



MOTORCYCLE ACCIDENTS: PROFILE AND CHARACTERIZATION OF VICTIMS ASSISTED IN A PUBLIC HOSPITAL

ACIDENTES DE MOTOCICLETA: PERFIL E CARACTERIZAÇÃO DAS VÍTIMAS ATENDIDAS EM UM HOSPITAL PÚBLICO

ACCIDENTES DE MOTO: PERFIL Y CARACTERIZACIÓN DE LAS VÍCTIMAS ATENDIDAS EN UN HOSPITAL PÚBLICO

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ABSTRACT

Objective: to analyze the characteristics of accidents involving motorcyclists. **Methodology:** Cross-sectional study with a quantitative approach held at the Municipal Hospital of Imperatriz. The sample was non-probabilistic by convenience, made with 112 victims of trauma by motorcycle accidents. Data were stored and analyzed statistically, using a computerized database, built with EPINFO Version 7.0. The research project was approved by the Ethics Committee in Research, Protocol Number 062/2011. **Results:** most of the victims were male (89.19%), 16-30 years old (66.07%); (51.79%) are single; (65.3%) do not have Driver License. The characteristic of the injuries were (64.29%) suffering internal fractures and the injured body region (43.73%) was in the lower limb. **Conclusion:** it is proven that the young male population is the most affected and that awareness of their vulnerability should be part of the prevention strategy. **Descriptors:** Fracture; Traffic Accidents; Motorcycles; Accident Prevention.

RESUMO

Objetivo: analisar as características dos acidentes envolvendo motociclistas. **Metodologia:** estudo transversal, com abordagem quantitativa, realizado no Hospital Municipal de Imperatriz. A amostragem foi do tipo não-probabilística por conveniência, feita com 112 vítimas de trauma por acidente de motocicleta. Os dados foram armazenados e analisados estatisticamente utilizando-se de um banco de dados computadorizado, construído com o programa EPINFO Versão 7.0. O projeto de pesquisa foi aprovado pelo Comitê de Ética em Pesquisa, Protocolo nº 062/2011. **Resultados:** a maioria das vítimas era do sexo masculino (89,19%), com faixa etária de 16 a 30 anos (66,07%); (51,79%) solteiros; (65,3%) não possuíam Habilitação. Sobre a característica das lesões, (64,29%) sofreram fratura do tipo interna e quanto à região corpórea lesionada, (43,73%) encontravam-se nos membros inferiores. **Conclusão:** comprovou-se que a população jovem masculina é a mais afetada e que a conscientização sobre sua vulnerabilidade deve fazer parte da estratégia de prevenção. **Descritores:** Fratura; Acidentes de Trânsito; Motocicletas; Prevenção de Acidentes.

RESUMEN

Objetivo: analizar las características de los accidentes envolvendo motociclistas. **Metodología:** estudio transversal con enfoque cuantitativo realizado en el Hospital Municipal de Imperatriz. La muestra fue del tipo no-probabilística por conveniencia, hecha con 112 víctimas de trauma por accidente de motocicleta. Los datos fueron almacenados y analizados estadísticamente, utilizando un banco de datos computadorizado, construido con el programa EPINFO Versión 7.0. El proyecto de investigación fue aprobado por el Comité de Ética en Investigación, Protocolo nº 062/2011. **Resultados:** la mayoría de las víctimas eran del sexo masculino (89,19%), de 16 a 30 años (66,07%); (51,79%) son solteros; (65,3%) no poseen Libreta de conducir. Sobre la característica de las lesiones, (64,29%) sufrieron fractura de tipo interna y la región corpórea lesionada (43,73%) se encontró en los miembros inferiores. **Conclusión:** se comprueba que la población joven masculina es la más afectada y que la consciencia sobre su vulnerabilidad debe ser parte de la estrategia de prevención. **Descritores:** Fractura; Acidentes de Tránsito; Motocicletas; Prevención de Acidentes.

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INTRODUCTION

Automobile accidents, highlighting the use of motorcycles, have become a real public health issue, being one of the main causes of death in our country. Over time, more and more diagnosis of trauma due to this cause appear in several hospitals.¹

A study conducted in the city of Campinas in São Paulo State, shows that the highest risk groups for traffic accidents are the motorcycle users, male population in general and especially young people.²

The use of motorcycles has changed, influenced by cultural and socioeconomic factors or by the advantages of this type of vehicle: lower cost of acquisition, maintenance, small size that facilitates displacement, even in traffic jam. It is also mentioned the growing use of motorcycles as a mean of work. This results is increasing the number of motorcycles in the country and consequently the vulnerability and exposure to risk of injury to users, making it a major cause of physical incapacitation and death.³

