

# Knowledge and Awareness of Medical Students about Injuries in Forensic Perspective

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## Abstract

**Introduction:** Injury is any harm caused illegally to a person, which may be caused by any mechanical force which results in a break in natural continuity of any tissue. Each and every injury as its own medico-legal importance which is the key in interpretation of specific injury. Thus every medical student must be clear about this, which helps in concluding different injuries as every medical practitioner has to deal with injuries throughout their life. This can be dealt only when there is proper knowledge and awareness about different injuries in medical field.

**Objective:** This study was done to study knowledge and awareness of medical students about injuries in forensic perspective.

**Materials and Method:** It is a cross-sectional study done at Saveetha Medical College, Chennai, Tamil Nadu. Students of 2nd, 3rd, and 4th year M.B.B.S participated after giving informed consent. 115 students participated in the study. Questionnaire containing 20 questions were distributed and responses were obtained and analyzed.

**Results:** Out of 115 students, 95% of the students had basic knowledge on injuries. Though awareness was present, there was minimal lack in certain areas such as knowledge on contusions, grievous hurt and differentiating cut and chop wounds.

**Conclusion:** The knowledge and awareness on various injuries is very important for every medical student and practitioner for recognizing and differentiating it. So students should gain more knowledge and awareness on injuries.

**Key Words:** *Injury, Medical students, Knowledge and awareness, Forensic perspective.*

## Introduction

Legal definition of injury: Section 44 IPC defines injury as “any harm what so ever illegally caused to any person in body, mind, reputation or property.” Medically, a wound or injury is a break of natural continuity of any of the tissues of living body. Injuries can be classified medically, legally and medico legally.

An injury is always caused by some mechanical force, in which there may be a counterforce given by the body or rigid stationary object when there is movement of person or combination of both. Thus the energy produced is transferred into a person's tissue. A tissue is a complex structure thus the energy is not transferred uniformly which causes compression or

traction or combination of both. Rigid structures such as bones, resist deformation, but if the limit exceeds fracture occurs. Mechanical force to soft tissues alters their shape, which results in cohesion between the tissue cells, connective and vascular tissue frameworks and capsules of organs. Soft tissues rupture when they are stretched beyond the limits of their tensile strength.<sup>[8]</sup>

Mainly, injuries are due to mechanical or thermal or electrical or chemical etc. Each and every form of injury as its own medico-legal importance. Injuries have acquired least importance among doctors, despite of being one of the leading causes for complications and death. Many things can be done to gain understanding on specific injuries and examine. Any injury can give clues for its occurrence by proper examination, for example,

bite marks, nail tissue scrapings. So any medical person can be effective in this, but can be successful only by gaining knowledge and getting more exposure. This is the duty of every medical practitioner. This can be done only when there is good understanding on injuries and their medico-legal importance during the course of study. Many aspects like, cause of injury, time since it happened, manner of injury, site of impact, direction of force applied, position of the victim and assailant, place of injury, motive of the offence and many factors can be concluded only with proper knowledge on injuries. Even ante mortem and postmortem injuries can be differentiated. Every doctor should know that irrespective of their speciality, they are going to deal with medico-legal aspects of injuries comes throughout their life. Thus the key part of any medical practitioner is to assess appropriately, document clearly and interpret the injuries which were occurred. Medical practitioners are constantly exposed to examination of victims and handle medico-legal aspects of injuries. They are often subjected to court of law, so if they lack knowledge it will lead to negative conclusions. The interpretation and assessment of different injuries can be done only when there is good awareness and knowledge about injuries among medical practitioners. Mechanical injuries have great part in interpretation and assessment and also important in medico-legal aspects, so they were included mainly in this study were knowledge and awareness of different types of injuries among medical students was checked.

### Materials and Method

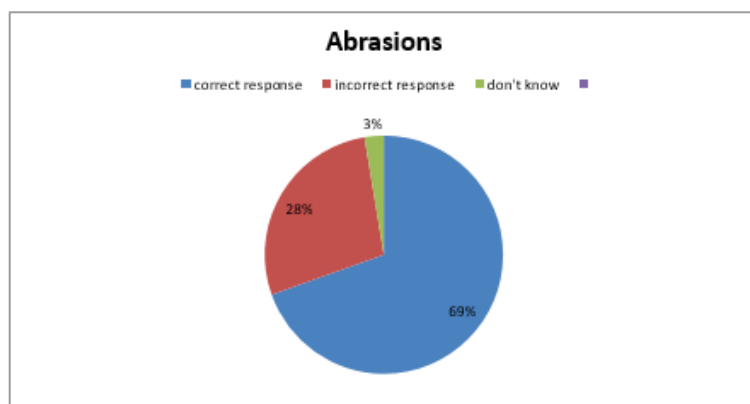
This cross-sectional retrospective study was conducted in Saveetha medical college and hospital, Chennai. Undergraduate medical students underwent

