

Major Road Traffic Emergencies: The Role of Disaster Victim Identification

ABSTRACT

This chapter focuses on mass disasters that mainly arise from manmade circumstances. Mass disasters may arise from natural or manmade circumstance. Over the past few decades, there has been a considerable evolution in trauma therapy, which has decreased mortality during the golden hour. There are still issues, though, and one of them is maxillofacial damage in a patient who has had several traumas. Because the craniofacial region is so close to the brain, cervical spine, and airway, severe damage to this area might make it more difficult to treat a trauma patient in the early stages. In the event of maxillofacial injuries, the standard strategies of airway, breathing and circulation (ABC) therapy are frequently adjusted or enhanced with other approaches. In an already challenging scenario, such alterations come with their own set of difficulties and traps.

This line
should come
in the end of
abstract

Keywords: Traige; Disaster Victim Identification, Ante mortem, Post mortem, Interpol, Forensic Odontology

1. INTRODUCTION

Road traffic injuries are the leading cause of manmade circumstances. It may be a **small-scale** accident or maybe massive road accident involving thousands of lives and spread across mammoth area. The most frequent reason for patients to appear in an emergency room or trauma outpatient clinic is road traffic injuries to the craniofacial region. At least one out of 10 people killed on roads across the world is from India, according to the World Health Organization [1]. In the year 2021, there were 4,12,432 recorded traffic incidents in the nation, resulting in 1,53,972 fatalities and 3,84,448 injuries. Regretfully, the age bracket most severely impacted by traffic accidents is 18 to 45, which makes up around 67 percent of all unintentional deaths [2]. The Ministry has also been working on identifying black spots on national highways and on short term and long-term rectification of these black spots, through its organizations like National Highways Authority of India (NHAI) and National Highways & Infrastructure Development Corporation Ltd (NHIDCL) [2]. These injuries can range from straightforward nose fractures to severe facial communication, and treating them can be quite difficult. The presence of the upper airway and close proximity to the cranial and cervical tissues, which may be concurrently implicated, aggravate injuries to this highly vascularized area. While there is a fairly well-established strategy for managing respiration, circulation, and airway in non-maxillofacial injuries, injuries to this region have frequently been discussed. Commonest bone affected was nasal, mandible followed by zygoma and maxilla [3].

2. CAUSES AND RISK FACTORS AND FACTS

2.1 Causes

Numerous factors can lead to a traffic accident, including speeding, using a cell phone, driving while intoxicated or under the influence of drugs, overloading a vehicle, poor lighting, running a red light, passing too close to the car, disregarding traffic laws, bad weather, driving on the wrong side of the road, defects in the condition of the motor vehicle, faults of cyclists and pedestrians, etc. Road accidents are multi-causal and are the result of strong and intricate interplay of various factors.

These can broadly be categorized into those relating to:

- (i) Human error: Alcohol,
- (ii) Road condition/ environment like poor weather conditions
- (iii) Vehicular condition.

Human errors include under the effect of alcohol, reckless or distracted driving. Environmental conditions include poor weather conditions like rainfall or winter fog. A major reason is the time of the day as major accidents happen at night time. Poor lighting conditions on roads also leads to increased percentage of road accidents.

Road traffic injuries are the eighth largest cause of mortality worldwide. World Bank underscores a distinct co-relation between socio-economic status and road use patterns in low- and middle-income countries such as India. Most common mode of accident of two-wheeler was side-on accident, followed by head-on collision [3].

2.2 Risk Factors

The most common risk factors include:

1. Safe traffic rules and approach to road safety
2. Speed limits
3. Influence of alcohol and other psychoactive substances
4. Usage of helmets in case of motorcycles, seat-belts, and child restraints
5. Distractions
6. Unsafe highway infrastructure
7. Vehicles: basic standards of airbags and seat-belts
8. Delay in post-crash management: Delay in reaching hospital is of prognostic value and assesses the trauma care transport system.
9. Traffic laws enforcement inadequacy

2.3 Facts

Here we have discussed few numbers which Road Accidents in India 2021 reported [2]. Road accidents are responsible for:

