

Different Types of Deformities in Road Traffic Accidents Patients Presented to the Emergency Department in Rehman Medical Institute, Peshawar

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Abstract

BACKGROUND: Road traffic accidents (RTAs), often referred to as car accidents or traffic collisions, are events that occur when vehicles on the road collide or are involved in incidents resulting in damage, injury, or death. These accidents are a significant global public health concern and have far-reaching societal and economic implications. Road traffic accidents (RTAs) are a significant cause of death,

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disability, and economic loss in developing countries, yet they are preventable. Among working-age men, they drive cars. About 1.2 million people die each year from his RTA, and the number of RTA is projected to increase by 65% over the next 20 years.

METHADODOLOGY: A study was conducted at Rahman medical institute peshawar.by selecting cross sectional study there were 360 patients who were observed and investigated for different type of deformities in road traffic accidents patient presenting at Rahman medical institute Peshawar Pakistan. **RESULTS:** In our study we took 360 patient of road traffic accident Out of the 360 patients, majority 59.7% were male. The patients were divided into three age categories: 16-18 years (32.2%), 18-25 years (36.9%), and above 25 years (30.8%). 58.7% were from urban areas. 47.5% of patients were involved in motorcycle accidents, and 52.5% in car accidents. 61% of patients didn't wear a helmet during motorcycle accidents, and 39% did. 97.8% of patients didn't use seat belts properly, while 42.2% followed the rules and used them correctly. 57.9% of patients knew the traffic laws, while 42.1% were unaware of them. The majority of patients were students (39.17%). followed by graduates (16.39. According to patient responses, 28.6% of accidents were due to high speed, 20% to mechanical faults, 19.2% to opponent mistakes. use cell phones during accidents were 43.7%. 30.1% of motorcycle accident injuries were due to one-wheeling, while 69.9% were due to other reasons. 51.0% of patients involved in accidents had spinal injuries. 57.5% had neck injuries. 59.5% of patients received EMS or local service. 61.3% of patients received health services on time, while 38.7% experienced delays. 41.5% of patients reported that EMS did not have all necessary healthcare instruments, while 58.5% said they did. 60.7% of patients had collar injuries, while 39.3% were safe from collar injuries. 74.9% of patients reported being treated with good manners by healthcare workers, while 25.1% faced less attention. **CONCLUSION:** In conclusion, the study highlights important factors contributing to accidents and injuries, including non-compliance with safety measures, lack of awareness of traffic laws, and the role of high-speed and mechanical faults. It also emphasizes the need for improved emergency services and healthcare access. Efforts to raise awareness, enforce safety regulations, and enhance healthcare infrastructure are crucial to reduce the incidence of accidents and injuries in the studied population.

INTRODUCTION:

Road traffic accidents (RTAs) pose a substantial threat to life, well-being, and economic stability in developing nations, despite their preventable nature. Particularly among working-age men, who frequently operate motor vehicles, the impact of these accidents is pronounced.(1) Approximately 1.2 million individuals succumb to road traffic accidents annually, with a projected 65% increase in the number of such incidents expected over the next two decades.(2)

In developing nations such as Pakistan, falls represent a significant yet preventable contributor to mortality and disability. However, acquiring precise epidemiological data on injuries in these countries proves challenging. To address this, we employed the capture-recapture method to estimate mortality and injury rates resulting from road traffic accidents (RTA) in Karachi. (3). A retrospective examination of the patient's records and radiographs spanning a five-year period from January 2003 to December 2007 was conducted. Data were categorized and scrutinized according to age group, gender distribution, anatomical location, and injury causation. In total, 324 patients with 486 injuries were examined, comprising 80.9% males and 19.1% females. The highest frequency of incidents was observed in the 21–30 years' age group. The predominant site for fractures was the Para symphysis, accounting for 39.3% of cases.(4). In the majority of cases, injuries were recorded within a few hours after the accident. However, it was recognized that this approach could potentially underestimate the severity of the condition, as individuals with multiple injuries may not immediately report neck pain during their hospital stay, but could later encounter significant disability.(5). Saudi Arabia experiences a high frequency of traffic accidents, influenced by factors such as driver age, educational attainment, occupation, violation history, vehicle ownership, joyriding tendencies, impaired vision, sun glare, sandstorms, extended driving hours, disregard for speed limits, abrupt road entries and exits without signalling, the presence of stray animals, absence of road markings, unfamiliarity with routes, infrequent vehicle checks, irregular vehicle servicing, and driving while under the influence of medication. (6).