The increase of traffic accidents involving motorcyclists has been observed since the end of the last century, when there was an increase in the use of motorcycles, as a vehicle of easy movement, fast mobility and low cost. The motorcycle became the most used vehicle by young Brazilians, especially males, whether as transportation mean to work, leisure, sport or even as a working tool, as in the case of the “motoboy” and motorcycle taxi drivers, being an occupational activity in various cities as well as in the city of this research.⁴

Although the definition of the word “accident” in dictionaries is a “casual, unexpected”, we cannot speak the same of traffic accidents. Most of the time, traffic accidents are predictable and preventable, since high speed, intoxication, incompetence, negligence and recklessness of the driver are the main causes involved in accidents.⁵

Publications of the World Health Organization and the Ministry of Health show the growth of morbidity and mortality related to traffic accidents in recent years. In a publication about inequalities in mortality from traffic accidents, the Ministry of Health warned of their negative impact on the health of the population, the loss of years free of disability, the reduction in life expectancy of adolescents and youth, as well as the high social and economic costs imposed on health and pension system.²⁻⁴

For motorcycles drivers, the body segment more protected by safety equipment during impact is the head, and the lower and upper limbs are the body regions most susceptible and seriously injured. In the limbs, the most common types of injuries are fractures, bruises and strains. The limb fractures are considered low or medium severity injuries. However, they require prolonged immobilization, causing long periods of victim’s recovery, with significant economic and social costs.⁶

In a research conducted in the emergency room located in the city of Teresina, Piauí State, there was the predominance of males, mainly in the age group of 15-24 years old and 25-34 years old, with incomplete elementary school and high school, monthly income of one to two minimum wages; most of them single. Accidents with this particular sample had and increased exposure, as result of such drivers often having driver’s license and have learned to drive under age. These data lead to reflection on the social and cultural patterns in relation to gender issues, which are perpetuated in societies.⁷

According to the National Traffic Department (Denatran), Maranhão is the Brazilian state having the largest proportional percentage of motorcycles in circulation, in relation to other states. Within the state, especially in the city of Imperatriz, there is the second largest motorcycle fleet of Maranhão. Accidents involving this type of transport fell in daily life, taking the recklessness and negligence of the users of traffic rules, noting that they many times do not act preventively, failing to use Personal Protective Equipment (PPE) or even other reckless acts.⁸

Thus, the objective of this study is to analyze the characteristics of accidents involving motorcyclists.

METHOD

Cross-sectional study with a quantitative approach performed in the city of Imperatriz-MA, where the Municipal Hospital of Imperatriz (HMI) is located, the most urgent and emergency health unit in the state, giving services to several neighboring cities, covering cities in the north of Tocantins, South of Pará and South of Maranhão.

Because it is an institution that serves many patients from surrounding cities the sample was non-probabilistic convenience, made with 112 victims of trauma by motorcycle accidents, assisted in that service. The data collection were performed with the patients

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or family members of motorcycle accident victims treated at this institution during May-June 2013, using previously elaborated questionnaire, consisting of socioeconomic data and circumstances of the accident, such as gender, age, level of education, whether to use safety equipment, by whom was rescued, alcohol consumption and possession of driver's license. The pattern of injuries suffered by the victim were also investigated, as: injured body area, occurrence of fracture, and also the time of the accident.

The eligibility criteria include all patients who received care at the hospital, victims of motorcycle accidents, without restriction on the gender, age, or national driver's license. As for exclusion criteria, there were patients in a comatose state and those who refused to sign the free and informed consent term. All patients who agree to participate in the study were guided and explained about the Informed Consent Term (TCLE).

All these data were stored and analyzed statistically using a computerized database, built with the software program EPINFO Version 7.0 and presented in tables.

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Quantitative variables were shown as frequency, percentage, mean and standard deviation.

The ethical aspects were properly considered and conditioned to the requirements contained in the Regulating Guidelines and Norms of Research Involving Human Beings, from the National Health Council Resolution 196/96. The project was approved by the Ethics Committee in Research of the University Hospital, Federal University of Maranhão, article 062/2011.

RESULTS

Table 1 shows that among the 112 victims interviewed the predominance is male corresponding to (89.19%), indicating also that the most affected age group is the young from 16 to 30 years old with (74,75%) of victims who mostly indicate their marital status as single with (61.33%) considering also brown skin color with a total of (57.85%) of respondents.