- 422 deaths every day
- 18 deaths every hour
- The number of deaths on account of road accidents increased by 16.9 percent.
- India shares only one percent of number of vehicles globally but it accounts for almost 11% deaths due to road accidents.
- Two-wheelers account for highest share road accident death numbers (45 percent) in 2021 followed by Cars, Taxis, Vans and LMV vehicles (12.9 percent), Pedestrians (18.9 percent), Trucks/Lorries (6.2 percent), Buses (2.0 percent), Auto rickshaws (3.9 percent) and other motor vehicles (6.6 percent).
- The single most important factor responsible is over speeding that led to 71.7 percent road accidents and 69.6 percent deaths in road accidents.

2.4 Trauma Management

Sentence
needs
modification to
make sense

Many special agencies are involved in a disaster response and it is **therefore important to acknowledge and appreciate for their very important function and shared responsibilities**. Due to uncertainty with regard to the extent of damage, disruption and lack of reliable information, there is often difficulty establishing an immediate emergency response following a massive accident. Co-ordination at local, regional and/or national levels **are** imperative. Effective synchronization of a disaster mitigation operation can only be ensured if a fully functioning command and organizational structure is developed.

2.5 Chain of Survival Elements

Once cardiac arrest is identified, the American Heart Association gives the following six elements which can impact survival of victims with cardiac arrest:

- Prevention and Preparedness for early recognition and immediate response
- Activating Emergency response system: shouting for help and contacting local emergency response number
- High quality CPR and if available defibrillation: Bystanders who are not trained can do Hands only CPR
- Advanced resuscitation interventions
- Early and quick transfer
- Post care
- Recovery

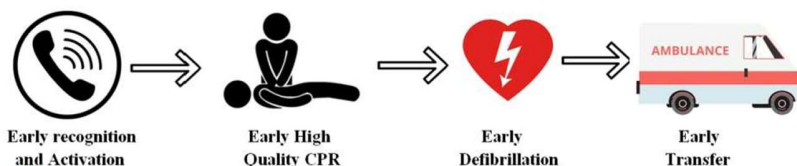


Fig. 1. Chain of Survival Elements

Ensuring that injured patients receive prompt, well-coordinated pre-hospital treatment is essential to improving the overall results of trauma care delivery. Pre hospital treatment has to be secure and prompt. The pre-hospital rescue should take as little time as possible. Pre-hospital care offers a very broad range of trauma care, yet it presents several difficulties.

2.6 Initial approach in Pre-hospital Care

The following four goals are central to the first strategy in prehospital emergency care, particularly with regard to trauma:

1. Scene evaluation for safety
2. Brief Primary Assessment
3. Resuscitation, Urgent intervention, and triage
4. Quick victim transport

2.6.1 Scene Evaluation

The "Safety 123" approach" should be kept in mind while providing primary pre hospital care.

1. **Safety of the Rescuer** or Provider
2. **Safety of the Scene** must be ensured and it comes with experience and training.
3. **Safety of the patient**

2.6.2 Primary Survey

In India, trauma care is based on Advanced Trauma Life Support® (ATLS®) which lays the ABCDE approach [4]. ABCDE stands for:

- A- Airway
- B- Breathing
- C- Circulation
- D- Disability
- E- Exposure

It is important to note that this ABCDE is a general approach for trauma patients and for more specific special needs, specialists team must be consulted for adequate management depending on the type of trauma [5]. Relevant history and information should be collected and note should be made in terms of Glasgow Coma Scale (GCS). A 10-second assessment by talking to the victim should be done. Chin lift or jaw thrust manoeuvre, suctioning, oxygen mask placement, **preparation** for definitive airway, auscultation and percussion of chest should be done. Hemorrhage should be identified and controlled and **if needed**, IV Tranexamic acid should be given **need for blood transfusion should be noted**. All the clinical findings should be documented for communication to the treating physician at the emergency/ trauma center.