In most cases, injuries were recorded shortly after the accident occurred. However, it was acknowledged that this approach could potentially underestimate the severity of the

condition, as patients with multiple injuries might not report neck pain during their hospital stay but could later encounter significant disability. (5)

Traffic accidents are prevalent in Saudi Arabia, with various factors contributing to their high incidence. These factors encompass the driver's age, education level, profession, violation history, vehicle ownership, engagement in joy riding, impaired eyesight, challenges posed by sun haze and sand storms, extended periods of driving, disregard for speed limits, abrupt entry and exit from roads without signalling, the presence of stray animals, inadequately marked roads, unfamiliarity with roadways, infrequent vehicle checks and servicing, and driving while under the influence of medication.(6). In incidents involving road traffic accidents (RTAs), cyclists, motorbike riders, and scooter riders often find themselves in the role of victims, experiencing significant injuries and, tragically, fatalities. Motorbike riders face the challenge of making rapid decisions, needing to respond promptly to navigate obstacles on uneven roads, such as quickly stopping or changing direction.(7).

In many instances, road traffic accidents (RTAs) have disproportionately affected motorcyclists, senior-aged drivers, and truck drivers. Adverse weather conditions, including high temperatures, fog, limited sunlight, storms, ice formations, and rain, contribute to the occurrence of RTAs. Research, such as studies conducted by Agarwal and colleagues, reveals that motorists modify their on-road behaviour in response to various adverse weather conditions. This adaptation may involve actions such as reducing overtaking, increasing following distances, and adopting a slower driving pace. (8). The seating position of an individual within a motor vehicle and the specific side of impact play pivotal roles in lateral collisions, significantly influencing the likelihood of sustaining severe thoracoabdominal injuries when these factors are considered together. (10)

evaluate when determining the likelihood of significant thoracic and abdominal injuries in drivers and front seat passengers. The extent of steering wheel deformity serves as an indicator of the force and impact endured in a collision, making it a standalone predictor for assessing the severity of injuries sustained in these incidents. (11) In cases of facial injuries, ocular injuries frequently coincide owing to the close proximity of the eyes to the middle and upper thirds of the face. A retrospective

examination focused on individuals with severe ocular injuries in conjunction with middle and upper third facial injuries. From a total cohort of 1,608 patients experiencing a range of craniomaxillofacial injuries between 1984 and 1990, 367 patients were specifically chosen for this study.¹²⁾

Road accidents are indeed a significant public health concern globally. ⁽¹³⁾ 70% of accidents in Iran country have occurred on roads and suburban roads. Road accidents can have serious consequences, and the fact that many of the victims are healthy young people is particularly tragic. Additionally, the 10% fatality rate is also quite high, indicating the severity of these accidents. ⁽¹⁴⁾

The occurrence of accidents surged by 1,882 cases, reflecting a 58% increase, while the number of injury cases rose by 2,829, and fatalities saw a spike of 120 between 2001 and 2007 in Kinshasa. This notable upswing in motor vehicle accidents and their ensuing repercussions underscores the critical need for implementing road safety measures and conducting awareness campaigns to alleviate the risks associated with accidents and their aftermath. ⁽¹⁵⁾

