THE PREVALENCE OF ROAD TRAFFIC ACCIDENTS (RTAS) AND FACTORS CONTRIBUTES TO FRACTURE AMONG ADOLESCENTS IN PESHAWAR, PAKISTAN. A MULTICENTRIC STUDY APPROACH

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ABSTRACT

BACKGROUND: Injuries are taking alarming but insidious shape in the current century, among these injuries Road Traffic Accidents (RTAs) are a leading contributor. Low and middle-income countries such as Pakistan have a high prevalence of it.

OBJECTIVES: This study was intended to investigate the prevalence of RTAs among the most prone population of the area which is adolescents.

METHODOLOGY: A cross-sectional descriptive study was done to investigate the prevalence. Data was collected from the emergency departments of four hospitals (MTI-KTH, LRH, HMC & Kuwait Teaching Hospital) in Peshawar, Pakistan. Data was collected through a questionnaire, while analysis was performed as descriptive through tables and charts through SPSS 22. Informed consent was taken from participants while data was accepted by the ethical review committee.

RESULTS: The total number of respondents was 258 where the male were a dominant variable that is 79.5% of victims were males and 20.5% were females, and the most common age of victims in adolescents was the age of 16 years (17.2%). it was revealed that 24.41% of the total victims were adolescents, in which the gender of adolescent injury victims were comprised of 81% males and 19% females. where in total victims' ages were between 5-40 years as projected. History of falls (HoF) which is 38.1%, followed by Others which is 30.2%, Road Traffic Accidents (RTAs) which is 23.8%, and Physical assault which is 7.9% is the main reasons for fractures among the participants.

CONCLUSION: The prevalence of RTAs in the overall age line and adolescents is found to be quite higher, which may be differences in the infrastructure of highways and roads and different literacy rates and awareness, which required an awareness and sensitization campaign and courses among parents and adolescents.

KEYWORDS: Road Traffic Accidents, Injuries, Global burden of disease, adolescents.

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INTRODUCTION:

An accident is defined as "an occurrence in a sequence of events that usually produces unintentional injury, death, or property damage."[1] Two-thirds of those who pass away on the roads are "vulnerable road users," such as cyclists, motorcyclists, and pedestrians.[2] RTA is a very important global issue. In the world, RTA ranks as the seventh leading cause of death. By 2030, RTAs are predicted by the World Health Organization (WHO) to grow to the fifth-highest cause of death. These mishaps rank among the top three causes of death for individuals between the ages of 5 and 44 and are the main cause of death for children between the ages of 5 and 29.[3] The recently enacted Sustainable Development Goal 11.2 aims to give everyone by 2030 access to secure, cheap, accessible, and sustainable transport services.[4]

Road traffic accidents (RTAs) are a leading cause and a major contributor in terms of overall injuries.[5] The World Health Organization (WHO) estimates that road traffic accidents claim the lives of 1.35 million people annually and that 93% of RTA fatalities worldwide occur in lower-middle-income nations, despite accounting for only 60% of all vehicles on the road.[2] According to WHO 2021, children, adolescents and young adults are more commonly affected; road traffic injuries are the leading cause of death for children and young adults aged 5–29 years, and accidents involving men (about 73% of them) are more common than those involving women. With 20 to 50 million injuries that do not result in death but instead cause disability and a significant economic burden to individuals, families, and nations, traffic accidents are the leading cause of death for children and youth aged 5 to 29. The loss is attributed to the expense of medical care

and the lost wages of the injured or deceased person.[6]

The reasons behind this high incidence of RTA in poor economic countries are that they do not have proper road infrastructure, they do not have enough money and workforce to provide awareness to the public about RTAs and they do not have quality vehicles that can prevent crashes from brake failure, etc.[7]

In Pakistan, there is also a trend of one-wheeling and risky behaviors among young people and the resulting incidences of RTAs have been frequently reported across the country. For instance, according to Shamim et al. of the total prevalence of injuries resulting from RTAs in Karachi, Pakistan, 50% of victims were between the ages of 15 and 29 years.[8] Another study conducted in Karachi to explore the prevalence of RTA reported that the age range of 18 to 29 accounted for 43.1% of RTA victims. Males made up the majority of the victims (86.6%). Motorcycles (87.50%) were the most frequently used vehicles, followed by rickshaws (6.8%) and cars (2.4%). 75.30% of RTA happened on major roads. The head (32.2%), upper limb (37.60%), and lower limb (64%), were the most frequently injured areas. Events involving direct contact with another vehicle or object, wet road conditions, and pedestrians crossing the street were substantially more likely to result. The study was conducted to reveal the factors that contribute to fractures and the number of cases of RTA among adolescents in Peshawar, Pakistan.[9] The objectives of the study were to assess the number of cases of road traffic accidents (RTA) among adolescents and to evaluate factors that contribute to fracture among adolescents in Peshawar.