Structure of sentence
needs improvement

2.6.3 Good Samaritan Law

In India, Good Samaritan Law was passed as a Bill by the Hon'ble Supreme Court on March 30, 2016, giving the "Force of Law" to the guidelines under Article 141 of the Indian Constitution for the protection of Good Samaritans and then issued by the Ministry of Road Transport and Highways [6]. Important features of the law are as follows: -

- It protects you from being harassed by the police and hospital staff.
- Police, ambulance staff or the hospital staff cannot compel you to disclose your identity
- The hospital is not allowed to demand payment from you or to hold you in custody.
- No one can compel you to become an eye witness for any Medico legal case without your own consent

This helps to get over the bystander effect in which a person is less likely to help the victim in the presence of other people. The majority of the population is reluctant to assist injured crash victims for fear of being harassed by the police, being held in hospitals, and having to go through a lot of red tape. These are the people who can be very helpful at the scene as they can alert and call for help, provide first-aid to the injured and make the most of the golden hour, carry them to the nearest hospital, if an ambulance does not arrive in time.

3. MANAGEMENT

The essential principles of airway management do not change. Nowadays, there are multiple methods available for handling airway. Nevertheless, no solution is infallible and needs to be customized based on the specific circumstances and the extent and nature of the harm. This kind of emergency circumstance requires the experience and technical expertise of the operator, who should be able to diagnose and prognosticate airway blockage and possess the necessary training to undertake an airway surgical procedure.

3.1 Initial Management

The look, listen and feel method aids in determining the presence of airway blockage and potential problems. When a mandible is involved in high-velocity trauma, the swallowing mechanism is affected by pain and insufficient protective reflex modulation, making it harder to maintain an open airway. Therefore, in order to avoid aspiration and further pulmonary problems, it is crucial to shield the airway from blood and vomitus. The palpation of trachea reveals any collapse or deviation. Auscultation of larynx should be done for stridor. An imminent danger to the airway is explained by the existence of any laryngeal stridor or tracheal pull. It is desirable to have a skilled team available for establishing rescue surgical airway when treatment via conventional definitive airway is less possible. Strictly speaking, patients with craniofacial injuries should get appropriate oxygenation and continuous saturation monitoring, regardless of the extent of the lesion. To

remove fluids and blood from the mouth and oropharynx, a high-volume suction should be accessible.

3.2 Airway

Major complication in maxillofacial injuries is a compromised airway. Reduced awareness, drunkenness from alcohol or drugs, and impaired laryngeal and pharyngeal reflexes can all exacerbate the condition and increase the patient's risk of aspiration. Avulsed tissues, multiple mandibular fractures, dentures, damaged teeth, foreign substances, significant glottis edema that might endanger the airway, and multiple mandibular fractures further worsen this situation. Nausea and vomiting can be caused by swallowed and pooled blood, alcohol, narcotics, and head injuries. Vomiting causes an increase in intracranial tension, which in turn causes salivation and bleeding that obstructs the airway. When patients are in the supine posture, there is an increased risk of aspiration and vomiting. Technically speaking, posterior displacement of the mandible or maxilla in individuals with numerous facial fractures may reduce airway patency. Airway embarrassment can also result from injuries to the larynx and trachea; however, these are less common.

4. TRIAGE

One of the fundamental ideas behind the efficient handling of significant situations is triage. Triage, which refers to the grouping, prioritizing, and classification of sick and wounded individuals according to their urgent need for care, is derived from the French word "trier," which implies separating, categorizing, or classifying [7].

START triage system is the most commonly used triage system used in United States. Patients are divided into the following tags red, yellow, green and black. Criteria's include the criteria including the ability to walk, respiratory rate, capillary filling, radial pulse and obeying the commands are used. Based on this system, all injured adults older than 8 years are evaluated using an algorithm of the system in 60 seconds or less (one should aim to evaluate accurately in 30 seconds).

Sentence
reconstruction
required



- **Red:** Represents altered physiological parameters, any time-sensitive conditions or conditions with increased urgency
- **Yellow:** Represents semi-urgent conditions where admission for monitoring, evaluation, and treatment is needed
- **Green:** Patients requiring minor treatment and quick discharge.