Epidemiological studies on road traffic accidents provide valuable insights into the patterns and vulnerabilities associated with such incidents. Several key factors influence these patterns, including gender, age, social group, and risk area. Here's a breakdown of how each of these factors can affect the incidence and outcomes of road traffic accidents. ⁽¹⁶⁾ The issue of growing motor vehicle traffic in developing countries, often coupled with inadequate roadway infrastructure and lax enforcement of traffic regulations, has indeed led to a surge in road traffic accidents and the emergence of what can be described as "urban chaos." This is a multifaceted problem that requires a combination of strategies and interventions to establish a safer traffic environment. ⁽¹⁷⁾ The initiative in Brazil, coordinated by the Ministry of Health, aims to strengthen road safety policies by improving information, planning, monitoring, and evaluation of interventions. By addressing these five pillars, Brazil and other participating countries work to reduce the impact of road traffic injuries and deaths, ultimately making their road networks safer for all. ⁽¹⁸⁾ Road traffic accidents (RTAs) have indeed been a significant concern in Sub-Saharan Africa. The statistic you provided, an increase from

41 to 93 RTAs per 100,000 populations over a fifteen-year period up to 2015, indicates a substantial rise in road traffic accidents in the region during that time frame. (19)

Low and middle-income countries (LMICs), often with less developed infrastructure and road safety measures, tend to experience a disproportionately high burden of RTA-related deaths and morbidities compared to high-income countries. (20) Injury severity assessment typically relies on various methods and criteria, including clinical signs, symptoms, and the extent of organ and system damage. (21) Minor injuries like small cuts, bruises, soft tissue injuries, and burns are common occurrences in daily life. These injuries often result from accidents or mishaps, but they typically heal on their own or with minimal intervention. attention and resources should be focused on reducing serious injuries and their sequelae. (22)

MATERIALS AND METHODS

The study was based on Factors associate frequency of deformities in road traffic accident presented to emergency department in RMI. In this study we were looking for the knowledge in patient and factors associate frequency of deformities in road traffic accident at Rahman medical institute, Peshawar.

Study Area

The research study was conducted at Rahman medical institute.

Study Duration

The research study was conducted from June to august 2023 (3 months).

Study Population

Study participants Rahman medical institute, Peshawar. Data were collected by face to face communication and through filling questionnaire.

Study Design

The current descriptive cross sectional study was conducted through a modified questionnaire in Rahman medical institute, Peshawar.

Study Setting

The study was conducted in emergency department of Rahman medical institute, Peshawar. The interviewed base questionnaire was filled in emergency department.

Sample Size

The sample size for the study was 360 patients visited to Rahman medical institute Peshawar.

Sample size was calculated by using formula:

$$N = Z^2 p (1-p) / E^2$$

Z= desired level of confidence (95%) E=standard sampling error (5%)

P=estimate prevalence was 42%

Sampling Technique

Non probability sampling (convenience sampling technique) was applied for the study.

Sample Selection

Inclusion Criteria: Patients presented to emergency department with RTA.

Exclusion Criteria: Patients presented to emergency department who is not willing.

Data Collection Procedure

Approval was granted by the internal graduate study committee after thorough evaluation. Subsequently, a formal application, detailing the study's purpose and accompanied by a questionnaire, was submitted to the head of the Emergency Department in Peshawar. Written permission was obtained from the department. The ethical aspects of the research study were extensively discussed with the department head responsible for patients unable or unwilling to provide informed consent. Every facet of the study was carefully examined to ensure the confidentiality and privacy of the participants. In addition, written consent was secured from the study participants, and those who agreed to participate were queried about their knowledge and factors associated with the frequency of deformities in road traffic accidents.

Questionnaire

A descriptive cross-sectional study was conducted in RMI Peshawar among patients who were either unable or unwilling to provide informed consent for study participation. Data were gathered using a pre-designed structured questionnaire administered through interviews with the patients. The questionnaire was formulated in the English language, and responses were recorded without any researcher influence. The statistical analysis was subsequently performed based on the respondents' provided information.

- Percentages and frequencies have been used to determined different relationships.
- Data were presented in the form of graphs charts and in tables.