METHODOLOGY

This study as clearly understood from the topic, is a Prevalence study so a Cross-sectional descriptive survey was conducted in this research project. The four largest hospitals of Peshawar were targeted for the data collection process, these were Khyber Teaching Hospital (MTI-KTH), Lady Reading Hospital (LRH), Hayatabad Medical Complex (HMC), and Kuwait Teaching Hospital. Three of them are public sector while one is a private sector hospital. The research project took 6 months in its complete after the approval of the synopsis. The sample size was calculated by using the following formula developed by Daniel WW, Cross CL.[10]

$$n = N*X/(X+N-1),$$

where,

$$X = Z\alpha/2^2 * p*(1-p)/MOE^2$$

With a 95% confidence level, 5% margin of error (MOE), sample proportion of 0.5(value of 0.5 is recommended for unknown proportion), and total population of adolescents (270,029) in Peshawar, Pakistan (Peshawar, Pakistan - statistics 2022), the calculated sample size was 195, but looking into the response rate and access to data in the hospitals, the adjudged sample size was taken 258. The sample was selected through the quota (Non-probability) sampling method. The inclusion criteria for the study were in online and concrete databases of patients from Emergency Departments of the hospitals, only those injuries were considered and included, which were associated with Road Traffic Accidents (RTAs). Also, those victims were considered whose ages ranged from 10-19 years. The exclusion criteria for the study were all patients coming to the ER Department besides RTA victims were excluded from the study. Also, children under the age of 10 years and adults aged 20 years and onwards were excluded from the data collection process.

Data were collected from Emergency departments of the aforementioned four largest hospitals of Peshawar KPK. Data were collected from the authorized health directory of victims coming into the ER department with injuries. The data collection process was initiated after taking informed consent from the health care staff on duty, data were collected according to the preset inclusive and exclusive criteria. Through the keen search of online and concrete databases of Emergency Departments (EDs) of these hospitals, the data were collected. Only the Emergency Department of these hospitals will be considered because of the direct flow and easiness in data collection. It took 6 hours to collect data from each of ER departments of these hospitals.

The data were collected based on four variables that is; Medical Record number (MR No. taken in nominal scale), Gender (taken in nominal scale, 1= Male & 2=Female), Age (taken as a continuous quantitative variable), and finally type of injury [type of injury was also taken in nominal scale during data entry in Microsoft Excel V2014 that is, 1=Road Traffic Accidents (RTAs), 2= History of falls (HoF), 3=Physical Assaults, & 4=injuries from other causes]. Data were divided into two groups that is; data of overall victims in terms of age and data about adolescents specifically. Then both of these data sets were entered into the SPSS and analysis was done on the data while keeping an eye on the preset objectives specifically that is; the Prevalence of RTA in overall age groups and adolescents and percentages of male and female victims of RTA in overall age group and adolescents specifically. The collected data were analyzed through manual statistics and Statistical Package for Social Sciences SPPS version 22 to calculate the proportion (prevalence) of RTAs in adolescents and percentages of RTAs in males and females. Data were presented in graphical illustrations and also transcribed into words for better insight.

The study was conducted after approval from the College Review Board and the concerned hospitals. Formal approval request letters were written from the college to the Medical and Nursing Directors (MDs & NDs) of the concerned hospitals. The study was conducted in natural settings and no illegitimate manipulation of the subjects was done during the study. Oral Informed consents were taken from the staff on duty during data collection from the concerned hospitals. No harm is intended towards the subjects and their belongings throughout the study. No fabrication or forging of data has been done.The ethical approval No. DIR/RCN-ERC/DR/23-13 was taken from the Royal College of Nursing Ethical Board on 23/02/2023.

RESULTS

In the current project, the number of males was high (79.2%) among the total participants of 258. The most common age of victims in adolescents was age of 16 years (17.2%) followed by 18 years age (14.1%), and age 19 & 10 years (12.5) (table 1).