ATP	Description
RED	- Patients requires immediate life-saving interventions - High-risk situation or confused/lethargic/disoriented or severe pain/distress or danger-zone vitals
YELLOW	- Patients with but nondanger zone vital signs but Needing "many" resources - Patients needing only one resource
GREEN	No resource needed

Language needs modification

Fig. 3. ATP Triage Categories

Bazyar et al came to this conclusion that no triage system is superior or inferior in relation to patient's clinical outcome; hence they recommended that different countries should design their own triage model which suits their emergencies & disasters dictated by their conditions, availability of resources and relief man force [9].

5. DISASTER VICTIM IDENTIFICATION

In cases of massive road disaster including heavy motor vehicles where multiple casualties are reported, searching the dead bodies is the first step in the management of dead bodies which is mostly chaotic. The phase of body recovery lasts for a few days due to difficult terrains, damaged roads and tough weather conditions not favoring the search operations and prioritizing a speedy recovery is important since it facilitates identification and lessens the psychological strain on survivors. Body parts were handled

as though they were separate bodies. Each and every body received a distinct identification number that included the team number, location items number, and recovery date. The found within each body were arranged into individual bags with same UID number and are sealed by the police.

Human beings are blessed with teeth which not just help in function and esthetics in this life. They are completely repairable in this life but also indestructible in after life. Teeth help the forensic experts to identify victims and individuals in a post mortem situation. Forensic dentistry is a relatively newer field which helps to identify teeth and requires expertise and empathy. In mass disaster situations, a lot of people lose their lives and it is very important to identify each one of them, treat them with dignity and hand over them to their loved ones.

Correct tense

Change sentence

Break sentences to make more sense

Change sentence structure

Coordination among various bodies is important in Disaster Victim Identification (DVI), where multiple agencies and organizations, with diverse and competing functions and responsibilities are required to work together. The most crucial thing is to have a flexible mindset when incorporating DVI operations into multidisciplinary emergency responses. This will help to minimize misunderstanding and advance shared goals.

The following agencies and services form DVI teams: emergency response specialists consisting of police, fire and ambulance; rescue units for search & rescue in mass accidents where bodies are spread across mammoth acres; investigation units for crime & fire; forensic scene and post blast examiners; disaster investigation unit for air safety; Intelligence Unit; and media personnel for public information dissemination.

5.1 Preparation Needed before DVI

Prior to the people being deployed, the lead authority should address or reduce occupational health, welfare, and safety risks, even if first responders, including DVI staff, would need early access to the event scene. In India mostly police and anthropologists visit the scene and from there they pack the bodies in separate bags and transfer it to the mortuary. Initial accident scene evaluation includes:

- Extent of the accident scene (evaluating the size, hazard and other factors).
- Condition and possible number of body parts or human remains.
- Estimating the potential amount of property.
- Estimating the time required for processing.
- What other Medico-legal special equipment, resources or personnel of expertise are required.
- Considering and formulating a methodology to remove human remains and body parts.
- Transporting the deceased.
- Safe and dignified storage of the deceased & property to the mortuary.

DVI teams have the following trained and experienced specialists:

- Forensic Pathologists.
- Forensic Odontologist.
- Fingerprint Experts (Friction Ridge Experts).
- Forensic Biologists / Geneticists.
- Forensic Anthropologists

Supporting experts includes: photographers to maintain digital record, Radiologists, Interview Teams, evidence collection and management teams,

mortuary staff, logistics, liaison officers, missing persons officers, IT Specialists and agents administrating and monitoring records. The Mortuary received the body and then body is moved to the Stores. Reception area has the following stations:

- **Station I: External Examination:** Only external examination of the body is done. Take out all the belongings and take photographs as necessary. The external belongings are segregated, labeled and sealed for the family after positive identification.
- **Station II: DNA and Fingerprint collection:** Many national identity cards have fingerprints registered to it and this database can be used to identify the individual.
- **Station III: Post mortem Examination:** Autopsy is done depending on the type of disaster. In cases of massive road accidents, it is mandatory to do complete autopsy of the driver to rule out if there was cardiac arrest or was the individual under the effect of alcohol or drugs.
- **Station IV: Odontology:** Here, 2 Forensic Odontology experts run dental examination in a pair examining only the teeth and associated structures. These evidences at times aid in identification based on one point of agreement on dental grounds.

