medical College, Vinayaka Mission's Research Foundation (Deemed to be university), Karaikal, Pondicherry, India

<sup>4</sup>Professor, Department of Forensic Medicine & Toxicology, Vinayaka Mission's Medical College, Vinayaka Mission's Research Foundation (Deemed to be university), Karaikal, Pondicherry, India

<sup>5</sup>Assistant Professor, Department of Pathology, Vinayaka Mission's Medical College, Vinayaka Mission's Research Foundation (Deemed to be university), Karaikal, Pondicherry, India

## Corresponding Author:

Prasanna Parthasarathy ([dr.prasgok2@gmail.com](mailto:dr.prasgok2@gmail.com))

## Abstract

**Background and Objectives:** Physical assault is one of the world's leading cause of morbidity and mortality which can be preventable. In India, assaultive violence tops the list in 15-24 years age group, placing heavy burden on health care facilities. The present study was carried out with objectives to study the pattern and distribution of injuries in cases of physical assault, and the age and sex distribution of victims.

**Methodology:** The study was carried out in the Casualty of a Tertiary Care Hospital, in the state of Puducherry, over a period of 12 months from January 2021 to December 2021. A total of 200 cases of alleged assault were included in the study.

**Results:** Males (79%) outnumbered females (21%). Commonest age group affected was 16-25 years (53%), followed by 26-35 years (35%). In 79% of cases, the assailant was known to the victim. Majority of the assaults occurred on streets (41%), and during the night hours (53%). Most common type of injuries sustained by the victims were contusions (41%), followed by abrasions (24.5%). Most commonly affected region of the body was head & neck region (40.5%) followed by the upper limbs (27.5%). 28.5% of victims had sustained grievous injuries. Blunt weapon was most commonly used (46%). Majority of the cases (65%) were treated conservatively.

**Conclusion:** Males in the age group of 15-34 years were found to be more susceptible to physical assault some of which were grievous in nature. Incidents were predominant in the night hours and on the streets. Blunt trauma, contusions being the commonest form, with head and neck region bearing the brunt.

**Keywords:** Assault, pattern of injuries, weapon, casualty

## Introduction

Assaultive violence has been recently recognized as an important public health problem, in India, the medical profession had taken its time in addressing assault-related trauma as a public health problem. Assault being a crime of violence has a lot of medico-legal implications at the national and local levels. The consequences of violence related injuries are wide ranging depending upon the region of the body involved, certain areas are particularly vulnerable or have special medico-legal significance. Of all regions, those of the head and neck are the most common and most important as head injuries provide the major contribution to morbidity and mortality in assaults <sup>[1]</sup>.

Violence causes more than 1.6 million deaths worldwide every year. More than 90% of these occur in low- and middle-income countries. Violence is one of the leading causes of death in all parts of the world for persons aged 15 to 44 <sup>[2]</sup>. As per Sec. 351 IPC, an assault is defined as “Whoever makes any gesture, or preparation intending or knowing it to be likely that such gesture or preparation will cause any person present to apprehend that he who makes that gesture or preparation is about to use criminal force to that person is said to commit an assault <sup>[3]</sup>”.

## Review of literature

A significant amount of violence occurs out of sight at homes, workplaces and even in the medical and social institutions set up to care for people. Many of the victims are too young, weak or ill to protect themselves. Others are forced by social conventions or pressures to keep silent about their experiences. As with its impacts, some causes of violence are easy to see. Others are deeply rooted in the social, cultural and economic fabric of human life. Recent research suggests that while biological and other individual factors explain some of the predisposition to aggression, more often these factors interact with family, community, cultural and other external factors to create a situation where violence is likely to occur. <sup>3</sup> Aggressive behavior arises in the brain through interplay between the subcortical structures in the amygdala and the hypothalamus in which emotions are born and the prefrontal cognitive centers where emotions are perceived and controlled. Locally produced testosterone is assumed to be more important in the process of aggressive arousal than testicular testosterone arriving in the circulation <sup>[4]</sup>.

