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REVIEW ARTICLES

Types of Road Traffic Accidents and Emergency Medical Care

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Abstract

Introduction: A traffic accident is when only material damage is caused to the vehicle and track environment, and there are no casualties. RTA represents a significant risk for morbidity and mortality in Kosovo, of which head injury and multiple-site injury increase injury severity.

The anatomical site, mechanism of injury, time to reach an initial health facility, time of the day, patient condition at ED, type of treatment given, GCS at admission, and days spent in the hospital were among independent predictors of management outcome. Targeted approaches to improving the care of the injured victims may improve outcomes.

Thus, the clinician should consider the clinical presentation of RTA and give due attention to the identified contributing factors in managing it. Law enforcers should also emphasize the identified types and mechanisms of accidents. The PubMed database was utilized for article selection, and papers were obtained and reviewed. The ATLS protocol has been developed to manage trauma patients systematically so as not to miss any condition that may kill the patient.

Conclusions: Triage is essential in managing accidental situations and strengthening the primary, secondary, and tertiary health system. To design clinical guidelines, algorithms, and triage protocols at the three levels of health care, all healthcare professionals should be educated and trained with continuing courses in triage, communication, and Basic Life Support -AED, ACLS, PHTLS, BTLS, and ATLS.

Keywords: Traffic accidents, Emergency, Types of automobile accidents, Clinical pattern, Management outcomes

Introduction

Traffic medicine is an interdisciplinary field that includes medicine, psychology, accident research, and vehicle type. Traffic medicine as a term has been used for 40 years by the International Association for Traffic Accident Medicine, founded in 1960 in San Remo, Italy. World Road Safety Health Day is marked on Apr 7, 2004, when hundreds of associations organize events to raise awareness of road traffic injuries as a global health problem. [1]

Traffic medicine is an integral part of the field of concern in forensic medicine because it concerns accidents with fatalities and survivors. Traffic is one of modern humanity's most important economic activities because the routes are the routes by which goods and orders are exchanged. Road traffic accidents are one of the world's leading causes of injuries and fatalities and, hence, represent an essential field of research that uses traffic accident analysis and prediction techniques to determine the key factors contributing to road traffic accidents. [2, 3]

Epidemiology – Causes. The number of road traffic deaths remains unacceptably high. A global estimate

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Photo 1. Traffic Medicine Symbol. The symbol of the International Association for Accident and Traffic Medicine (IAATM) was founded in 1960 in San Remo, Italy, with the new name renamed in 2000 by the (IAATM) as the International Traffic Medicine Association (ITMA).[7]

shows that about 1.35 million people die from preventable accidents, and 50 million are injured by road traffic accidents every year. Road traffic accident is the 8th leading cause of death among people of all ages, while it is the leading cause of death for the age group of 5-29 years. [4, 5]

In 2022, the NHTSA counted 42,795 fatalities in motor vehicle traffic crashes; that is 1.35 fatalities per 100 million vehicle miles traveled. Worldwide, approximately 16,000 people die each day as a result of injuries (5.8 million deaths per year), and projections for 2020 indicate that approximately 8.4 million deaths are expected per year. Six million car accidents occur each year in the United States. [6]

Statistical data concludes that the following are responsible for traffic accidents: inadequate human behavior in 85% of cases, condition of roads, and climatic conditions in about 10%, whereas technical releases with 5%.[8]

Figure 1. DRSABCD is a crucial first-aid action plan that can significantly impact emergencies.

Car accidents are scary, and Road traffic injuries are the leading cause of death for children and young adults aged 5-29 years. Approximately 1.35 million people die each year as a result of road traffic crashes. More than half of all road traffic deaths are among vulnerable road users: pedestrians, cyclists, and motorcyclists. 93% of the world's road fatalities occur in low- and middle-income countries, even though these countries have approximately 60% of the world's vehicles.[9]

Division of traffic accidents

- A traffic accident occurs when only material damage is caused to the vehicle, track, or environment, and no human casualties are reported.
- A traffic accident involves human victims and material damage. Rolling over a moving vehicle is an accidental event in which the car hits or tramples the pedestrian or passive participant in the traffic.
- Traffic accidents can involve both the active participant—the driver or pedestrian in motion—and the passive participant—the passenger in the vehicle or the calm pedestrian.
- We talk about human victims when there are injured or dead participants in the traffic accident, active or passive participants in the traffic.
- We talk about injury or trauma when, in a traffic accident, the entirety of the human body is violated in one or more places. [10, 11]

Types of automobile accidents

Traffic accidents can be divided into several types: loss of control, head-on vehicle collision, vehicle rollover, head-on vehicle accident, multiple collision, unilateral, side, and single collision.

- ***Loss of control*** is most often the leading cause for any driver involved in a traffic accident, which can be caused by illnesses that prompt this reaction to begin, but it depends on the type of car accident that is taking place.