Line seems abrupt. More context necessary

5.2 DVI practice in India

In India we follow the INTERPOL (International Criminal Police Organization) provided paper-based system to support these protocols, with antemortem, postmortem and identification forms printed on different colors to avoid misinterpretation which focuses primarily on managing & reconciling information available about human remains at the site of accident.

The INTERPOL defines the steps in the process of identification of DVI workflow in four phases. The fifth phase is the "debrief" phase which is focused on quality control and training.

- Phase 1: **Scene:** Involves meticulous examination and gathering data at the scene. All the properties are to be recovered, labeled and secured.
- Phase 2: **Post-mortem Examination:** Involves gathering information from the human remains examined by specialists to detect forensic evidence. This includes fingerprints, palm prints (dactyloscopy), dental examination, genetic DNA profiling, subjective mark of identifications like tattoos, scars of previous accidents or surgical implants which may be unique to the victim.
- Phase 3: **Ante-mortem:** Involves gathering any background information that could help with identification. Dental & medical records, fingerprints and DNA provided by family members or are recovered from the victims' home, workplace or the evidence available from general physicians or specialists like dentists.

- Latent finger, palm & footprints (dactyloscopy) can be secured at the missing persons' home or workplace.
- Traces of DNA from toothbrushes, combs, garments worn and night-wears
- Information on medical treatments like radiographs, fracture and orthopedic plates and screws.
- Information on dental records like photographs, radiographs, casts and treatment notes.

Items collected from the home and offices are later returned after examination and documentation. Comparing this data are useful in identifying a person positively because human fingerprints, palm and foot prints, dental health, and DNA are all incredibly unique personal characteristics that may be consistently connected to an individual. Photographs of the missing individual with as many distinguishing characteristics as possible such as scars, tattoos, striking jewelry, and pictures that provide a clear view of their teeth are highly beneficial.

- Phase 4: **Reconciliation**: Involves comparing, combining and compiling all the data collected by a team of specialists from the scene, postmortem examination and ante mortem investigation data to produce a positive identification and identify the individual.

6. ROLE OF FORENSIC ODONTOLOGY

A single tooth with distinguishing characteristics can be utilized for identification; however, a complete mouth radiograph might not provide enough information for a conclusive result. There is no minimum need for the number of concordant points for definite identification. Comparing the postmortem dental remains with ante mortem dental records serves as positive identification. Dental records including written notes, study casts and radiographs. Numerous complex restorations serve as points of identification. In the postmortem data collection, the following dental registration should be made:

- Teeth present intact or sound, filled (restorative material specified), surfaces, root filling and missing teeth
- Dental and Maxillofacial Prosthesis:- fixed (implants, crowns & bridges) and removable prosthesis
- Developmental congenital anomalies and disorders: - impactions, hypo and hyperdontia, ectopic, transpositioned or retained dentition, shape and size anomalies.

- Malocclusions like Class II or III molar relation, frontal open and deep bite > 5mm. cross-bites, scissor bites, midline displacement, crowding and spacing.
- Evidence of pathological changes: - jaw fractures, **tumours**, major infections (sinusitis, osteomyelitis)

The ante-mortem dental records can be only written records, records combined with unsystematic radiograph, records with only bitewings, or records combined with full mouth survey and/or an orthopantomograph (OPG). Dental data can be accessed using **Metric** or **Non metric** methods. Metric methods include: Odontometrics, Root Length, Incisor and mandibular canine index and radiographs. Non metric methods include: dental morphology and anomalies, chelioscopy, rugoscopy and palatoscopy. Non dental structures aiding in sex determination are as follows: mandible and maxillary sinus.

During postmortem dental profiling, we can comment upon age of child by comparing stage of tooth development with development chart with high accuracy, or using aspartic acid racemization, SEM/EDXS to analyze with market availability timeline of resins in restorative material. Sex determination can be done by visual/clinical method through size, dimorphism, rugoscopy and chelioscopy; microscopic methods using barr bodies; and advanced methods using PCR on DNA from pulp followed by amplifying Amelogenin, SRY, and DYS14 genes [10].

