BURDEN OF ACCIDENTS INVOLVING MOTORCYCLISTS IN DISTRICT KOHAT, PAKISTAN

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ABSTRACT:

OBJECTIVES:

The main aim was to assess the frequencies of accidents of motorbike in previous one year and also to estimate the factors related with the accidents.

METHODOLOGY:

The study design was quantitative and the data was collected from motorcyclists. In order to collect the primary data; a structured questionnaire was used. We interviewed 412 motorcyclists. Almost all the motorcyclist responded and thus we achieved 99% response. Statistical Package for Social Sciences (SPSS) version 21 was used to enter data, clean it and analysis.

RESULTS:

After the analysis we got hold of some factors, which were associated with accidents. Some of these factors were human, vehicle and environment related factors completing the epidemiological triad of agent, host and environment.

CONCLUSION:

Based on the results of the study we concluded that bikers must shun the practice of speeding over and above the limits of speed given by the government, one-wheeling, and listening to music while driving. Moreover, the bikers must be taught the basic skills of motorbike riding by authorized personnel and keep latest models of motorbikes, which are in excellent condition. The guardians or parents along with the law enforcement agencies must make ensure that biker must get a license before using the bike.

KEYWORDS: *District Kohat, Road Traffic Accidents, Burden, Motorbikes*

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INTRODUCTION:

Road traffic accidents are considered as a major cause of mortality and morbidity in the world[1, 2]. The second leading cause of death among the young adult males of age 15-44 years in 2016 were road traffic accidents when more than 2 million deaths occurred in the world, and majority of these deaths occurred in the third world countries[3]. However developed countries are no exceptions and countries like United States (US) also face a huge burden of disability and death[4]. Due to heavy rush and blockages of the roads, motorcycles have attained the status of quick and reliable service as transportation and travelling to work[2] but it also increases the risk of accidents against other vehicles, thus motorbikes are considered at higher risk of mishap to the riders. Research studies have concluded that majority of accidents were associated with riders who are mostly young age and frequently attempting risky behavior on bike while riding[5, 6]. The use of motorcycles is further higher in Pakistan, and thus also account for more accidents[4]. As due to economic constraints like rising fuel costs, traffic jams and low purchasing power of the consumers, the number of motorcycles has increased in Pakistan[2]. Besides some benefits of motorbikes, the motorbikes also exhibit some dangerous trends due to the structural weaknesses of its design. These structural weaknesses increase the risk of road injuries and different studies have reported that chances of bikers getting injured are three times more during crash and the rider is 16 times more likely to die due to accident[7] and there

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is anxious need of conducting a proper study on the risk factors associated with accidents amid motorcyclists to help in decreasing the burden. Little work has been done in Pakistan to identify the risk factors of accidents, which involve the motorbikes. Moreover, the factors, which are thought to be in relation with the accidents, are still yet not measured in Pakistan. The health researchers and workers in the emergency department of the district who were attending these emergencies of accidents and later taking care of mortalities of people was a main inspiration for conducting this research. Furthermore, little or no literature is available, regarding the burden of accidents and consequently the mortalities and morbidities resulting from the accidents, little was left to imagination but to properly design a study to investigate and target the risk factors to control it. The main aim was thus to assess the burden and leading causes of motorbike accidents.

METHODOLOGY:

This was an observational, cross sectional analytical study. The target population were motorbike riders in the Kohat city of Khyber Pakhtunkhwa, Pakistan. District Kohat is situated to the south of Peshawar at a distance of about 60 kilometers. The Bangash tribe of the Pashtuns largely inhabits it. We divided district Kohat into four major geographical locations with the help of roads i.e. (Bannu, Rawalpindi, Hangu and Peshawar). We selected two petrol pumps from each area randomly and then motorcyclists coming to fill their bikes with petrol were interviewed at these locations. It was initially thought that motorcyclist coming to these petrol pumps will be staying at the refill stations for a few minutes and this will help the principal investigator to interview the biker. It was a success and we filled all the questionnaires at these locations. The study collection took about two weeks' time duration.