Table 1: Demographic background of the participants

	Frequency	%
Gender		
Male	205	79.2
Female	53	20.5
Age		
10.00	8	12.5
11.00	3	4.7
12.00	4	6.3
13.00	5	7.8
14.00	4	6.3
15.00	4	6.3
16.00	11	17.2
17.00	7	10.9
18.00	9	14.1
19.00	8	12.5

The age of adolescent injury victims is oddly scattered across the age line, but the concentration in age is 10 years and between 16 and 19 years. The most common age of victims among adolescents was 16 years (17.2%), followed by 19 and 10 years (12.5%), and so on, as shown in Fig. 1, respectively. The gender of adolescent injury victims were comprised of 81% males and 19% females.

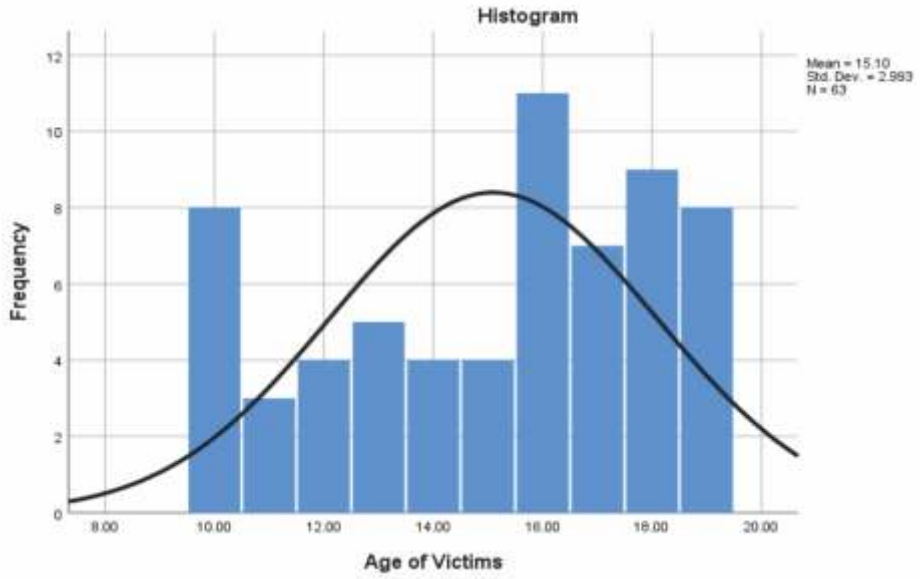

Fig No. 01-Age of victims

After analysis, it was found that the most common type of injury among the victims was the history of falls (HoF) that is 36%, followed by Others that is 35%, Road Traffic Accidents (RTAs) that is 22.5%, and Physical assault that is 6.2% as illustrated in Fig No. 2:

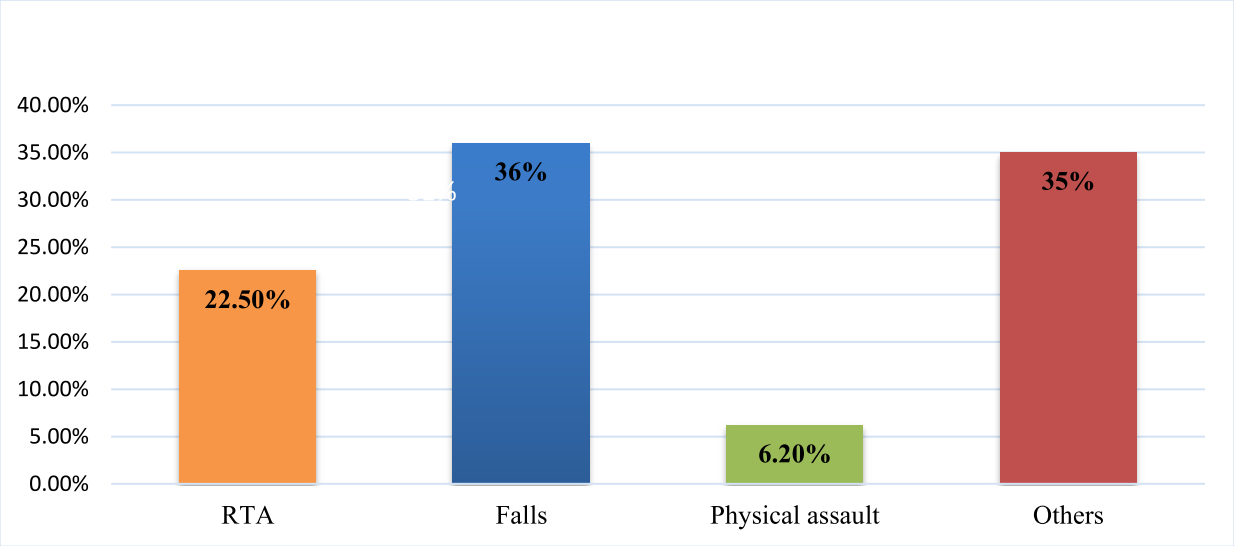

Fig No. 02: 4.3 Factors that lead to fracture among all age groups

DISCUSSION

The study was conducted in Peshawar, Khyber Pakhtunkhwa, Pakistan. In this area, this study is alien because no other similar studies have been done here. The prevalence of Road Traffic Accidents (RTAs) in the overall age line has been found out 22.5%, while in adolescents the prevalence was found to be 23.8% respectively. This prevalence is far greater than the prevalence reported in a Rawalpindi Hospital-based study in which 6.8% of cases were referred to as RTAs among all input of cases for the reference year 2005.[11] The increase may be because the study done in the Rawalpindi General Hospital is 17 years old and there were far fewer vehicles in the country than the current year. Another reason for the increased cases of RTAs in Pakistan especially in Peshawar may be due to mediocre roads and highways as compared to those in Rawalpindi and Lahore city.

The prevalence is also high from that of a study done in 2019 in Amhara State, Ethiopia. 20% of injuries were referred to as RTAs among all injury flow to Emergency Departments in Amhara State, Ethiopia.[12] This increase may be due to disparity in infrastructures of roads and highways. Another reason for this increase may be the difference in awareness and sensitization levels of civilians of Peshawar, Pakistan, and Ethiopia respectively. Also, the percentages of victims that were children and adolescents were found to be 51.8% in the Ethiopian study; again it is far less than the findings of this study which is 85% adolescents and children approximately. The reason for such a huge disparity could be the size of the total population and the sample taken from it. If we compare the Amhara State of Ethiopia with that of Peshawar, Pakistan, then we can find significant differences in terms of adolescents and children population. Also, it is that the highway map of the two cities is quite different.

An Indian study reported an RTA prevalence of 41.2% among adolescents. The value of prevalence is quite higher than the findings in this study. The possible reason for this increase in value in the neighboring country would be due to the culture of risk-taking behaviors of teenagers in the country.[13] This risk-taking behavior in teenagers arises due to the portrayal of action especially one-wheeling in most of the Bollywood movies. The teenagers take inspiration from these movies and portray it on the highways and roads resulting in Road Traffic Accidents. Another possible reason would be that most of the people of India are under the poverty line and belong to slums. Their literacy and understanding level about sensitization and awareness is quite low as compared to Pakistan.

In Addition, a study on risk-taking behaviors (e.g. wheeling while riding motorcycles) and RTAs in the adolescent population was done in Jakarta, Indonesia. They found that 39% of motorcycle riders among adolescents had met a Road traffic accident. If we compare the findings of this study with that of ours; then we can conclude that the findings in the Indonesian study are quite greater than that of this study. The possible reason could be the disparity in terms of highways and road infrastructure. Also, the difference in awareness and sensitization of the public especially adolescents is a hallmark reason for this.[14]

Furthermore, a systematic review of the prevalence of Road

traffic accidents (RTAs) in developing countries was done in Maharashtra, India in 2015. They found that prevalence ranges from 11.1 - 42.6% for the adolescent population, If we compare the findings, then we can say that the prevalence reported in the systematic review has a pattern of a continuum across the developing countries. Some countries have a low prevalence while others have a high prevalence.[15] Another conducted in 2017 in India reveals that 756 were male (84.0%) and 144 (16.0%) were female. The mean age of the victims was 32.7 years. Most of the victims, i.e., 377 out of 900 (41.9%) were occupants rather than drivers.[16] The disparity in prevalence may be due to the reasons aforementioned. The prevalence of RTAs in Pakistan falls near the pivotal area of the so-called continuum.

The limitations of the study were, that only four big hospitals in Peshawar, Khyber Pakhtunkhwa, Pakistan have been targeted in this study. As many people visit local clinics run quacks and low-level hospitals and health care centers. This reduces the credibility in terms of generalizing the findings on the entire adolescent population of Peshawar, Pakistan. Many people with Road traffic accidents (RTA) often do not visit the hospitals when they have minor injuries and these hidden cases are the underwater part of the iceberg according to Epidemiology. These hidden cases cloud the findings of this study. So this is one of the limitations of the study, and the findings rely on the collected data, and the credibility of data collected from the Health Directory is guaranteed only to its authors. This can cloud the findings and so it is also a limitation to this study.