- ***Head-on vehicle collision.*** The driver is driving on the road, and suddenly, another vehicle traveling in the opposite direction comes towards your car due to losing control and colliding head-on with the other vehicle.
- ***Rolling the vehicle.*** Passengers can be ejected when a car, truck, or bus slides off the road or into an abyss or rolls over many times. Unfortunately, there is no time to react immediately, and as a result of the vehicle rolling, the injured may have serious injuries, endangering the lives of the victims. When drivers and passengers are wearing seat belts, survival is significantly increased.
- ***Head-on vehicle accident.*** One of the most dangerous collisions can be when a vehicle collides head-on. But often, this "T" effect occurs on the driver's side of the car, who can suffer broken bones and brain concussions, which can be fatal because these crashes are usually sudden and unavoidable.
- ***Multiple collision vehicle accidents.*** Another highly vulnerable traffic accident is a multi-vehicle crash involving three or more vehicles in a chain of events from a single event, the accidents of which can be associated with minor and serious injuries.
- ***Head-on vehicle accident.*** One of the most dangerous collisions can be when a vehicle collides head-on. But often, this "T" effect occurs on the driver's side of the car, who can suffer broken bones and brain concussions, which can be fatal because these collisions are usually unexpected and unavoidable.
- ***Multiple collision vehicle accidents.*** Another highly vulnerable traffic accident is a multi-vehicle crash involving three or more vehicles in a chain of events from a single event, the accidents of which can be associated with minor and serious injuries.
- ***Vehicle accident with one-sided collision.*** Driving next to another vehicle is quite dangerous if the driver is on a country road or highway. Any distraction from the other driver can cause them to drift out of their lane, resulting in injury.
- ***Vehicle accidents with side-impact collisions.*** When a vehicle is broad-sided (struck sideways by the front of the other driver), it is known as a side-impact collision. **T**his type of car accident most often occurs at an intersection, but to avoid collisions, slow down when approaching the intersection—whether you have a green light or not.
- ***Vehicle accident*** - alone in the vehicle. A car accident involves a vehicle, but that does not mean its driver is always at fault. It is generally caused when a single driver reacts by swerving to avoid hitting something, perhaps an animal or the driver hitting an oak tree, concrete pillar, tree, or utility pole. In these cases, the weather is often a factor that can present unavoidable risks in road traffic. [12]

Management. Before the patient is received at the emergency department, emergency medical services (EMS) provide the hospital with a list of information about the patient. This list includes the patient's mechanism of injury, vital signs, age and sex, and apparent injuries [13, 14]. The advantage of this early warning is that it notifies additional personnel, assures resources are available, and prepares for anticipated procedures and blood transfusions **[**15].

DRSABCD Action Plan

The Royal Life Saving DRSABCD Action Plan is vital in assessing whether a casualty has any life-threatening conditions and if any immediate first aid is necessary. The DRSABCD emergency action plan involves seven steps:

Photo 2. Kosovo Police Service, Kosovo Fire Brigade, SHME 112, Emergency Clinic.

Thus, the Advanced Trauma Life Support (ATLS) protocols put forth a systematic approach to treating trauma patients [16]. The most crucial element of the ATLS protocol is the initial investigation. It is organized based on the lethality of the injuries, from most to least lethal. It is also practical in cases of limited personnel, as it simplifies priorities. Thus, any injury found can be dealt with before moving on to the next step [17]. Primary investigation is split into five core steps: airway examination and protection, breathing and ventilation, circulation examination, disability evaluation, and exposure.

Road traffic accidents are a leading cause of injury and death worldwide, especially in the younger population. [3,18, 19]

Fig 2. The first step of first aid is to preserve the victim's health, treat, stabilize, and transport with medical care to the hospital.

The injury depends on the mechanism of the accident, as specific injuries are associated with particular Accidents. The primary goal in managing these patients is to ensure

that they do not suffer from life-threatening conditions and that, if they do, they are handled swiftly and appropriately. The Advanced Trauma Life Support protocol has been developed to approach trauma patients and manage them accordingly and systematically. [17]

These protocols have helped physicians save countless patients who were afflicted with injuries from traumatic events.[16]

The work aims to summarize the best available evidence on interventions that can reduce road traffic injuries.

Objectives to: Demonstrate the ability to assess and manage emergency airway, breathing, and circulation. Use a defibrillator and administer appropriate therapy. Formulate a list of possible diagnoses and prioritize the assessment elements. Develop a disposition plan after stabilization in the emergency department. Prevent death. Avoid aggravating injuries. Relieve pain and anxiety. Facilitate the arrival of EMS 112 Teams.