Table 1. Distribution of motorcycle accident victims according to the situation of the accident by age, sex, skin color, marital status. Imperatriz, Maranhão, Brazil, from May to June 2013.

	n	%	Mean ± SD
			27.18 ± 9.15
Gender			
Male	99	89,19%	
Female	12	10,81%	
Age			
1 to 15 years old	2	1,79%	
16 to 30 years old	74	66,07%	
1 to 45 years old	26	23,21%	
46 to 60 years old	7	6,25%	
0 or more	2	3,68%	
Skin color			
Yellow	54	48,21%	
white	12	10,71%	
Mulatto	2	1,79%	
Black	14	12,50%	
Brown	30	26,79%	
Marital Status			
Single	58	51,79%	
Married	31	27,68%	
Stable union	15	13,39%	
Separated	5	4,46%	
Divorced	1	0,89%	
Total	112	100,00%	

In Table 2, analyzing the information on the education of the participants, it was found that there was a predominance of victims who have only elementary school with (50.00%) of

the results. As for family income, most of the respondents, with (55.36%), says living with 1-3 minimum wages.

Table 2. Distribution of motorcycle accident victims according to the situation of the accident by level of education, family income. Imperatriz, Maranhão, Brazil, from May to June 2013.

	n	%
Education level		
Illiterate	5	4,46%
Elementary school level 1	22	19,64%
Elementary school level 2	34	30,36%
High school	48	42,86%
Higher education	3	2,68%
Family income		
Up to 01 salary	39	34,82%
01 to 03 salary	62	55,36%
04 to 10 salary	10	8,93%
10 or more	1	0,89%
Total	112	100,00%

In Table 3, there are the history of alcohol consumption with its frequency and type of beverage ingested. The results show that (65.18%) reported being drunk at the time of

the accident, most often 2-3 times a week with (63.01%), and the alcoholic beverages most consumed was beer with (69.85%).

Table 3. Distribution of accident victims, motorcycle drivers, reporting use of alcohol at the time of the accident, frequency of alcohol use, type of drink. Imperatriz, Maranhão, Brazil, May to June 2013.

	n	%
Use of alcohol		
Yes	73	65,18%
No	38	34,83%
Frequency of alcohol use		
2 to 3 times a week	46	63,01%
4 to 6 times a week	4	5,48%
3 to 4 times per month	7	9,59%
Less that twice a month	13	17,81%
Everyday	3	4,81%
Type of drink		
Beer	51	69,86%
Cachaça	16	21,92%
Whisky	6	17,04%
Total	112	100,00%

Table 4 lists the use of Personal Protective Equipment and the victim's activity at the time of the accident, showing that only (37.50%) of respondents have National Driver's License, and most of them used personal

protective equipment at the time of the accident with a percentage of 66.96% and 72.32% were on leisure.

Table 4. Distribution of accident victims, for possession of the National driver's license, personal protective equipment use (E.P.I.) and the activity at the time of the accident. Imperatriz, Maranhão, Brazil, May to June 2013.

	n	%
Have Driver's license		
Yes	42	37,50%
No	70	62,50%
Use EPI		
Yes	75	66,96%
No	37	33,04%
Activity at the moment of the accident		
Working	31	27,68%
Leisure	81	72,32%
Total	112	100,00%

In Table 5, the respondents (48.21%) claim to have never suffered any motorcycle accident before. As regards of the type of fracture (64.29%) mention having suffered

internal fracture, and the body region most affected were the lower limbs (44.75%). In the type of help received, most were helped by curious people (39.29%).

Table 5. Distribution of motorcycle accident victims according to some accident already suffered before, fracture, help, injured body area and the time of the accident. Imperatriz, Maranhão, Brazil, from May to June 2013.

	n	%
Accidents suffered		
None	54	48,21%
One	35	31,25%
two	16	14,29%
Three	6	5,36%
More than three	1	0,89%
Fracture		
Exposta	22	19,64%
Intern	72	64,29%
None	18	16,07%
Type of help		
Curious people	44	39,29%
Friend	26	23,21%
Relative	12	10,71%
Samu	30	26,79%
Injured body area		
Head	43	38,39%
Thorax	8	7,14%
Upper limb	10	8,93%
Lower limb	49	43,75%
Abdomen	2	1,79%
Time		
Day	56	50,00%
Night	56	50,00%
Total	112	100,00%

DISCUSSION

The increased morbidity and mortality caused by motorcycle accidents requires interventions to promote its reduction. Since recklessness is the main cause of accidents because users neglecting traffic regulations, it is important to seek the primary prevention in the rehabilitation of these users as the most effective way to mitigate this issue.