A study conducted by Charles N C and Oberaifo A W at the police clinic, Benin City, Edo State, Nigeria, had a total of 426 people were assaulted during the period of study, comprising 246 males and 180 females in a male to female ratio of 1.4:1. Age groups 30-39 years and 20-29 years accounted for 70.4% of cases. The study concluded that body parts were more commonly used in Interpersonal assaults (IA) and the injuries were usually mild and not life threatening <sup>[6]</sup>.

A prospective study conducted by Rajendra Prakash Maurya *et al.* at Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India between October 2012 to December 2012 revealed that Out of 9600 new patients who attended casualty over four months study period, 284 (2.96%) had been assaulted. The mean age of the victims were between 17-70 years with male to female ratio being 3:2.1 (P=0.004). Majority of the assault victims were unmarried (72.54%) and unemployed (57.04%). Alcohol abuse was reported in 37.68% cases. 60.16% cases had been reported to the police. The commonest mode of assault was physical assault (66.20%) while 9.15% had assault by firearms. Blunt and sharp weapons were used in 34.51% and 20.77% cases, respectively. The most common cause of assault was old familial conflict (27.46%) followed by property related conflict (21.14%) and election or politics related (16.90%). The head and neck region was the commonest site (52.95%) of injury followed by upper limb (17.01%), thorax (12.82%) and lower limb (10.45%) while the abdomen was least affected (6.75%) <sup>[9]</sup>.

A prospective study conducted by Rao D, *et al.*, revealed among 360 cases studied, Males were 78.3%. The extremes of age were least affected and individual between 21-30 yrs were the most affected. The face and Right upper limb (19.3%) were vulnerable parts of the body and Abdomen was least vulnerable. Contusions and Abrasions formed the majority of the

injuries. Stabs, Chops. and Firearm wounds did not exist in surviving patients <sup>[5]</sup>. A retrospective study conducted by Bhullar DS and Aggarwal KK at Faridkot had concluded that majority (58%) of the victims were in the age group of 21-40years, males (92%) with simple injuries (80%) and with light sharp weapons. Upper limbs were the parts of body with injuries in majority (47%) of cases followed by head (17%) and mixed type (14%) <sup>[12]</sup>.

### Materials and methods

This was a hospital-based, descriptive, cross sectional study conducted at casualty of Vinayaka Mission's Medical College and Hospital, Karaikal. This study was carried out for a period of one year, from January 2021 to December 2021. Cases in which police complaint was not filed and cases of sexual assault were excluded from the study. The study was commenced after the approval of institutional ethical committee.

Detailed information of victims of physical assault were collected by a proforma. Brief history, demographic profile, time, place and motive for assault, details of alleged assailant, number and type of injuries sustained, region involved, and weapon used, course of treatment. Informed written consent was taken in all the cases included in the present study.

### Statistical Analysis

All the qualitative variables like age were summarized using descriptive statistics such as mean and standard deviation. All quantitative variables like site of injury, type of injury etc. were presented by using frequency and percentage.

### Results

In the present study out of 200 victims, Majority of them 158 cases (79%) were males and 42 (21%) were females. (Figure 1). Majority of the study population 106 (53%) belonged to the age group 16-25 years, followed by 70 (35%) of them belonged to age group 26-35 years. These two age groups together constituted 88% (176) of the study population. In both genders, the commonest age group was 16-25 years followed by 26-35 years. (Table no 1)

As per Modified Kuppuswamy scale, majority of the study population 83 (42%) belong to upper lower class, while about 59% of them belonged to Lower and Lower Middle Class. Only 5 (2%) of the study group belonged to Upper class. While majority of the cases 174 (87%) were from Urban area, 26 (13%) of the cases were from Rural areas. In the present study, it was observed that Out of 200 study subjects 132 (66%) were married, 51(25%) were unmarried and 17 (9%) were divorced.