Material and Methods

A rapid evidence synthesis approach adapted from the SURE Rapid Response Service was applied to search, appraise, and summarize the best available evidence on effective intervention in reducing road traffic injury. We found 15 articles through a search of different databases mentioned above. After screening for the titles and abstracts of the articles, four of them that satisfy the inclusion criteria were included in the final review. To answer the question under review, we searched for relevant studies from databases, including PubMed and the Cochrane Library [20, 21, 22]

Review findings. Based on our search, we identified systematic review, meta-summary, meta-analysis, and review. Then, we appraised and graded the methodological quality of systematic reviews that are deemed to be highly relevant using AMSTAR 2. [10]

Discussion

Road traffic crashes occur on all continents and in every country. Every year, they take the lives of more than a million people and incapacitate many millions more. Pedestrians, users of non-motorized vehicles – including bicycles, rickshaws, and carts – and motorcyclists in low-income and middle-income countries carry a large proportion of the global burden of road traffic death and serious injury. The elderly, children, and people with disabilities are particularly vulnerable. [2, 6. 19]

Each country should prepare a multisectoral road safety strategy involving agencies concerned with transport, health, education, law enforcement, and other relevant sectors. The strategy should also be multidisciplinary, involving road safety scientists, engineers, urban and regional planners, health professionals, and others. The identified interventions to reduce road traffic accidents were [2]

Legislation and enforcement, Public Awareness/ Education, Speed Control/ rumble strips. Each country needs a lead agency on road safety, with the authority and responsibility to make decisions, control resources, and coordinate efforts by all government sectors – including health, transport, education, and the police. This agency should have adequate finances for road safety and be publicly accountable for its actions. National efforts will be boosted if one or more well-known political leaders can actively champion the cause of road safety. [10]

Specific actions are needed to prevent road traffic crashes and minimize their consequences. These actions should be based on sound evidence and analysis of road traffic injuries, be culturally appropriate and tested locally, and form part of the national strategy to address the problem of road crashes. Road traffic crashes are predictable and, therefore, preventable. To combat the problem, though, close coordination and collaboration across many sectors and disciplines must be achieved using a holistic and integrated approach. While many interventions can save lives and limbs, political will and commitment are essential; more can be achieved with them. [2, 3]

The time to act is now. Road users everywhere deserve better and safer road travel. The mobilization of governments and relevant institutions, especially civil associations, aims to reduce traffic injuries, disability, and mortality in road accidents. Each government will implement stricter measures to reduce road traffic injuries through health promotion campaigns, consolidating the injury surveillance system, and mobilizing different sectors at all levels of society.

The governments of most countries welcome the report of the World Health Organization and the World Bank on the prevention of road traffic injuries, respecting the implementation of the recommendations to the fullest extent possible. Road accidents are considered one of the three main public health problems in every country of the world. This worrying global problem makes us aware that effective and sustainable prevention of injuries and deaths in road traffic can only be achieved through coordinated multisectoral cooperation. To prevent fatal road accidents in the country, healthcare professionals and citizens must know how to provide first aid and basic care and how to treat a road accident victim at the scene. [5, 6]

Knowing the basics of first aid and basic care will undoubtedly help buy time to save the lives of road traffic accident victims.

The mobilization of the Government of the Republic of Kosovo, together with all actors, and a firm long-term policy can affect the prevention and monitoring of road traffic accidents. However, there is still more to do in this direction; however, at least through nationwide policies and strategies, we can influence the reduction of road traffic deaths by 20%. [12, 14]

But one thing is now clear: the mentalities must be changed, and together, we will manage to win this collective and individual fight to save the lives of victims of road traffic accidents. To address this critical problem, the Government of the Republic of Kosovo should create a Road Safety Operations Center or advance or strengthen it, where different sectors of the country can be involved, such as government agencies, non-governmental associations, and society. Civil society manages and monitors road traffic accidents through policies and a nationwide strategy to reduce road traffic accidents. This center should have taken many initiatives to prevent injuries, disability, and mortality in road traffic through awareness campaigns for the country's general population. The motto for the prevention of injuries and deaths in road traffic is "Do not drink alcohol, do not take drugs while driving. It kills you," which should be considered as a campaign to encourage motorists as well as motorcyclists to wear safety helmets while driving.[12]

Conclusions.

Triage is essential in managing accidental situations and strengthening the primary, secondary, and tertiary health system. To design clinical guidelines, algorithms, and triage protocols at the three levels of health care, all healthcare professionals should be educated and trained with continuing courses in triage, communication, and Basic Life Support -AED, ACLS, PHTLS, BTLS, and ATLS.

Recommendations

Triage is an essential component in managing accidental situations, and it institutionally supports the advancement and strengthening of the health system at the primary, secondary, and tertiary levels.

To design clinical guidelines, algorithms, and triage protocols at the three levels of health care.

All healthcare professionals should be educated and trained through continuing courses in triage, communication, Basic Life Support (AED), ACLS, PHTLS, BTLS, and ATLS.

If the following recommendations are to be successful, they should be addressed across a wide range of sectors and disciplines. However, they should be treated as flexible guidelines for adapting to local conditions and capacities.

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