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Research Article

FACTORS LEADING TO THE HIGH PREVALENCE OF ROAD-TRAFFIC ACCIDENTS (RTAs) IN DIFFERENT AREAS OF PAKISTAN

¹Ateeq ur Rehman, ²Dr Maria Arshad, ³Muhammad Waryam Jakher

¹Foundation University Medical College, Islamabad, ²DHQ Kasur, ³Punjab Medical College Faisalabad.

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Abstract:

Road traffic accidents are one of the biggest avoidable causes of morbidity and mortality among both developing and developed countries. The lists made in the attempts of explaining the factors behind road-traffic accidents is by no means exhaustive; researches of different regions point to almost similar causes that hold responsibility for RTAs. The study aims towards finding factors that interact with one another to cause road traffic accidents, in an attempt to understand them better and develop better solutions for reducing RTA-related morbidity.

Methods: The study was conducted in Bahawalpur, Pakistan. The duration of our study was from February 2020 to March 2020. 100 Victims of RTA presenting in BVH. Ages 10-60 year. After taking informed consent from the respondents, data was collected through a performed questionnaire having two separate sections. Section 1 included the demographic details of the victims whilst section 2 was based on close-ended questions regarding nature of accident, nature of injuries inflicted, conditions of the accident, and the factors that precipitated the accident.

Results: The data was summarized into tables, graphs and pie charts. The data was analyzed by descriptive analysis by frequency distribution of variables with RTAs. Multiple factors were found to play their part in occurrence of an RTA. This included personal, biological, vehicular and environmental factors.

Conclusions:

Road-safety laws and mode of vehicular transport are major factors that are involved in RTAs. In addition, individual safety measures such as helmets and seat-belts can help avoid a great amount of RTA-related injuries.

Keywords: Road Traffic Accidents, Vehicles, Road-safety.

Corresponding author:

Ateeq ur Rehman,

Foundation University Medical College, Islamabad.

QR code



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INTRODUCTION:

Road traffic accidents are one of the biggest avoidable causes of morbidity and mortality among both developing and developed countries. The WHO estimates in 2013 point out that about 1.2 million people lose their lives annually in RTAs worldwide, while an almost tenfold number suffers from injuries and disabilities¹. Apart from the significant financial and infrastructural damage they cause, road traffic accidents impart a heavy toll in terms of causing loss of life, disabilities and mental trauma.

The vast array of the impacts of RTAs merit the attention of high standards of research work to understand the interplay of factors that are important for an accident to occur and resultantly help researchers, policy-makers and healthcare professionals design interventions that must be made to reduce the morbidity and mortality caused by these unfortunate events.

Despite the recent advances in technology and road-safety mechanisms, the past few years have shown an overall persistence or increase in the rates of road-traffic accidents worldwide. This can be somewhat attributed to the availability of motor vehicles to a higher population of people that have not been adequately trained, equipped and educated about road-safety guidelines. This factor, in addition to the generally low-cadre road infrastructure in developing countries, further compounds the role of road-traffic accidents as a public health menace. A longitudinal study in Nigeria studied accidents for 8 years and consistently found a high number of young people among drivers and victims of the accidents.³

The lists made in the attempts of explaining the factors behind road-traffic accidents is by no means exhaustive; researches of different regions point to almost similar causes, but with high degrees of variations in what causes hold the highest responsibility of causing RTAs. They point out that RTAs might be the result of weak road infrastructure and improper imposition of statutory road-safety laws, poor conditions of motor vehicles, human negligence, factors affecting the health and attention of the driver, weather conditions and intoxication.

A researcher cited a 2013 World Bank report that predicted an increase in RTAs in developing countries by a shocking estimate of 80 percent.⁴ This situation requires utmost attention to the study of RTAs, in search of the causes and the efforts that can be made for their curtailment.

This research is a contribution to the attempts of dissecting the epidemic of road-traffic accidents in Pakistan, specifically the region of South Punjab, where every little work has been done previously in the aforementioned aspect of public health.

LITERATURE REVIEW:

Road Traffic Accidents form a large number of the avoidable human morbidity events that result in injuries, debilitations and in some cases, loss of life. In addition to the physical and financial damages, the psychological trauma is a big component of the aftermath of RTAs.⁵ Although road-user behaviors and disparities in drivers' judgement have been linked prominently with RTAs in various studies⁶, a number of other factors are also at play; these will be explored in this literature review, the goal of which is to aid the research of the causes that are prominent in contributing to the load of Emergency patients in BVH, Bahawalpur.