this study. 115 students participated in the study. Students of 2nd year, 3rd year and 4th year MBBS were included in this study. Students of 1st year was excluded as they lacked knowledge on forensic medicine. Study period was from 21st January 2019 to 30th March 2019. This study was done with the help of specially prepared questionnaires for which the validity was checked. It had about 20 questions and they were asked to tick their choice of option. The questionnaire consisted of knowledge on various injuries regarding forensic science such as abrasions, lacerations, contusions, chop and cut wounds, hesitational cuts, grievous hurt and their importance medico legally. The participants were assured that participation was voluntary and confidentiality would be maintained. The Approval of the ethical committee was done before starting. The questionnaires were given to students after explaining the importance of the study. Informed consent was obtained from students who participated and the responses were collected. 120 questionnaires were distributed out of which 5 students didn't sign the informed consent; so, it was excluded. The data was then entered in MS Excel and was analyzed and percentages were obtained using SPSS software.

### Results

Total 115 students participated in the study. In general 95% of the medical students had basic knowledge and awareness about various types of injuries and its forensic perspectives, as they were able to classify forensic injuries medically, legally and medico legally. Other 5% were lacking on this basic knowledge.

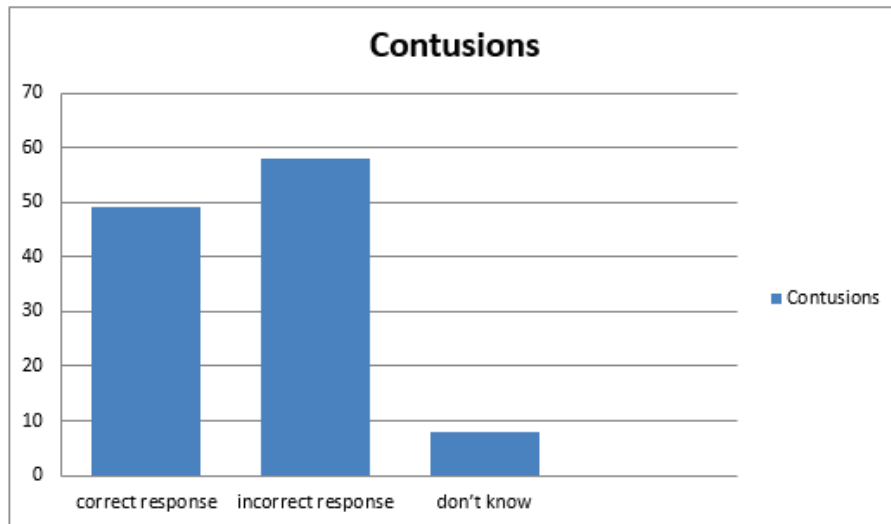
#### Knowledge and awareness on abrasions:



(Figure 1)- Abrasions are due to blunt force

Out of 115 students, 69% of students had knowledge on abrasions [refer figure 1]. Other 28% disagreed that abrasions are due to blunt force and 3% had no knowledge on abrasions. Most of them had awareness on abrasions common during road traffic accidents. Nearly half of the students were aware that abrasions do not affect both superficial and deep layers of skin. Whereas others lacked this information. 87.8% of the students had knowledge on pattern of abrasions and also agreed that time since abrasion can be identified by colour of scab. Only few disagreed that pattern of abrasion helps in identifying type of weapon and, that time since abrasions can be known with colour of scab. Other percentage of students didn't have knowledge.

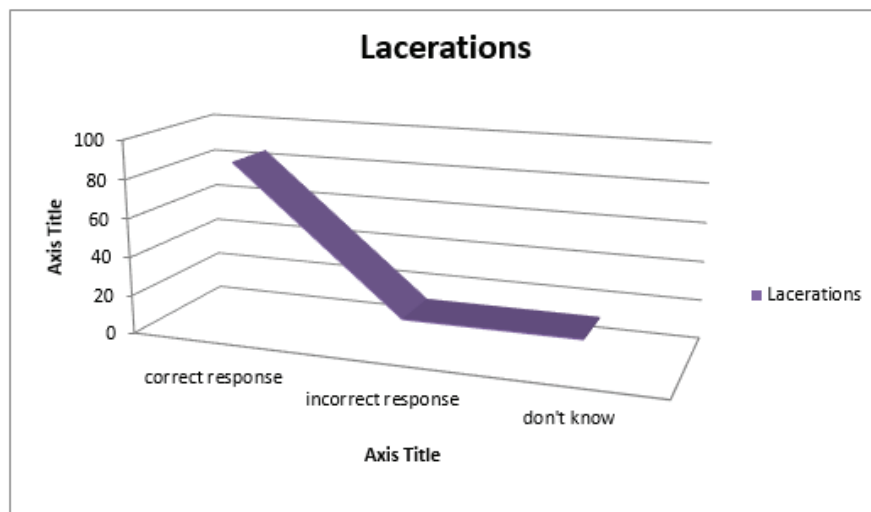
#### Knowledge and awareness on contusions:



(Figure 2)- Contusions causes bleeding

Knowledge and awareness on contusions were present only among of 49 students and 50% said contusions does not cause bleeding [refer figure 2]. Three by fourth of students approximately had knowledge on ectopic contusions and minimal number of students lacked knowledge. Only 17.3% of students knew that bridging of tissue is not seen in bruise. Other 47.8% believed it and 26% didn't know that it is only seen in laceration.

#### Knowledge and awareness on lacerations:

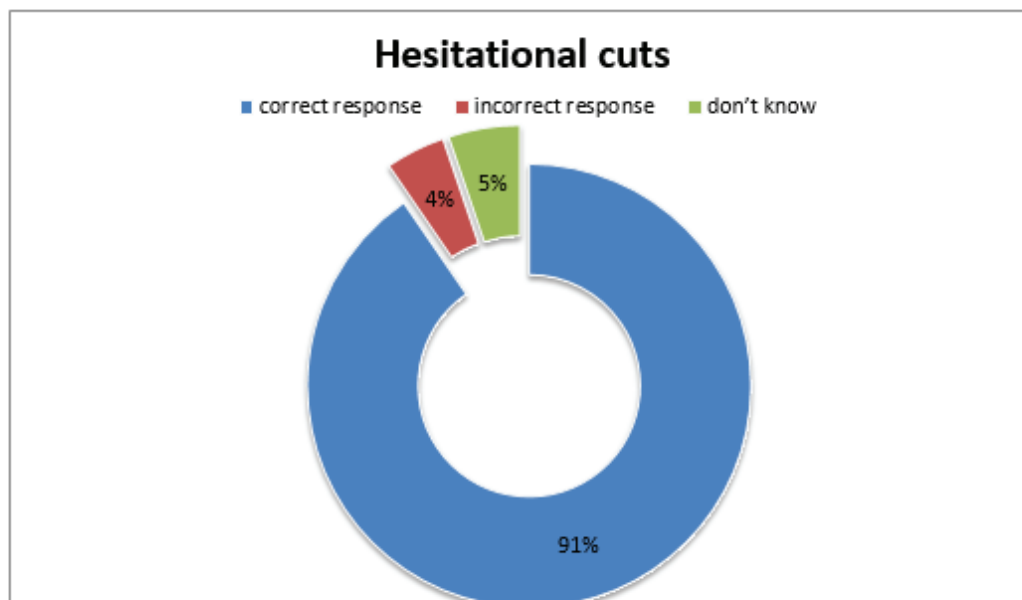


(Figure 3)- Lacerations involve all the layers of skin

Knowledge about lacerations was present among 75.6% of students [refer figure 3]. Others disagreed and few didn't know that lacerations involve all layers of skin. Only 69.5% of students were able to differentiate between lacerations and incised wounds and believed that

lacerations can lead to produce scar. Other few students were not able to differentiate between lacerations and incised wounds and 20% had no awareness and 20% disagreed the fact that lacerations will produce scar.

#### **Knowledge and awareness on hesitational cuts:**



**(Figure 4)- Hesitational cuts are suicidal in nature**

91% of students had good understanding on hesitational cuts [refer figure 4]. Only 5 out of 115 students disagreed that hesitational cuts indicates the suicidal nature of injury and believed that it's homicidal. 6 students didn't know what hesitational cuts are.

#### **Knowledge and awareness on grievous hurt:**



(Figure 5)- Emasculation comes under grievous hurt

Only 70% of students gave correct responses on grievous hurt, [refer figure 5] where, few disagreed that emasculation comes under grievous hurt and some lacked knowledge on grievous hurt. And only 35.6% were known that abrasions do not come under grievous hurt while other students accepted it.

