

An epidemiological survey on motorcycle accident victims assisted at a Reference Trauma Center of Sergipe

LEVANTAMENTO EPIDEMIOLÓGICO DOS ACIDENTES MOTOCICLÍSTICOS ATENDIDOS EM UM CENTRO DE REFERÊNCIA AO TRAUMA DE SERGIPE

RELEVAMIENTO EPIDEMIOLÓGICO DE LOS ACCIDENTES MOTOCICLÍSTICOS ATENDIDOS EN UN CENTRO DE REFERENCIA DE TRAUMA DE SERGIPE

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ABSTRACT

The trauma caused by motorcycle accidents affects a large number of victims and is a serious public health problem in Brazil. This documental study was performed with a quantitative approach with the objective to raise epidemiological data from 554 motorcycle accident victims assisted in September and October 2006 in a referral center for trauma of Sergipe. The result analysis shows a predominance of men (82.7%) with mean age of 27.78 years, who were admitted during the night shift (45.9%), Sunday (27.3%), whose injuries were abrasions (n=169) on the head, face and neck. The victims stayed in the hospital for up to 12 hours (76%) and were discharged. Of the registered cases, 14.6% were suspected of having consumed alcohol and 19.3% were not wearing a helmet during the accident.

DESCRIPTORS

Accidents, traffic
Motorcycles
Wounds and injuries
Emergency nursing

RESUMO

O trauma por acidentes motociclísticos atinge um grande número de vítimas e se constitui um grave problema de saúde pública no Brasil. Trata-se de um estudo documental com abordagem quantitativa que objetivou levantar dados epidemiológicos de 554 vítimas de acidentes motociclísticos atendidos nos meses de setembro e outubro de 2006 em um centro de referência ao trauma de Sergipe. As análises dos resultados evidenciaram predominância de homens (82,7%) com idade média de 27,78 anos que deram entrada no turno da noite (45,9%), domingo (27,3%), que tiveram como lesão as escoriações (n=169), nas regiões da cabeça, face e pescoço. Permaneceram no hospital até 12 horas (76%), evoluindo para alta. Dos casos registrados, 14,6% tinham suspeita de ingestão alcoólica e 19,3% não utilizavam capacete durante o acidente.

DESCRITORES

Acidentes de trânsito
Motocicletas
Ferimentos e lesões
Enfermagem em emergência

RESUMEN

El trauma por accidentes motociclísticos alcanza a un gran número de víctimas y constituye un grave problema de salud pública en Brasil. Estudio documental con abordaje cuantitativo que objetivó relevar datos epidemiológicos de 554 víctimas de accidentes motociclísticos atendidos en septiembre y octubre de 2006 en centro de referencia de trauma de Sergipe. Los análisis de resultados evidenciaron predominancia de hombres (82,7%) con edad media de 27,78 años que recibieron internación en el turno noche (45,9%), domingo (27,3%), que sufrieron escoriaciones (n=169), en las regiones de cabeza, cara y cuello. Permanecieron en el hospital hasta doce horas (76%), evolucionando hasta su alta. De los casos registrados, 14,6% tenían sospecha de ingesta alcohólica y 19,3% no utilizaban casco durante el accidente.

DESCRIPTORES

Acidentes de tránsito
Motocicletas
Heridas y traumatismos
Enfermería de urgencia

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INTRODUCTION

External causes are shown to be the most prevalent cause of death among young individuals of productive age, especially aggression and traffic accidents, which constitute a severe public health problem that increases social and economic costs through what is required for the treatment and rehabilitation of victims⁽¹⁻³⁾.

The latest data provided by VIVA (Surveillance System for Violence and Accidents) report 41,677 victims of accidents in Brazil, while 592 traffic accidents occurred in Sergipe, which ranks 6th in mortality of motorcyclists by traffic accidents⁽²⁾.

In the last five years, the vehicle fleet grew from 30 to 42 million, with growth especially in the number of motorcycles, whose licensing grew 75% due to various factors, among them, the low cost of motorcycles compared to automobiles, easy access to multiple lines of financing and business options enabled by the use of motorcycles^(2,5).