A 2017 research suggested that administrative authorities tend to single out a cause of RTA where there is more than one responsible for the event. It has been argued that the human factor contributes on early 70%-80% of the major accidents. Similar findings have also been reported by researchers after studying RTAs in Pakistan. It has been argued that the human factors of negligence included vehicular overloading, over-speeding and driving at night, impairing driving ability due to headlight glare and lower levels of alertness. In 2017, researchers conducted a study on road-traffic accidents in Gambia and found that the majority of accidents are more likely to injure and inflict concussions to pedestrians, bicyclists and motorcyclists as compared to vehicle occupants, the risk factors of which were poor driver visibility, comparatively less rich implementation of road-safety standards, poor road design and vehicular impairment.

In 2018, it was found that intoxication is another leading cause of road-traffic accidents leading to serious injuries. In this study conducted in Poland from 2004 to 2017, they found that every 20% of the total serious road-traffic accidents are caused by alcohol consumption of drivers. This factor, supplemented by a shortage of proper road infrastructure and delays in rescue services in non-urban areas increases the probability and subsequently, lethality of accidents. In a 2016 study in Pakistan, it was concluded that weather conditions were very important for consideration of the frequency of road-traffic accidents. The researchers further found that most accidents involved a male population, pointing towards a statistical gender

disparity in the number of male and female drivers and passengers.

In 2006, a researcher presented an interesting facet to this discussion: road-traffic accident injuries were multiplied in cases where seat-belt was not used, thus suggesting that most accidents involved male drivers exceeding the speed limit in urban centers at night time with a high frequency of disuse of seatbelts. Another researcher considered injuries in road-traffic accidents to a legitimate public health issue in developing countries and pointed out that drunk end riving and driver fatigue were huge factors at play that contributed to the human component of accidents.¹⁴ Researchers, in 2019, have reported that pedestrian children were frequently those who received injuries in road-traffic accidents due to numerous factors such as low guardian attention on the road or divided attention while tending to another child. In absence of strict road-safety implementation, this factor raises accident injuries greatly.¹⁵

In 2016, it was found that road traffic accidents in KPK region of Pakistan were highly linked to various factors such as specific timings i.e. morning period of a weekday. In addition, it was found that 23.5% of all accidents involved underage driving and that concurrent cell phone usage also hampered the driver attention, exposing them to a greater risk of road-traffic accidents.¹⁶ Another Pakistani researcher has accounted that Pakistan has various limitations in studying the factors and the subsequent effects of road-traffic accidents which must be adequately catered to, such as absence of reliable estimates, low reporting to authorities and outdated Views of healthcare. A research conducted during the two years showed 145 accidents occurred on Karachi-Hyderabad Motorway largely were a consequence of human error, be it of driver or pedestrians.

METHODOLOGY:

It was a descriptive cross-sectional epidemiological study. The study was conducted in Bahawalpur, Pakistan. The duration of our study was from February 2020 to March 2020. The data was collected from 100 RTA victims. Victims of RTA presenting in BVH ages 10-60 year.

Informed consent was taken from the respondents and the data collected through a questionnaire which contained demo graphic details of respondents first, followed by close ended question detailing injury description and factors involved in culmination of the accident. The data was summarized into tables, graphs and pie charts. The data was analyzed by

descriptive analysis by frequency distribution of variables with RTAs.

RESULTS:

Out of the total respondents (n=100), people from age group 31-35 years were maximum in number (32%). The rest of respondents fell in age groups 16-20 years (8%), 21-25 years (25%), and 36-40 years (18%). (table 1). Majority of respondents were laborers by occupation (40%), while others were employees (26%), students (2%), housewives (9%) and farmers (3%). A sizeable number of respondents were illiterate (49%). From the total (n=100) 42% were literate and only 9% were graduates in their educational level. The marital status of respondents was married (66%) and unmarried (34%) each. The results showed that the victims were residents of urban and rural background in equal numbers (50%) each. The most suffered victims were drivers (68%), followed by occupants (25%) and pedestrians (7%). A size able number of respondents were from lower socioeconomic background (62%). The respondents belonging to middle and upper class were 37% and 1% respectively. (Table-1)

The most common injury sustained by victims were fractures seen in 41-60% of the cases. 21-40% of victims had soft tissue injuries and 1-20% sustained head injuries. The injury appeared immediately (96%) in almost all the victims from the time of impact. Victims were ambulated through private transport (41-60%), rescue (21- 40%) and ambulances (1-20%). The impact collisions of accidents were all of collision of two wheeled vehicles (bike) with another bike, rickshaw or car; the incident being 21-40% for each. (Table-2)

The main external factor contributing to RTA's was condition of environment (50%), while weather(39%), condition of roads(8%), traffic signals(2%), and stray animals on road (1%) were also seen. (PieDiagram-1)

The incidence of the accidents was seen to be highest on Mondays (21%) and Sundays (18%). The rest of the days of weeks the incidence was Friday (15%), Thursday (14%), Saturday (13%), Tuesday (11%) and Wednesday (9%). (Pie Diagram-2)