Excel and SPSS was used for the analysis of data

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RESULTS

In our cross sectional study conducted at Rahman medical institute, Peshawar we took 368 patients of RTA patients from ICU department. Designed questionnaire distributed in them for the assessment of knowledge and evaluation of risk factors associated with RTA. For the analysis of obtained data and to find out the result we arranged our participants in different ages.

GENDER OF PATIENTS

Results showed that out of 360 patients from whom we collected data there were 40.3% female and 59.7% male.

Count of gender of patient

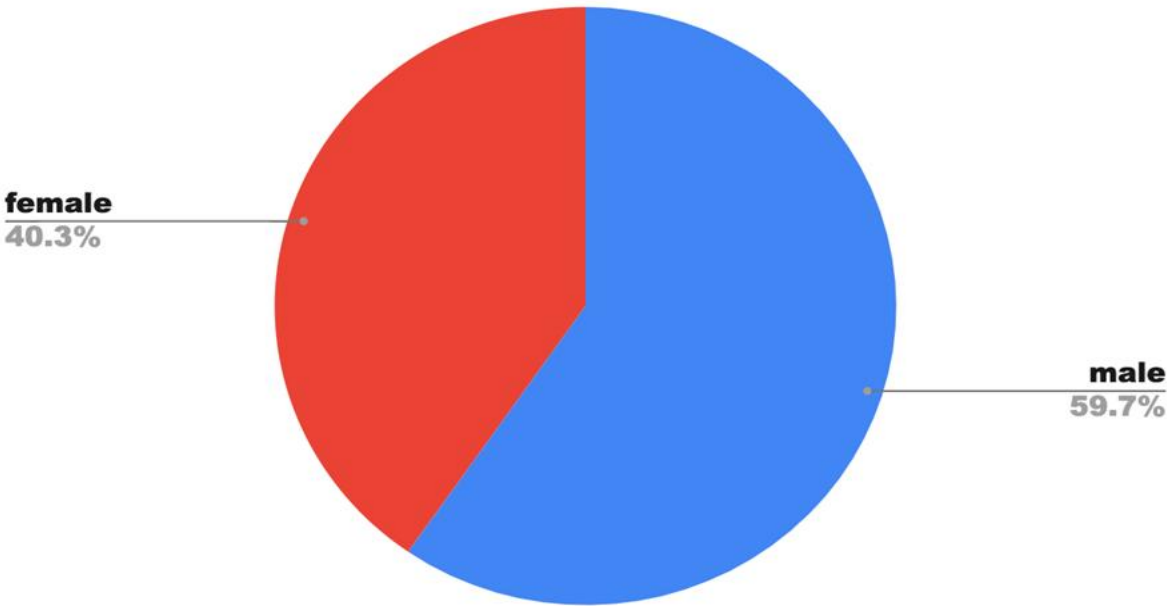


FIGURE: GENDER OF PATIENTS

AGE OF PATIENTS

The obtained data of 360 patients from Emergency department of RMI we divide age in three categories. In that three categories we founded that 16-18y patients are 32.2%, 18-25 were 36.9% and above 25 were 30.8%.

Table 1: Age of Patient

Age Of Patient		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	16-18y	116	32.2	32.2	32.2
	18-25y	133	36.9	36.9	69.2
	above 25	111	30.8	30.8	100.0
Total		360	100.0	100.0	

CAUSE OF ACCIDENT

In the given pie chart the accident which is occurred according to patient response 28.6% were due to high speed, 20% were mechanical fault, 19.2% were opponent mistake 15.8% were due to wet road, and 16.4 were due to error of ridder.