Motorcycles are less safe than automobiles given a lack of structure and protection devices provided in the latter, which significantly expose the motorcycle's occupants. Additionally, high speed, the consumption of alcohol, lack of attention, fatigue, and sleepiness are factors considered to greatly contribute to the increase of accidents and severity of the victims' conditions⁽⁵⁻⁸⁾.

Spinal cord and brain injuries predominate in accidents, which are almost entirely represented by Traumatic Brain Injuries (TBI) in men with a low socioeconomic status, with a previous history of trauma and alcohol consumption⁽⁹⁾.

The study is justified by the relevance of the topic and the need to make available epidemiological data from a region with a growing number of motorcycles and victims, who when they do not die, suffer sequelae that may be either temporary or permanent and that compromises their quality of life.

Prevention is key and possible in most cases, through educational and legal measures and passive protection (use of helmets, gloves, jackets), among others. The analysis and interpretation of data can guide decision-making related to public policy planning aimed for prevention and health promotion⁽²⁾.

This study describes the profile of victims of motorcycle accidents cared for in a trauma center in the state of Sergipe, Brazil concerning gender, age, injury diagnosis, mechanism of trauma, marital status, Individual Protection Equipment (IPE), likely alcohol intake, time of hospitalization and clinical progression.

METHOD

This descriptive, documental study with a quantitative approach was carried out in the Trauma Center Emergency Hospital in the city of Aracaju, Sergipe, Brazil.

The sample was composed of all the victims of motorcycle accidents cared for in the trauma center of this hospital between September and October 2006 (N=554). These months were randomly chosen due to the regularity of monthly care provided to trauma victims throughout the year.

The victims of motorcycle accidents receive initial care at the trauma center and are later sent to diverse units along with their medical files. After hospitalization, files and forms are sent to the File Division outside the hospital facility, located in downtown Aracaju.

After authorization was provided by the hospital's board and approval was obtained by the Human Research Ethics Committee at the Federal University of Sergipe (protocol CAAE 05814.0.000.107-07) data collection was conducted from April 16th to May 22nd 2007 in the Statistics and Medical Records (SAME). Confidentiality of information was ensured in accordance with Resolution 196/96, Brazilian National Council of Health.

The collection of data from the emergency care files and forms was conducted through a form addressing the following variables: age, gender, origin, day of the week when the event occurred, shift when care was provided, type of trauma, use of helmet, intake of alcohol, duration of hospitalization, diagnostic and clinical progression.

Data were stored in a database in the SPSS Program, version 12.0 in the form of frequency distribution tables. The variable 'age' was presented in the form of descriptive statistics (average, standard deviation, minimum and maximum). ANOVA was used (variance analysis) to investigate a potential association between alcohol intake and age. An alpha risk $\leq 5\%$ of committing type 1 error was considered for the entire study.

RESULTS

The epidemiological survey of 554 victims of motorcycle accidents in the state of Sergipe reveals that the average age was 27.78 ± 11.64 years old, minimum of one year and maximum 82 years old.

Data in Table 1 show the distribution of victims according to gender, day and period when the event occurred,

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origin, suspicion of alcohol intake, use of helmet, duration of hospitalization, and clinical evolution. Data reveal that the male gender was prevalent (82.7%) among the accident victims, along with weekend occurrences (45.4%), night shift admissions (45.9%), coming from cities other than Aracaju (46.7%), being hospitalized for more than 12 hours (76.0%), and being discharged from hospital (83.2%). There were no records concerning the use of alcohol in 84.3% of the cases or neglect concerning the use of helmet in 69.1%. However, suspicion concerning the consumption of alcohol and lack of helmet was observed in 14.6% and 19.3% of cases, respectively.

Table 2 shows 625 injuries for 554 victims, that is, some victims suffered more than one injury. Most presented bruises (n=169), wounds (n=136) and close fractures (n=122). More than half the victims suffered injuries to the head, neck and face (n=324), followed by injuries to the limbs and pelvis (n=249).