The peak time of the day for accidents was at noon and early evening between 12:00- 18:00 (56%). Between the hours of morning 06:00-12:00 (34%), night 18:00-24:00 (9%) and late night (1%) accidents took place. (PieDiagram-3)

It was seen that the highways (36%) were the most

encountered site of accidents followed by chowks (22%), streets (21%) and U-turns (21%). (Pie Diagram-4)

The victims of RTA's showed no intake of alcohol, drowsiness while driving or medical illness, whereas some respondents had vision disorders (21%) and mental illness (10%). The victims were not using protective seatbelts (100%), helmets (90%) and did

not hold a driver license (58%). The factors contributing to RTA's showed that at time of impact talking to passengers (25%), and overloading (25%) are important. (Bar Chart-1)

The vehicular status was not a main contributor to the accidents as 93% accidents were in default free vehicles while only 7% had faulty vehicles. (Bar Chart-2).

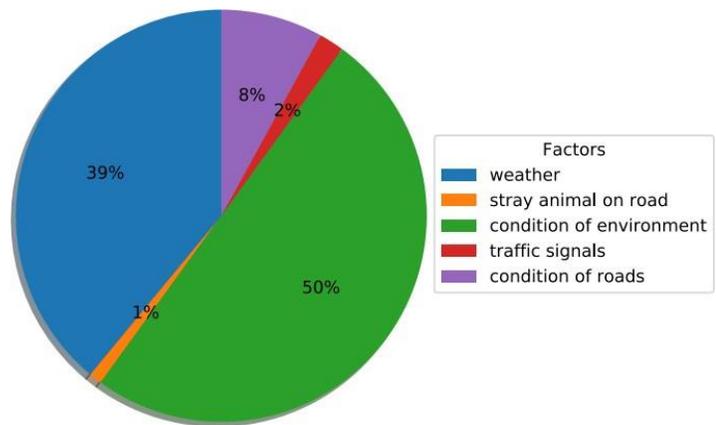
Table # 1: Demographic Data

Measure	Item	Count	Percentage
Age	16-20	08	8%
	21-25	25	25%
	26-30	17	17%
	31-35	32	32%
	36-40	18	18%
Occupation	Laborer	40	40%
	Student	22	22%
	Employee	26	26%
	Farmer	03	3%
	Housewife	09	9%
Education Level	Illiterate	49	49%
	Literate	42	42%
	Graduated	9	9%
Marital Status	Married	66	66%
	Unmarried	34	34%
Resident	Urban	50	50%
	Rural	50	50%
Status of Victim	Driver	68	68%
	Occupant	25	25%
	Pedestrian	07	7%
Socioeconomic Status	Upper Class	01	1%
	Middle Class	37	37%
	Lower Class	62	62%

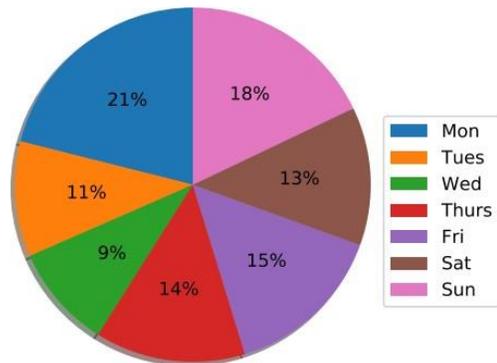
Table # 2: Description of Accidents in Percentages

Types of Injury			Appearance of Injury		Mode of Transport			Accident Collision			
Fracture	Head Injury	Soft Tissue Injury	Immediate	Delayed	Ambulance	Rescue Service	Private	Bike to Bike	Bike to Rickshaw	Bike to Car	Bike to Other
55%	18%	27%	96%	04%	18%	37%	45%	37%	24%	25%	14%

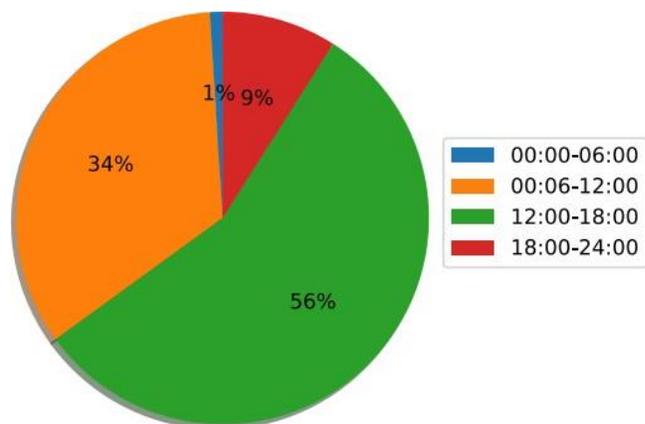
Pie Chart # 1: Effects of Environmental Factors on RTAs