Table 2: *Cause of Accident*

Cause of Accident		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	high speed	103	28.6	28.6	28.6
	mechanic	72	20.0	20.0	48.6
	opponent	69	19.2	19.2	67.8
	ride err	57	15.8	15.8	83.6
	wet road	59	16.4	16.4	100.0
Total		360	100.0	100.0	

Table 3: *Distribution of Injury Characteristics and Pre-Hospital Emergency Medical Services Among Study Participants*

Variable					Category	Frequency (n = 360)	Percentage (%)
Spinal Injury					Yes	184	51.0
					No	176	49.0
Neck Injury					Yes	207	57.5
					No	153	42.5
Received EMS/Local Service					Yes	214	59.5
					No	146	40.5
Health Service on Time					Yes	221	61.3
					No	139	38.7
EMS Had Required Instruments	Healthcare	Yes		Yes	211	58.5	
				No	149	41.5	
Collar Injury					Yes	219	60.7
					No	141	39.3
Treated with Good Manners by		Yes		Yes	270	74.9	

Healthcare Workers

No 90 25.1

Table 3 is a summary of the distribution of the characteristics of the injury and of the pre-hospital emergency medical service (EMS) variables among 360 study participants. Overall, 51.0% of the patients had a spinal injury, and 49.0% did not have a spinal injury. The prevalence of neck injuries was higher (57.5%) than prevalence of no neck injury (42.5%).

As for pre-hospital emergency health care, 59.5% of the patients said they received EMS or local emergency health care services while 40.5% said they did not receive such services. In addition, 61.3% reported timely access to healthcare services while 38.7% reported delayed access to healthcare.

An evaluation of the preparedness of EMS revealed that 58.5% of respondents felt their EMS had all of the healthcare instruments necessary to be prepared for emergencies, and 41.5% felt that they lacked the required instruments. With regard to cervical trauma, 60.7% of patients suffered from injuries to their cervical collar, while 39.3% did not have any injuries to their cervical collar. As far as the quality of patient care is concerned, most (74.9%) said that healthcare workers were good mannered and treated them professionally while one in four (25.1%) said that healthcare workers were not good mannered and did not treat them professionally.

DISSCUSION

Road traffic accidents (RTAs) are a significant cause of death, disability, and economic loss in developing countries, yet they are preventable. Among working-age men, they drive cars. About 1.2 million people die each year from his RTA, and the number of RTA is projected to increase by 65% over the next 20 years. For the RTA serious admission distribution by age, and sex. In our data there were high count of male were included in RTA cases. Results showed that out of 360 patients from whom we collected data there were 40.3% female and 59.7% male. For further more knowledge we divide age in three categories data of 360 patients from Emergency department of RMI. In that three categories we founded that 16-18y patients are 32.3%, 18-25 were 39.9% and above 25 were 30.8%. Since the prevalence of RTAs differs between urban and rural areas, tailored approaches may be necessary. In urban areas, the focus could be on traffic management,

while in rural areas, initiatives might include improving road infrastructure and access to emergency medical services. In the collection of our data, we divided region in to two rural and urban according to data there were 44.3% patients related to rural and 58.7% related to urban in our total data collection of 360.

Natthika Sae-Tae It was found that severe injury and mortality contributed to road traffic accidents (RTAs) among motorcycle users and car users. Specifically, 11.6% of RTAs among motorcycle users were attributed to severe injury, and 5% were attributed to mortality. Among car users, 14.3% of RTAs were due to severe injury, and 7.5% were due to mortality. Natthika Sae-Tae in our data of 360 patients underlying medical conditions, 47.5% patient cause of motorcycle accident and 52.5% were car accident.

Helmets are the most effective safety gear to prevent head injuries in motorcycle accidents. Increasing helmet use can significantly reduce the severity of head injuries in the event of a crash, which is a leading cause of mortality and long-term disabilities in motorcycle accidents. In our data Its showed that 61% patient don't wear helmet during driving motorcycle and 39% did.