CONCLUSION

In this study, the prevalence of Road traffic accidents (RTAs) among adolescents is investigated in Peshawar, Pakistan. The prevalence of RTAs in the overall age line and adolescents is found to be quite higher than a similar study done in 2008 in Rawalpindi, Pakistan. The prevalence is also higher than in Ethiopia, but far less than in India and Indonesia according to study sources. The reason for the disparities in the findings of this study from other studies around the world may be the differences in the infrastructure of highways and roads and different literacy rates and awareness levels of the civilians of these countries.

The findings suggest that in Pakistan particularly in the local province of Khyber Pakhtunkhwa, there is an immense need for awareness and sensitization among parents and adolescents regarding Road traffic accident' (RTA) hazards and prevention. Also, there should be a working policy about traffic management and reforms in the highways and roads.

REFERENCES

1.Peden MM, editor. World report on road traffic injury prevention. World Health Organization; 2004 Mar 23.

2.Hareru HE, Negassa B, Kassa Abebe R, Ashenafi E, Zenebe GA, et al. The epidemiology of road traffic accidents and associated factors among drivers in Dilla Town, Southern Ethiopia. Frontiers in public health. 2022 Nov 10;10:1007308.

3.Atreya A, Shrestha DB, Budhathoki P, Nepal S. Epidemiology of road traffic accidents in Nepal from 2009/10 to 2019/20: a 10 year study.

4.Neelakantan A, Kotwal BA, Ilankumaran M. Determinants of injuries and Road Traffic Accidents amongst service personnel in a large Defence station. Medical Journal Armed Forces India. 2017 Jul 1;73(3):216-21.

5.James SL, Castle CD, Dingels ZV, Fox JT, Hamilton EB, Liu Z, Roberts NL, et al. Global injury morbidity and mortality from 1990 to 2017: results from the Global Burden of Disease Study 2017. Injury Prevention. 2020 Oct 1;26(Suppl 2):i96-114.

6.Pérez-Núñez R, Pelcastre-Villafuerte B, Híjar M, Ávila-Burgos L, Celis A. A qualitative approach to the intangible cost of road traffic injuries. International journal of injury control and safety promotion. 2012 Mar 1;19(1):69-79.

7.Detho A, Samo SR, Mukwana KC, Samo KA, Abubaker MH. Road Traffic Accidents (RTAS) Safety Issues On Highways: A Review. Quaid-E-Awam University Research Journal of Engineering, Science & Technology, Nawabshah. 2019 Aug 8;17(01):34-40.

8.Shamim S, Razzak JA, Jooma R, Khan U. Initial results of Pakistan's first road traffic injury surveillance project. International journal of injury control and safety promotion. 2011 Sep 1;18(3):213-7.

9.Muhammad K, Shaikh S, Ashraf J, Hayat S. Characteristics, reasons and patterns of Road Traffic Injuries presenting in emergency department of a tertiary care public hospital in Karachi. Pakistan Journal of Medical Sciences. 2022 Mar;38(4Part-II):862.

10.Daniel WW, Cross CL. Biostatistics: a foundation for analysis in the health sciences. Wiley; 2018 Nov 13.

11.Bhatti MA, Ajaib MK, Masud TI, Ali M. Road traffic injuries in Pakistan: Challenges in estimation through routine hospital data. J Ayub Med Coll Abbottabad. 2008 Mar;20(3):108-1.

12.Tiruneh BT, Bifftu BB, Dachew BA. Prevalence and factors associated with road traffic incident among adolescents and children in the hospitals of Amhara National Regional State, Ethiopia. BMC emergency medicine. 2019 Dec;19(1):1-6.

13.Trivedi A, Rawal D. Prevalence of road traffic accidents and driving practices among young drivers. Age. 2011;61:31-9.

14.Umniyatun Y, Nurmansyah MI, Farradika Y, Purnama TB, Hidayat DN. Motorcycle risky behaviours and road accidents among adolescents in Jakarta metropolitan area, Indonesia. International journal of injury control and safety promotion. 2021 Jul 3;28(3):339-46.

15.Khatib M, Gaidhane A, Quazi Z, Khatib N. Prevalence pattern of road traffic accidents in developing countries: a systematic review. Int J Med Sci Public Health. 2015 Oct 1;4(10):1324-33.

16.Misra P, Majumdar A, Misra MC, Kant S, Gupta SK, Gupta A, et

al. Epidemiological study of patients of road traffic injuries attending the emergency department of a trauma center in New Delhi. Indian journal of critical care medicine: peer-reviewed, official publication of Indian Society of Critical Care Medicine. 2017 Oct;21(10):678.

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B. Acquisition of data/participation in designing methodology
C. Interpretation, analysis and discussion
D. Review of the manuscript