The relationship between the age of the victims and suspicion of alcohol consumption is presented in Table 3. ANOVA showed no statistically significant association ($p = 0.791$) between these variables, that is, alcohol consumption is independent of the victim's age.

DISCUSSION

In this study, the victims of motorcycle accidents were mainly young men (82.7%), aged 27.78 years old on average. The Ministry of Health⁽²⁾, reported similar findings in a search conducted in 2006 and 2007; accidents affected three times more young men than women.

The predominance of men in motorcycle accidents that may lead to death is explained by a greater exposure, given the growing number of motorcycles, low costs, vehicle masculinization, age characteristics such as immaturity, self-confidence, overestimation of their ability and underestimation of limitations, little experience and ability to drive, consumption of alcohol and/or drugs, risk behavior, non adherence to laws or IPE^(2,10).

Table 2 – Distribution of injuries and anatomic areas of victims of motorcycle accidents cared for at the emergency hospital in Aracaju – Sept/Oct 2006.

Injuries	Anatomic Regions						Total
	Head and Neck	Face	Thorax	Abdomen	Limbs and Pelvis	Back	
Bruises	3	60	9	7	87	3	169
Wounds	21	65	5	1	43	1	136
Close fracture	8	42	18	0	54	0	122
Hematoma	35	9	0	0	3	0	47
Edema	4	27	0	0	14	0	45
Contusion	15	4	5	0	6	0	30
Open fracture	2	0	0	0	24	0	26
Trauma and injury	3	10	2	0	10	1	26
Depressed Fracture	7	3	0	0	0	0	10
Hemorrhage	2	2	0	0	0	0	4
Sprain	0	0	0	0	3	0	3
Abrasion	0	1	0	0	1	0	2
Avulsion	0	1	0	0	1	0	2
Dislocation	0	0	0	0	2	0	2
Burns	0	0	0	0	1	0	1
Total	100	224	39	8	249	5	625

Nota: (N=554)

Table 1 – Distribution of victims of motorcycle accidents cared for at the emergency hospital in Aracaju – Sept/Oct 2006.

Variables	N	%
Gender		
Male	458	82.7
Female	96	17.3
Days of the week		
Monday	80	14.4
Tuesday	44	7.9
Wednesday	53	9.5
Thursday	76	13.7
Friday	51	9.1
Saturday	100	18.1
Sunday	151	27.3
Admission according to period of the day		
Morning (12am to 11:59am)	167	30.1
Afternoon (12pm to 5:59pm)	133	24
Night (6pm to 11:59pm)	254	45.9
Origin		
Other cities in Sergipe	258	46.7
Metropolitan Region of Aracaju*	256	46.2
Other states	39	6.9
No records	1	0.2
Suspicion of alcohol intake		
Yes	81	14.6
No	6	1.1
No records	467	84.3
Helmet		
Yes	64	11.6
No	107	19.3
No records	383	69.1
Time of hospitalization		
Up to 12 hours	421	76.0
12 to 48 hours	22	3.9
Above 48 hours	60	10.9
No records	51	9.2
Clinical evolution		
Discharge	461	83.2
Transference	15	2.7
Death	13	2.4
Others	34	6.1
No records	31	5.6
Total	554	100

* Includes the cities of Aracaju, Barra dos Coqueiros, São Cristóvão and Nossa Senhora do Socorro.

Nota: (N=554)

Table 3 – Association between age and suspicion of alcohol consumption among victims of motorcycle accidents cared for at the emergency hospital in Aracaju – Sept/Oct 2006.

Suspicion alcohol intake	N	Average	Standard Deviation	Age		Minimum	Maximum
				Lower Limit	Higher Limit		
Yes	79	27.85	8.072	26.04	29.66	14	50
No	6	31.00	7.668	22.95	39.05	18	39
No record	463	27.73	12.196	26.61	28.84	1	82
Total	548	27.78	11.644	26.80	28.76	1	82

* p - value: 0.0791/ Confidence interval of 95%
Note: (N=554)

Most of the accidents (46.2%) originated from greater Aracaju, which allow us to infer that hospital care provided to trauma victims is still centered in the capital, a fact that may be justified by a lack of specialized professionals and equipment in hospitals of other cities.