The standardized INTERPOL DVI forms should be used to document victim identification AM (ante-mortem) and PM (post-mortem) data. There are two forms which are color coded.

1. **Ante Mortem Form:** It is color coded in **Yellow** and is divided into following categories:
 - 100's: Administrative data;
 - 200's: Nominal data;
 - 300's: Effects on belongings and luggage carried by person;
 - 400's: Body description external and fingerprint, etc;
 - 500's: Medical findings, direct reference of missing person and samples of biological relatives and family tree of biological relationships;
 - 600's: Odontology (*Figure 4*);
 - 700's: Supporting Information;
 - 800's: Appendix DNA, appendix body sketch;

Identification is done based on two means: Primary and Secondary. Primary means of identification are the direct identifiers and they include: friction ridge analysis, comparative dental analysis, DNA analysis and unique serial numbers from medical implants. Secondary means of identification support primary means of identification and are normally not sufficient as the only means of identification which include personal description, medical findings, tattoos, as well as property and clothing found on the body. Identification much relies on the quality of both Ante-mortem and Post-mortem data which should be of the highest quality possible, and its quality should be processed at the very time of collection, i.e., early in the operation.

Based on dental examination, the following four conclusions are possible as defined by the American Board of Forensic Odontologists [12]:

1. **Positive identification:** When the AM and PM records match in details with no unexplainable discrepancies.
2. **Possible identification:** - When the AM and PM data have consistent features but due to poor quality, identity cannot be positively established.
3. **Insufficient Evidence:** - When the information collected is insufficient to come to a final conclusion.
4. **Exclusion:** - When the AM and PM data are clearly inconsistent.

6.2 Recent advances in Disaster Victim Identification (DVI)

Facial recognition is a relatively new technology. Unlike fingerprints and DNA, which do not change during a person's life, facial recognition has to take into account different factors, like ageing, cosmetic surgery, use of cosmetics, effects of drug abuse or smoking, pose of the individual and use of AI filters.

In future, face recognition system can be made using AI which will enable us to identify the deceased by identifying features when a facial image is entered into the system. The system will automatically encode the algorithm and be compared to the profiles database giving a result of the profiles which matches the most.

Each of the aforementioned phases already heavily relies on newer technologies, and research into these technologies and their potential uses is continuously underway. Current research into technology for DVI focuses on data collection at the scene for example: capturing finger and palm prints digitally [13]; using radiographic technology in the postmortem phase [14]; data analysis, management and matching at the reconciliation phase [15]; use of technology to track both living and dead victims of accidents using mobile communication, radio frequency identification (RFIDs), smart cards and internet. Most explorations are to enhance tagging, following and

tracking in scenarios of medical casualty triage, where the only aim is to preserve as many lives as possible.

6.3 Barriers in Adoption of Recent Advances in DVI

For adoption of any new technology, main element which plays role is the attitudes and perceptions of usability and usefulness towards interrogating the social practices around technology use. Paper-based tools which were developed in the 1960s are still in use. Adoption can aid in altering the social structures that are currently in place, but technology can also be used by organizations to alter or support the status quo. Several days or weeks may pass before the deceased is positively identified, depending on the type of occurrence and the number of victims.