The sample size was calculated with the help of the following formula.

$n = (Z_{\alpha/2})^2 * p * q / (d)^2$

n = optimum size of the sample from which the data is to be collected

d = Margin of error

p = estimated prevalence of accidents

$n = 1.96^2 * 0.5 * 0.5 / (.05)^2$

n = 385

As we used non-probability sampling so we added a 10% increase in sample size thus the sample calculated was 425 motorcyclists. All the motorcyclists coming for refill to the petrol pumps were selected as respondents. We used proportionate sampling fraction. The petrol pumps where more motorcyclists were coming to refill had more sample size selected. Structured questionnaire was used for data collection. Data collectors were given one day training, to familiarize them with the questionnaire and how to conduct interviews. The data collectors were requested to ensure the correctness of the questionnaires in all respects to the best of their ability. Advanced Studies and Review Board (ASRB) of Khyber Medical University, Peshawar was approached for the ethical approval. The study was carried out only after the ethical approval. The filled questionnaires were entered, cleansed and analyzed on SPSS 21. Total of 412 questionnaires were circulated among the motorcyclist and all were returned completed in all aspects, response was about 100%. The results comprised of the descriptive and inferential statistics. In the descriptive section, we computed the frequency and percentage of qualitative variables while means and standard deviations were computed for quantitative data. For inferential statistic including regression analysis, chi-square and t-test was used in study. A p-value of less than 0.05 was considered as significant to reject the null hypothesis.

RESULTS:

Of the total 412 motorcyclists, 223 had an accident in last one year, thus the prevalence was about 54%. The minimum age recorded was 14 years. We constructed 10 years groups for age. The first category was 14-24 years. Out of 132 respondents in this category, 65 (29.1%) had an accident in the last one-year. In the next category of 25-35 years there were 153 respondents in which 92 (41.3%) had accidents in the last year. In the next category 36-46 years, there were 97 bikers in which 48 had accident in one-year. For bikers of above 47 years there were 30 motorcyclists, of which 18 had an accident in the last one-year. There was little or insignificant alliance among ages of the respondents and accidents.

Table 1: Association of Marital Status and Accidents

Marital Status	Accident		P-value
	Yes	No	
Married	90	84	.403
Unmarried	133	105	
Total	223	189	

The accidents were not significantly associated with marital status.

Table 2: Association of Education and Accidents

Education	Accident		P-value
	Yes	No	
Matric/Inter	58	53	.841
Bachelors	91	73	
Masters	56	51	
Illiterate	18	12	
Total	223	189	

The accidents had insignificant association with education.

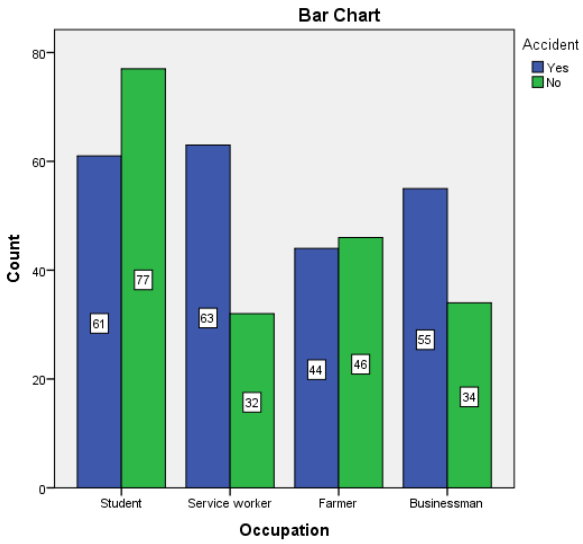

Figure 1: (Occupation and Accident)

Our research shows that majority of people who met accidents were service workers. In order to calculate the association among members' occupation and accident occurrence, statistical analysis reveals that there is significant association among members' occupation and accidents.