#### Knowledge and awareness on other types of mechanical injuries:

	Incised Wounds	Homicidal Cut Injuries	Differentiating Chop Wounds From Cut Wounds	Types Of Stab Wounds
CORRECT RESPONSE	71.3%	80%	10.4%	88.7%
INCORRECT RESPONSE	18.2%	12.1%	71.3%	8.6%
DON'T KNOW	10.4%	7.8%	18.2%	2.6%

(Table 1)- Other types of mechanical injuries

71.3% students gave correct response as incised wounds are not due to sharp force whereas few gave incorrect responses and somewhere not aware.

Cut in genitalia are usually suicidal was disagreed by 80% of students and were correct about it.

Perpendicular strike due to heavy cutting weapon indicates chop wounds was disagreed by only by less percentage of students and nearly three forth students agreed it and gave incorrect responses and so was not able to differentiate between chop and cut wounds.

Penetrating and perforating wounds are caused by pointed weapons was known by many of students, minimal population disagreed and few lacked knowledge and awareness [refer table 1]

### Discussion

The definition of physical injury in the forensic medicine is “damage to any part of the body due to the deliberate or accidental application of mechanical or other traumatic agent” [1]. The purpose of this assessment and documentation is establishing how injury is caused. As mistakes happen often, it is every doctor’s work to acquire knowledge on different injuries and their interpretation. Wounds are generally classified according to the method of caution and appearance. Each and every wound has different characteristics. These characteristics indicate the type of weapon. It is important for every medical practitioner as they often deal with medico-legal aspects of injuries throughout their practice.

A study done by, Barek A, Haque ST. [2] concluded that, the term hurt, injury and wound have almost the same meaning and some differences as well. They usually mean any damage to any part of the body or bodily harm caused by application of violence. Injury also includes any harm to the mind, reputation and property, and hurt includes bodily pain, disease or infirmity. Clinically a wound is produced when there is breach of anatomical continuity of the skin or mucous membrane with or without damage of the underlying tissues.

According to this study, knowledge and awareness on injuries were good among medical students. 115 medical students from Saveetha Medical College, Chennai, Tamil Nadu underwent this study. Out of which 95% of students had basic knowledge on injuries. There was a minimal lack of knowledge on contusions and grievous hurt and differentiating cut and chop wounds. This study mainly included mechanical injuries like abrasions, contusions, lacerations and other injuries like incised, cut, and chop wounds. Knowledge on medico-legal importance of each injury, hesitational cuts and grievous hurts was also present. In a similar study done by Rajeshree Rajendra Gaware et al., [3] 128 medical students participated, where knowledge and awareness on various injuries and its forensic perspectives were fairly good among medical students. Knowledge on its importance was present among 87.5% of the students. Knowledge on different types of injuries were present

among 84.37% of students. But the knowledge on history taking were lacking among students. Thus understanding these injuries plays vital role among healthcare workers.

This study also shows that, students are having some knowledge and awareness about injuries but it should be improvised among them to make them fully aware about injuries. Similarly, Giannakopoulos GF et al., [4] done study to assess the knowledge of inflicted injuries of domestic violence and found that it should be improved among healthcare providers.

It is every medical professional’s duty to develop skills to assess and interpret different injuries. Another study done by Payne-James JJ, Hinchliffe J. [5] says that, assessment and documentation about different injuries establishes the cause for the injury. They are rarely done correctly, so these skills should be within the remit of any medical professional. As there are many factors involved in interpretation of injury, it can be successfully done by forensic expertise. It can be undertaken by referring different documents like chart mapping, written descriptions or photographs.

The most common reason why medical evidence on injuries given in court is disagreeable is, confusing about the terms used by doctors and the inappropriate or inaccurate description of a wound, for example, documenting that the wound is laceration to describe cut wound caused by some sharp force such as a knife, when the wound is in fact, an incised wound [7], thus concludes that for proper differentiating and understanding various injuries, knowledge and awareness about it must be included among medical students which will surely help in future for better documenting of evidence. A comparative study done by, Reijnders UJ, Giannakopoulos GF, de Bruin KH. [6] concluded that, the injury assessment scores varied from good to blank in various participant groups such as forensic physician, emergency room physicians and nurses and medical students. So training in this field of medicine remains compulsory in all fields.

**Conflict of Interest:** Nil

**Source of Funding:** Self

### Conclusion

The knowledge and awareness on various injuries is very important for every medical student and practitioner for recognizing and differentiating it. All types of

injuries have their own medico-legal importance which helps to clearly depict and for documenting them. Such reports certified by medical professionals only will help in judgment in the courts of law. The medical students were having good knowledge of the forensic perspectives of the injury, but certain areas shows lack of awareness. Thus it needs to be improved and the students should gain more understanding of injuries and their medico-legal importance because as a medical professional they are constantly exposed to plenty of injury cases.

**Ethical Clearance:** Obtained from institutional ethical clearance board

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