In majority of the cases 159 (79%) the alleged assailant was known to the victim, where as in 41 (21%) of cases the assailants were strangers. Friends being the most common in 89 cases (44.5%) followed by Husband / wife in 38 cases (19%) and family members in 32 cases (16%). 83 (41%) of assault cases occurred on the streets, followed by 68 (34%) at home, 25 (13%) at other places like work place, public transport, bus stands etc., and 24 (12%) at recreational places like parks, bars and restaurants etc. Assaults occurring on streets and at home constituted 75% of the cases. (Figure No 2)

Majority of assaults 106 (53%) occurred between 6 pm to 12 mid night. followed by 57 (28.5%) between 12 Noon to 6 pm and 27 (13.5%) from 06.00 am to 12 noon. In the present study population, the most common type of injuries observed were contusions 82 (41%) males 32%, and 9% in females. Contusions were the commonest type of injury observed among both the genders, followed by abrasions 49 (24.5%) and incised wounds 25 (12.5%) of the total cases. Lacerations were seen in 18 (9%) of the cases. Fire arm and burn injury was observed in one case each. (Table no 2).

Most commonly affected region of the body in the study population was head & neck region with 81 cases (40.5%) of total cases followed by the upper limbs in 55 cases (27.5%) of cases. The least commonly affected region was abdomen with only 5 cases (2.5%) (Table no 3). Out of the 200 cases of assault, 57 cases (28.5%) were grievous in nature.

## Discussion

In the present study, males (79%) outnumbered Females (21%). This is similar to a study done by Rao D, *et al.*,<sup>[5]</sup> showed consistent findings with males forming the major case load i.e. 78.3%. It was also noted in a study conducted by Bhullar DS *et al.*<sup>[12]</sup> that Male victims dominated, constituting 92% of total number of cases. The study conducted by Nkombua L, *et al.*,<sup>[7]</sup> in Witbank General Hospital, South Africa, also concluded in his observation that Males constituted 71.8% of Victims. In the present study, it was observed that Majority of the study population 106 cases (53%) belonged to the age group of 16-25 years, followed by 70 cases (35%) that belonged to age group of 26-35 years. These two age groups together constituted 176 (88%) of the study group. Similar observations were made in a study done by Rao D *et al.*,<sup>[5]</sup> where 258 cases (71.66%) were in the age group of 21-50 years. Similar observations made by Bhullar DS *et al.*,<sup>[12]</sup> where 58% victims belonged to the similar age group. Majority of assault cases (41%) were on the streets, followed by 34% at home, 13% at places of work, in public transport systems and 12% at recreational places like parks, bars and restaurants etc. Assaults occurring at streets and homes constituted 75% of the cases. This is in accordance with the study conducted by Nkombua L, *et al.*,<sup>[7]</sup> where the victims were mainly attacked either in the street (39.9%) or at home (34.1%).

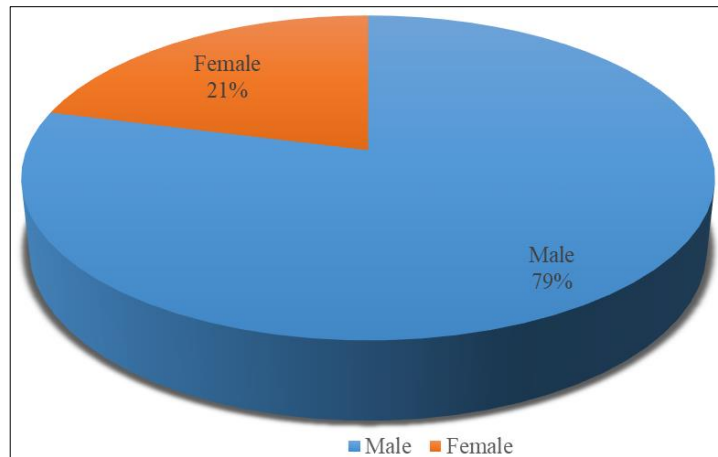
Maurya RP *et al.*,<sup>[9]</sup> had concluded in his study that the commonest place of assault was home (23.24%) followed by street (19.73%), school or college (17.25%), play ground or place of recreation (15.67%) and workplace (14.44%). In the present study most of the assaults occur at night (53%) occurred from 18.00 to 23.59 hrs. This is in accordance with the studies done in Bangalore by Rao D *et al.*<sup>[5]</sup> where 53.5% of cases were occurred at night. Similar observations were made in a study conducted by Nkombua L *et al.*,<sup>[7]</sup> where majority (68%) of the assaults occurred at night [15]. The similar results were seen in the studies conducted in United State, where most cases (52.2%, and 79% respectively) occurred at late night hours<sup>[8]</sup>.