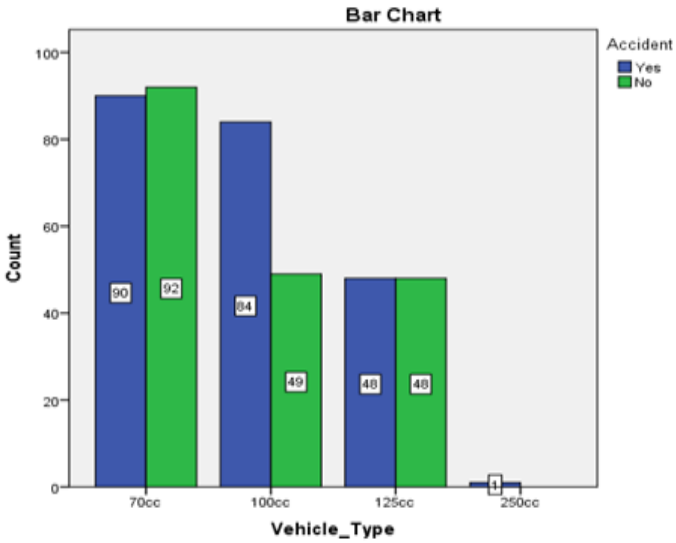

Figure 2: (Vehicle Type and Accident)

Research shows that majority of the accident victims were owners of bike of 70cc and 125cc. There was statistical evidence to show that accidents were associated with type of vehicle. According to the statistics there exist insignificant association among average duration of riding per day and accident. Our analysis concluded that there is foremost association among vehicle type, motorbike model, non-holding of license, non-usage of helmet while riding motorbike, speeding over and above the limit on motorbike, talking on motorbike, attending phone calls while riding, doing one wheeling on motorbike, listening to music on motorbike while riding, using drugs on motorbike while riding increases the risk of accidents.

DISCUSSION:

We concluded that accidents and injuries are directly related to vehicle and human related factors. This result of our study was consistent with the preceding research. Some studies reported that the vehicle and person related factors are the major risk aspect of accident and injuries are closely associated with occurrence of motorbike accidents[8, 9]. This further depicted that the aforesaid factors increase the burden of motorbike accident in district Kohat. Some studies reported that when there is new model of motorbikes, the owners are ensnared and involved in speeding over the allowed limit, which may result in accidents[10]. However, in our study further regression tells us that the good condition of the bike is an insignificant predictor of bike accident. Other studies carried out by National High way authorities reported that the major predictor of accidents might be the condition of motorbike[11]. If the condition of the bike is not up to the standard, and faulty, there is more chance of an accident. While the high-quality condition of motorbikes,

which is free from mechanical faults, reduces the tendency of the accident. Therefore, the result of our study was consistent with the previous studies. Our analysis shows that doing one wheeling on motorbike was a predictor of bike accident. Some studies shows that young teenagers are eager to do one wheeling on bikes in order to show their charisma to the onlookers and friends[12, 13]. Another study also showed that one reason of bike accidents might be due to one wheeling because when riders doing one wheeling, due to inherited structural deficiencies they are at risk of falling at a high speed, which in turn may cause serious injuries[14].

CONCLUSION:

Based on the results of the study we concluded that bikers must shun the practice of speeding over and above the limits of speed given by the government, one-wheeling, and listening to music while driving. Moreover, the bikers must be taught the basic skills of motorbike riding by authorized personnel and keep latest models of motorbikes, which are in excellent condition.

LIMITATIONS:

The first limitation of the study was its design, i.e. cross sectional, which only allows having a reference to the factor and cannot tell us anything about causality. We had limited time due to which a small geographical location was selected which may not be representative of Pakistani population. With a small budget also, the study had adverse effects. We may have missed many confounding factors and inserted many ecological fallacies in our study. It was out of the scope of this study to control them.

RECOMMENDATIONS:

It was recommended, that the riders should learn the basic skills of riding by practicing at a recognized driving and learning facility, which should provide them with driving licenses. They should avoid speeding over the limit given by the law enforcement agencies, and one wheeling to reach their destination. Riders should also avoid using cell phone during bike riding, attending phone calls, and listening to music.

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