Nichlas Udholm It's essential to address the issue of road traffic accidents in patients with Obstructive Sleep Apnea (OSA) as it can have serious consequences for both the affected individuals and other road users. The findings you mentioned from the nationwide study indicate that OSA is associated with an increased risk of motor vehicle accidents, and the accidents tend to be more severe when compared to a reference cohort. Nichlas Udholm from out data In accidented patient 30.7% have sleep apnea and remains 69.3% don't have such type of disease. from 360 patients 57.9% patient knows the traffic law and 42.1% didn't aware of traffic law. Due to careless and unfocused on the way during driving or crossing road anyone can involve in the RTA The obtained data from 360 patients there were majority of students which accounts 39.2%, 16.4% graduate, 13.3% undergraduate, 10.3% Illiterate, 9.4% teachers, 6.7% doctors, 3.9% lawyer, and 0.8% shopkeeper.

Speed control is indeed a crucial element in promoting road safety worldwide. Excessive speed is a significant factor in road accidents and their severity. in our data the accident which is occurred according to patient response 26.6% were due to high speed

20.0% were mechanical fault, 19.2% were opponent mistake 16.4% were due to wet road, and 15.8 were due to error of rider. 28.1% patient collisions were due to slipping, 24.9% car, 13.1% bus, 12.5% bike, 11.9% rickshaw, 10.0% coach.

Oscar Oviedo-Trespalacios Distracted driving, including activities like texting or talking on a phone, can significantly impact a driver's ability to maintain a safe speed and react to changing road conditions, which, in turn, increases the risk of accidents. Oscar Oviedo-Trespalacios. On our data the patient was asked if they use cell phone or not when the accident occurred in which 56.3% don't use cell phone while 43.7% did.

Amjad Pervez Motorcycle safety is a significant concern in many countries, especially in developing ones like Pakistan. Single-vehicle motorcycle crashes (SVMC) indeed contribute significantly to motorcycle-related fatalities, and several factors contribute to this issue: Lack of infrastructure, Inadequate rider training and licensing, Limited enforcement of safety regulations, Overcrowding and road conditions, Vehicle quality and maintenance Amjad Pervez.

Single centre retrospective study Conducted in the largest tertiary hospital in Southern Saudi Arabia. Spanning over ten years. The study involved 810 patients with traumatic spinal injuries (TSI) that were associated with orthopaedic fractures. Out of these, 184 patients (22.71%) were recruited for the study. The majority of the recruited patients were male (86%). The age distribution of the cohort showed that 55% of the patients were between the ages of 21 and 40 years. M A Algahtany .In our data we also found 30.1% includes in one wheeling while the remains 69.9% were injured due to other reason. We also found patients of spinal injury where they effected from RTA in the result 51.0% have spinal injury while remains 49% were safe from spinal injury. 42.5% were safe from neck injury while 57.5% have neck injury.

Effective Emergency Medical Systems (EMS), which include ambulances, trained personnel, and well-organized response protocols, are often limited or absent in many low- and middle-income countries (LMICs). This lack of infrastructure contributes to higher mortality rates after accidents. Sierra Debenham. In our total 360 patients 59.5% get EMS/local service and 40.5% didn't get EMS/local service. regarding health service 61.3% get health service on time while 38.7% get health service late. 41.5% answered

that the EMS don't have all instrument of health care while 58.5% answered yes of our question.

Injury during RTA can occur anywhere from the collected data of 360 patients 60.7% patient were collar injury and 39.3 were safe from collar injury. And we asked from patient that how u treated from health care worker from the obtained data 74.9% patient answered that the care worker treat with good manner while the 25.1% faced less attention from health care worker.

CONCLUSION

After the study conducted at emergency department of Rahman medical institute Peshawar Pakistan. We conclude that road traffic accident is an emerging problem in our society. Lack of knowledge about rule and traffic law which highly contribute in road traffic accident cases. A significant portion of road accidents can be attributed to human factors, such as distracted driving, impaired driving, and speeding. Education, awareness campaigns, and stricter enforcement of traffic laws are essential to address these issues. in addressing the issue of road traffic accidents, it is clear that a multi-faceted approach is required, involving government policies, law enforcement, education, and technological innovation. We must continue to work together to reduce the number of accidents, improve road safety, and ultimately save lives. The prevention of road traffic accidents should remain a top priority for society as a whole.

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