In this present study, the most commonly affected region was head & neck region with 81 (40.5%) of total cases followed by the upper extremity in 55 (27.5%) of cases. The least affected region being abdomen with only 5 cases (2.5%). It is in accordance with the study conducted by Oberoi S. S, Aggarwal K. K *et al.*,<sup>[10]</sup> where the most commonly affected region of the body was head and neck region followed by upper extremities. Similarly, in the study conducted by Charles N C *et al.*<sup>[6]</sup> in Nigeria, found that the head/face/neck region accounted for 57.1% of cases, while upper limb and lower limb each accounted for 27.6% and 17.7% of injury sites respectively. The similar results were found in the study conducted by Wright J, and Kariya A<sup>[8]</sup> at Paisley, 60% of injuries were to the head, face and neck (equal frequency for males and females), 12% to the upper limb. In the present study, the most common type of injury observed was contusion in 82 cases (41%). Contusions were the commonest type of injury observed in both gender, followed by abrasions 49 (24.5%) and incised wounds 21 (10.5%). This is in accordance with the studies done in Bangalore by Rao D, *et al.*<sup>[5]</sup> where the majority of the wounds were Contusions (42.7%) and majority were non-fatal injuries.

Similarly the study conducted by Maurya RP, *et al.*<sup>[9]</sup> at Sir Sunderlal Hospital, Banaras Hindu University, had concluded that the commonest type of injury observed were bruise/hematoma or contusion (43.51%), abrasion/laceration (28.16%) and fracture (21.75%), while visceral injury (1.85%) were the least observed type of injury. Another study conducted by Charles *et al.*<sup>[6]</sup> had similar finding, where more than half of the injuries in the study were bruises/hematomas and abrasions. Nkombua L, *et al.*<sup>[7]</sup> also had similar findings, the commonest type of injury observed were bruise/hematoma or contusions (47.1%), followed by abrasions. Majority of the injuries 71.5% (143) in the present study were simple, and 28.5% (57) were grievous in nature. This is in accordance with the study conducted by Thube H. R *et al.*,<sup>[11]</sup> at South Mumbai Government Hospital. In their study, the majority of the injuries 973 (75.5%) were simple in nature. Similarly in a study conducted by Rao D *et al.*,<sup>[5]</sup> in Bangalore where the majority of the injuries were simple, only 10.5% of the injuries were grievous.

**Conclusion**

Men aged between 16-35 years are the most common victims of physical assault. Most of the times the assailant was known to the victim, commonest being assault by friends. Most common type of injuries sustained by the victims were contusions followed by abrasions. Most commonly affected region of the body in assault cases was head & neck region. Blunt weapon was most commonly used.