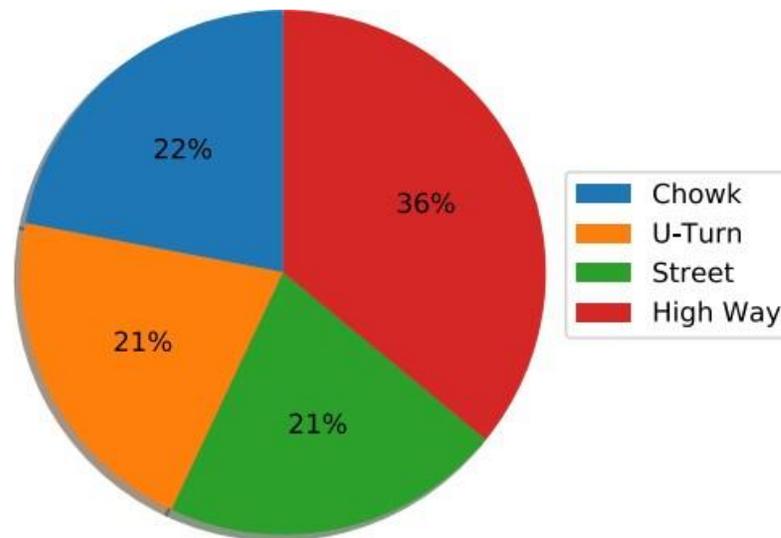
Pie Chart # 2 Day of Accident



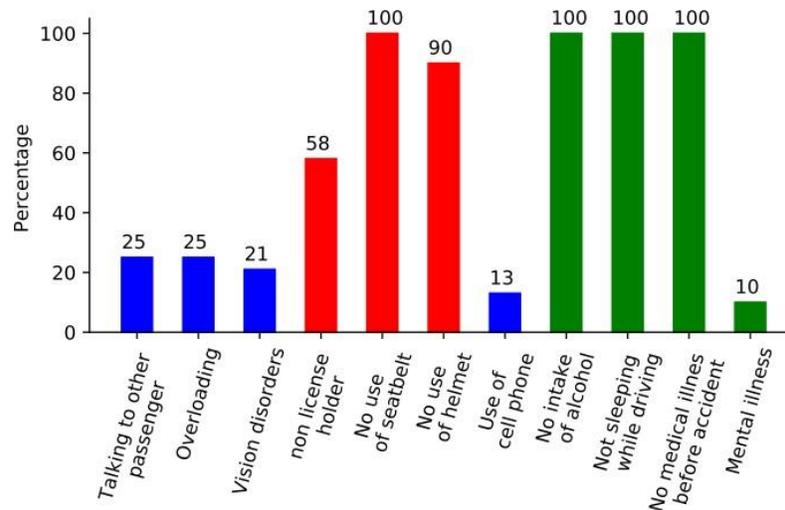
Pie Chart # 3 Time of the Accident



Pie Chart # 4 Site of the Accident



Bar Diagram # 1 Personal Factors of Victims



DISCUSSION:

This study shows that drivers make the most common group involved in RTAs (68%), predominantly married (66%), 31-35 years age group (32%), illiterate (49%) followed by literates (42%) and mostly belong to low socioeconomic class. While it shows that laborers make the most affected victims, RTAs are common in urban and rural areas equally. Our study shows the maximum number of accidents were involving two-wheeler vehicles as bikes (100%), conforming to studies in Karachi 12 and Turkey 19 and Tanzania 60

Accidents were found most likely to happen on highways (36%) and comparable on round about

(21%) and chowks (22%). This is consistent with a study in Peshawar 16 according to which the highest number of accidents were on highways (46%), followed by junctions (25%) and U-turns (24%). The victim most suffered in RTAs according to our study was the driver (68%), passengers (25%) and pedestrians (7%). The injury pattern most common is fractures (41-60% cases). These findings conform to an earlier mentioned study.

Many accidents took place in poor environmental conditions (50%), bad weather conditions (39%), careless driving (25%), overloading (25%) and talking on the phone (25%). These are the primary causes of RTAs as found by a 2-year study on

accidents in Hyderabad 8 and Uttar Pradesh 21 in 2020. Our study showed no significant difference in RTAs on week days and weekends, and the peak timing was found to be 12:00-08:00 which is contrary to study done by Erenler *Et.al.*. This can be accounted for the difference in peak rush hours, as our study is limited to a fixed locality of the country.

CONCLUSIONS:

Lack of use of helmets and seatbelts was found in all the victims of RTAs which is consistent with national and international studies done previously. This highlights the utmost significance of use of protective belts and helmets to reduce the risk and mortality caused by RTAs.

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