7. CONCLUSION

Road accidents have become a leading cause for fatalities and injuries globally with India being the leading country in this regard. The huge loss of life and attendant economic losses are highly avoidable and require urgent measures to be adopted for effective mitigation. Maxillofacial injuries pose an immediate threat to life as a consequence of its proximity to both the airway and brain and road traffic incidents increase the duration of reaching the primary care centre for management making it a situation of great importance. Every case is different requiring and is exacting even for experienced professionals. The current situation calls for a multifaceted strategy that involves departmental collaboration. Although advancements in technology and materials have made things easier, emergency workers and surgeons' prompt response, sheer talent, and presence of mind are what really matter. The Ministry has been putting into practice a multi-pronged road safety policy centered on the 4-Es, namely Education, Engineering (both of roadways and motor vehicles), Enforcement, and Emergency Care. Road traffic accidents are compensable for with corrective actions. There appears to be a gap in the plan adopted by the Emergency Management (NDMA) toward the victim identification process, as the policy framed by the NDMA is concerned with rescue, relief, and rehabilitation. This is because victim identification is a multidisciplinary approach, and a policy should be adopted by the NDMA in accordance with the guidance given by INTERPOL DVI 2005. Furthermore policy should be framed to imply the Forensic Experts Team (Forensic Medical Expert, Anthropologist, Fingerprint Expert and Odontologist) in such situations with proper training and drills to promote higher percentage of identifications. In order to achieve positive identification, the government should set up an identification board that gathers data both before and after death and is backed by infrastructure such as a morgue, triage center, identification unit, etc; and for rapid collection of ante mortem data they should also approach the Aadhaar number UID databases. The holistic concept of trauma management aims at

getting the right patient to the right place at the right time. Sex estimation is an essential part of the human identification process. An optimal technique for estimating dental sex should be simple, consistent, non-invasive, highly accurate, and reliable. While no such method currently exists, the search for one continues while forensic dentists continue to rely upon those that are available to us.

REFERENCES

1. <https://www.who.int/news-room/fact-sheets/detail/road-traffic-injuries>
2. https://morth.nic.in/sites/default/files/RA_2021_Compressed.pdf
3. Agnihotri A, Galfat D, Agnihotri D. Incidence and pattern of maxillofacial trauma due to road traffic accidents: a prospective study. J Maxillofac Oral Surg. 2014 Jun;13(2):184-8
4. American College of Surgeons Committee on Trauma (2004) Advanced trauma life support program for doctors, 7th edn. American College of Surgeons, Chicago
5. Maryam Bagherzadeh, Canada, "Approach to the trauma patient – ABCDE of trauma care," in International Emergency Medicine Education Project, January 19, 2022, <https://iem-student.org/2022/01/19/abcde-of-trauma-care/>, date accessed: November 22, 2023
6. National Emergency Life Support (NELS) Provider Course Manual for Paramedics
<https://main.mohfw.gov.in/sites/default/files/Provider%20Course%20Manual%20for%20Paramedics.pdf>
7. Koenig KL, Schultz CH. Koenig and Schultz's disaster medicine: comprehensive principles and practices: Cambridge University Press. 2010
8. Sahu AK, Bhoi S, Galwankar S, Aggarwal P, Murmu L, Nayer J, Sinha TP, Mishra PR, Ekka M, Kumar A. All India Institute of Medical Sciences Triage Protocol (ATP): ATP of a Busy Emergency Department. J Emerg Trauma Shock. 2020 Apr-Jun;13(2):107-109.

9. Bazyar J, Farrokhi M, Khankeh H. Triage Systems in Mass Casualty Incidents and Disasters: A Review Study with A Worldwide Approach. *Open Access Maced J Med Sci*. 2019 Feb 12;7(3):482-494.
 10. Maulani, C., Auerkari, E.I. Molecular analysis for sex determination in forensic dentistry: a systematic review. *Egypt J Forensic Sci* 10, 36 (2020).
 11. Prajapati G, Sarode SC, Sarode GS, Shelke P, Awan KH, Patil S. Role of forensic odontology in the identification of victims of major mass disasters across the world: A systematic review. *PLoS One*. 2018 Jun 28;13(6):e0199791.
 12. Body identification guidelines. American Board of Forensic Odontology (ABFO) *J Am Dent Assoc*. 1994;125(9):1244–1246
 13. Johnson BT, Riemen JAJM. Digital capture of fingerprints in a disaster victim identification setting: a review and case study. *Forensic Sci Res*. 2019;4:293–302.
 14. Sidler M, Jackowski C, Dirnhofer R, et al. Use of multislice computed tomography in disaster victim identification—advantages and limitations. *Forensic Sci Int*. 2007;169:118–128.
 15. Hofmeister U, Martin SS, Villalobos C, et al. The ICRC AM/PM database: challenges in forensic data management in the humanitarian sphere. *Forensic Sci Int*. 2017;279:1–7.
-