**Fig 1:** Distribution of assault cases according to gender



**Fig 2:** Place of assault

**Table 1:** Distribution of study population based on gender and age

Age in years	Male	Female	Total
<15	10	2	12 (6%)
16-25	87	19	106 (53%)
26-35	53	17	70 (35%)
36-45	5	2	7 (3.5%)
>45	3	2	5 (2.5%)
Total	158	42	200

**Table 2:** Type of injuries sustained according to gender

Type of injury	Male	Female	Total
Contusions	64 (32%)	18 (9%)	82 (41%)
Abrasions	41 (20.5%)	8 (4%)	49 (24.5%)
Incised wounds	22 (11%)	3 (1.5%)	25 (12.5%)
Fractures	11 (5.5%)	3 (1.5%)	14 (7%)
Stabs	7 (3.5%)	3 (1.5%)	10 (5%)
Burns	1 (0.5%)	0 (0%)	1 (0.5%)

Lacerations	12 (6%)	6 (3%)	18 (9%)
Firearm injury	0 (0%)	1 (0.5%)	1 (0.5%)
Total	158 (79%)	42 (21%)	200

**Table 3:** Type of injuries sustained according to gender

Type of injury	Male	Female	Total
Contusions	64 (32%)	18 (9%)	82 (41%)
Abrasions	41 (20.5%)	8 (4%)	49 (24.5%)
Incised wounds	22 (11%)	3 (1.5%)	25 (12.5%)
Fractures	11 (5.5%)	3 (1.5%)	14 (7%)
Stabs	7 (3.5%)	3 (1.5%)	10 (5%)
Burns	1 (0.5%)	0 (0%)	1 (0.5%)
Lacerations	12 (6%)	6 (3%)	18 (9%)
Firearm injury	0 (0%)	1 (0.5%)	1 (0.5%)
Total	158 (79%)	42 (21%)	200

## References

1. Saukko P, Knight B. Head and Spinal Injuries. Knight's Forensic Pathology. 4<sup>th</sup> ed. Boca Raton: CRC Press, 2016, 167.
2. Krug EG, Mercy JA, Dahlberg LL, Zwi AB. The world report on violence and health. The lancet. 2002 Oct 5;360(9339):1083-8.
3. The Indian Penal Code, 1860. Chapter XVI: 78 Available from <https://indiacode.nic.in/handle/123456789/2263?locale=en> [Cited 2021 August 4].
4. Batrinos ML. Testosterone and aggressive behavior in man. International journal of endocrinology and metabolism. 2012;10(3):563-8.
5. Rao D, Sudhakar R. A study of pattern of non-fatal injuries due to assault. Journal of Punjab Academy of Forensic Medicine & Toxicology. 2014 Jun 1;14(2):82-5.
6. Charles NC, Oberaifo AW. Assault pattern: Characteristics of victims seen at a police clinic. Gaziantep Medical Journal. 2016 Jul 1;22(3):124-8.
7. Nkombua L. Pattern of injuries suffered by patients treated for alleged assault at Witbank General Hospital, Mpumalanga. South African Family Practice. 2007;49(10):14a-d.
8. Wright J, Kariya A. Assault patients attending a Scottish accident and emergency department. Journal of the Royal Society of Medicine. 1997 Jun;90(6):322-6.
9. Maurya RP, Prakash S, Sen PR, Gautam SK, Singh S. Profile of Assault Victims Attending an Emergency outpatient department of a Teaching Hospital in India. Scholars Journal of Applied Medical Sciences (SJAMS). 2015;3(1B):92-97.
10. Oberoi SS, Aggarwal KK, Bhullar DS, Aggarwal AD, Walia DS, Singh SP. Profile of assault cases in Patiala. Journal of Punjab Academy of Forensic Medicine & Toxicology. 2012;12(1):17-21.
11. Thube HR, Chikhalkar BG, Nanandkarin SD. A Prospective Study of Injury Pattern in Victim of Assault Attended in South Mumbai Government Hospital, J Indian Acad Forensic Med. 2015 Jan-March;37(1):37-40.
12. Bhullar DS, Aggarwal KK. Medico Legal Diagnosis & Pattern of injuries with sharp weapons. J Indian Acad Forensic Med. 2007;29(4):112-4.