The characteristics of accidents in relation to the day of the week the event occurred indicate an increase in the number of victims from Friday and after, with a greater concentration on Saturdays, possibly related to alcohol consumption, more frequent in these periods. There is three times more chance of motorcyclists being involved in accidents from Thursday to Sunday, when there is increased consumption of alcohol, than from Monday to Wednesday, when consumption diminishes^(8,10-13); which is consonant with this study's findings.

In relation to the period when victims were admitted at the hospital, a large part (45.9%) of the victims was admitted at night (6pm to 11:59pm), also similar to findings of other studies addressing trauma victims⁽¹²⁻¹³⁾. The growing number of accidents in this period is a consequence of the greater consumption of alcohol, in addition to disrespect for traffic laws and lower light levels on public avenues⁽¹²⁾. Alcohol slows one's reflexes and affects vision in addition to causing a feeling of euphoria inducing the driver to an excessive speed, losing control of the motorcycle^(2,10,14).

The act of driving is highly complex and requires a high level of concentration from drivers, psychomotor performance concomitantly with the use of a series of neuropsychological mechanisms that become altered even with low levels of alcohol concentration in blood: much lower than the levels legally permitted to characterize a state of intoxication⁽¹⁴⁻¹⁶⁾.

In relation to the suspicion of alcohol consumption and non-adherence to helmet use, this study showed that most professionals did not record this information and among those in which information is recorded, 14.6 % and 19.3% were suspected of having consumed alcohol and did not use helmet, respectively.

Studies^(4-5,10,16) addressing victims of motorcycle accidents report that most victims did not use helmets for various reasons, such as inconvenience, discomfort and also for not expecting to be involved in an accident. It is worth noting that even though IPE reduces the risks in

the event an accident occurs, its use does not exclude the possibility of severe or fatal injuries.

In relation to the area of the body injured, the regions of the head, neck and face were the most affected in this study, followed by limbs and pelvis. The victims may present sequelae and temporary or permanent impairment, which harms the quality of life of patients and their families⁽⁸⁾. A study⁽⁵⁾ conducted with 430 trauma victims showed that the areas most protected from sequelae were the lower limbs, followed by face, upper limbs and head. Fractures in lower limbs were associated with a greater level of functional impairment⁽¹²⁾.

Most victims (76%) remained hospitalized up to 12 hours. A study conducted in Ribeirão Preto, SP, Brazil with 5,285 cases cared for in an emergency department reported that victims remained at the hospital for less than six hours⁽¹⁷⁾.

Most victims (83.2%) were discharged and 2.4% died. A similar result was found in a study⁽¹⁶⁾ conducted in the northeast of Brazil in which almost all (95.6%) victims survived.

There is evidence of the growing number of motorcycle accidents with victims cared for in emergency departments. In the face of such a scenario, there is an urgent need to implement public policies directed to the prevention of accidents and to promote health.

CONCLUSION

This study conducted with 554 victims of motorcycle accidents cared for in a trauma referral center allowed us to portray the profile of victims: mostly young men who were admitted into the hospital during the night shift and on weekends, originated from other areas than the metropolitan area, did not use a helmet, is suspected of having used alcohol in those cases in which information was recorded; no statistically significant association was found between the victim's age and suspicion of alcohol consumption. The most affects body areas were the region of head, followed by limbs and pelvis; patients were discharge up to 12 hours after admission.

Even though the study addressed a representative sample (n=554), there were limitations regarding some

results and the associations of variables given a lack of information provided in files and forms on the part of the professionals involved.

Recording is extremely relevant in professional practice and even though the dynamics of the emergency ser-

vice hinders such a practice, it is the role of managers to develop protocols together with the team to enable recording care delivery, which not only ensures the victims' right but also contributes data for research, essential to devising health actions.

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