According to the analyzed group, they were predominantly male victims (89.19%) of working age, from 16-30 years old (66.07%). Similar data were found in the study on characterization of the victims of motorcycle accidents hospitalized at the Emergency Hospital of Goiânia, with a majority of male victims (91%) and aged from 19 to 30 years old (54, 9%).⁶ Divergent data found in a characterization of traffic accidents involving young people in a public hospital observed (73.3%) were male and the age group that predominated ranged from 1 to 17 years old with (37,08%).⁹

On marital status, there was a predominance of single (51.79%), also found in

the study of the city of Teresina, PI about marital status of the injured, that singles represent (54.65%) of services to injured motorcycle drivers in the emergency department.¹⁰

In Education and family income, the sample shows that 50.00% of injured had incomplete Elementary School and with a family income of 1-3 minimum wages (55.36%). Data are similar to the current study, about education and income, where individuals with less education have suffered more accident (43.33%) and had the Elementary School (50.00%) with average salary of 1 to 3 minimum wages.¹¹ then, these factors are related to the cost benefit of using this mean of transportation in the area because its affordable price and low maintenance makes it possible for a greater number of families with low income have access to motorcycle, since the region is lack in quality public transportation.

In the content involving alcohol, there were 65.18% victims who were under its influence. Similar data were found in the study of Fortaleza/CE about factors associated with

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the occurrence of the motorcycle accident, showing that most of the victims (54.4%) reported drinking alcohol before the accident⁽⁴⁾. Divergent data found in the study of Porto Alegre-RS, showed positive alcohol intake only in 8.3% of the victims. It is believed this is because of the effectiveness of traffic control associated with the cultural behavior of the different regions.¹²

Regarding the National Driver's License (CNH) to drive motorcycles, 62.50% were not enabled to drive, presenting a similarity with a study of traffic accident victims with injuries (64%).¹¹ This result is different when states that 85.16% of injured motorcycle users in their study had license.¹³ It concludes that supervision of the deficiency on the transit legislation will reflect the increase in accidents for not preventing to drive not authorized drivers.

It was observed in the use of Personal Protective Equipment (PPE) that most of the motorcyclists (66.96%) used was the helmet, similar results were found in a research conducted in the state of Rio Grande do Norte.¹³ Differences were observed in the study performed presenting results (85.2%), which dominate the use of EPI.¹⁴

Data of different data of accident already suffered by the victims, with the National Driver's License (CNH), showed that users duly authorized to drive such means of transportation, suffer fewer accidents when compared to those without CHN.

Another comparing was performed using Personal Protective Equipment (EPI) to the level of education of the injured, where we observe that the percentage of accidents decreases as the education level increases, leading to the conclusion that the higher the level of education most common becomes the use of EPI.

According to the results, it is observed that the most injured body region was the lower limbs (43.75%), corresponding to one of the characteristics of traffic accidents and the victims treated in pre-hospital in South City of Brazil presented 43.86% of cases.⁷

In a study about analysis of morbidity and mortality of victims of traffic accidents it is described that 58.8% of victims have the head as the main injured body area.¹⁰ This divergence occurs by the vulnerability of the users of this type of transportation practically no having protection in case of impact, since the helmet protects only the head region. In some regions, there is still a part of the users resistance in its use, increasing the possibility range of injuries.

CONCLUSION

In the characteristic of injuries, 64.29% suffered fractures and internal type and the injured body region, 43.73% was found in the lower limb.

To inhibit risk in traffic, it is necessary to implement an effective education program in traffic that makes safest driving a motorcycle, including: expanding the studies on these users as working conditions, the vehicle, behavior in traffic and the risk of accidents, articulate people from different specialties interested in the subject to discuss interdisciplinary and intersectoral actions aimed at improving traffic safety and reducing such accidents; seek integration with companies that use these services in order to broaden the discussion to more specific intervention strategies.

It was found that this study, the predominance of males among the victims of these accidents was evident. Education programs for transit, with appropriate pedagogical techniques should be developed and implemented, in order to reach these risk groups such as adolescents and young adults, especially males.

Even as the study showed, a group of motorcyclists did not used helmet and did not have a driver's license. The imposition of measures is important, such as requiring a driver's license, the continued use of the helmet and the prohibition of the use of alcohol as determined in applicable laws in the country. In Brazil, the proportion of preventable accidents is high. Most of the time, this situation is due to the precariousness of the structures available to promote prevention.

It is essential that the authorities concerned with the areas of education and health checking their actions for the development of educational campaigns aimed at the entire population, not only to health professionals. It should be guide all the drivers, and particularly victims of this type of accident on first aid in cases of accidents or violence as a way to avoid inadequate care and sometimes, subsequent death or disability of the victims.

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