ORIGINALES

Prevalence and factors associated with motorcycle accidents by area of occurrence

Prevalência e fatores associados aos acidentes por motocicleta segundo zona de ocorrência

Prevalencia y factores asociados a los accidentes de motocicleta por área de ocurrencia

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ABSTRACT:
Descriptive, analytical and documentary research that analyzed the prevalence and factors associated with motorcycle accidents according to the area of occurrence. The data came from prehospital care records. Descriptive and inferential statistics were performed, and the associated factors were analyzed using binary logistic regression, adopting a significance of 5% and 95% confidence. The sample totaled 1,039 victims. Most of the records occurred in the urban area, involving the male, where the victim was the driver of the vehicle, had not ingested alcohol and used the helmet. Most of the attendances were performed by the Emergency Mobile Attendance Service, at the end of the week and at night shift. The mean score of the Glasgow Coma Scale for the urban area was slightly higher than the rural one, with a significant difference. The mean time between the request for care and the arrival at the place of occurrence, as well as between the request for care and hospital admission were significant, being prevalent for rural areas. In the bivariate analysis of the association of traffic accidents by motorcycle with the occurrence zone, the variables that showed a significant association were: Glasgow coma scale, time between request and arrival of the service, time between request of service and admission hospital, sex, alcohol intake, helmet use, other party involved, period of occurrence, accident turn, type of care and discharge type of the victim.

Keywords: Traffic Accidents; Motorcycles; Urban area; Countryside; Prehospital Care.

RESUMO:
Pesquisa descritiva, analítica e documental que analisou a prevalência e fatores associados a acidentes por motocicleta de acordo com a zona de ocorrência. Os dados foram provenientes das fichas de atendimento pré-hospitalar. Foi realizada estatística descritiva e inferencial, sendo os fatores

associados analisados por meio da regressão logística binária adotando significância de 5% e confiança de 95%. A amostra totalizou 1.039 vítimas. A maioria dos registros ocorreu na zona urbana, envolvendo o sexo masculino, onde a vítima era o condutor do veículo, não tinha ingerido álcool e fazia uso do capacete. A maioria dos atendimentos foi realizada pelo Serviço de Atendimento Móvel de Urgência, no final de semana e no turno da noite. A média de pontuação da Escala de coma de Glasgow para a zona urbana foi discretamente maior que a rural, com diferença significativa. As médias do tempo entre a solicitação do atendimento e a chegada ao local de ocorrência, bem como entre a solicitação do atendimento e a admissão hospitalar apresentaram significância, sendo prevalentes para zona rural. Na análise bivariada da associação dos acidentes de trânsito por motocicleta com a zona de ocorrência, as variáveis que apresentaram associação significativa foram: Escala de coma de Glasgow, tempo entre a solicitação e a chegada do atendimento, tempo entre a solicitação do atendimento e a admissão hospitalar, sexo, ingestão de bebida alcoólica, uso de capacete, outra parte envolvida, período de ocorrência, turno do acidente, tipo de atendimento e tipo de alta da vítima.

Palavras-chave: Acidentes de Trânsito; Motocicletas; Área Urbana; Zona Rural; Atendimento Pré-hospitalar.

RESUMEN:
Investigación descriptiva, analítica y documental que analiza la prevalencia y los factores asociados a los accidentes de motocicleta según el área de ocurrencia. Los datos provienen de registros de atención prehospitalaria. Se realizaron estadísticas descriptivas e inferenciales, y los factores asociados se analizaron mediante regresión logística binaria, adoptando una significación del 5% y 95% de confianza. La muestra totalizó 1.039 víctimas. La mayoría de los registros ocurrieron en el área urbana, que involucraban al hombre, donde la víctima era el conductor del vehículo, no había ingerido alcohol y usado el casco. La mayoría de las asistencias fueron realizadas por el Servicio de Asistencia Móvil de Emergencia, al final de la semana y en el turno de noche. La puntuación media de la escala de coma de Glasgow para el área urbana fue ligeramente superior a la rural, con una diferencia significativa. El tiempo medio entre la solicitud de atención y la llegada al lugar del suceso, así como entre la solicitud de atención y el ingreso hospitalario fueron significativos, prevaleciendo en las zonas rurales. En el análisis bivariado de la asociación de accidentes de tráfico en motocicleta con la zona de ocurrencia, las variables que mostraron una asociación significativa fueron: la escala de coma de Glasgow, el tiempo entre la solicitud y la llegada del servicio, el tiempo entre la solicitud del servicio y la admisión hospital, sexo, consumo de alcohol, uso de casco, otra parte involucrada, período de ocurrencia, giro del accidente, tipo de atención y tipo de alta de la víctima.

Palabras clave: Accidentes de tráfico; Motocicletas; Zona urbana; Zona rural; Atención prehospitalaria.

INTRODUCTION

Land Transport Accident (LTA) is defined as any unintended occurrence, which involves one or more cars used at the time of the accident, which damages the victim and can lead to death[1]. Traffic accidents have a significant impact on the health and development of the population, representing more than 1.2 million lives claimed each year and causing non-fatal injuries to approximately 50 million people worldwide[2].

The World Health Organization (WHO) estimated, in 2013, that traffic accidents correspond to the ninth place among the main causes of death in all age groups in the world, being the main cause of death in the age group between 15 to 29 years old[2]. In Brazil, LTA represent one of the main causes of death, with approximately 43 thousand deaths in 2013 and approximately 170 thousand hospitalizations financed by the Unified Health System (UHS)[3]. Of the Brazilian regions, the Northeast had the highest mortality rate from traffic accidents in 2014[4], four of its states are among the ten with the highest rates[5].

The costs that Brazilian society has with traffic accidents are very high, mainly referring to medical-hospital care and loss of production of the victims, being estimated at around R$50 billion per year[4]. Another important point to be mentioned is the particularities of the LTAs, depending on the area of occurrence, since the Brazilian industrialization process caused the mobility of the majority of the population from the rural to urban areas, thus, about 85% of the population lives in urban centers[6].

Among traffic accidents, the categories involving motorcyclists, pedestrians and cyclists are the most vulnerable groups and represent almost half of the victims[1]. Of the vulnerable categories, motorcycles gain prominence due to the increase in their sales, probably because they are more economical and due to their ease of purchase. In addition to this type of vehicle, it aggravates the death situation, since its protection to users is minimal in cases of collision[4], the category that had a significant increase in the number of deaths over the years[1].

In 2011, there were approximately 15 thousand deaths from accidents involving motorcycles, a drastic increase when compared to 1996, with a total of approximately 2 thousand deaths, with young people being the most affected population. In addition, the number of hospitalizations resulting from motorcycle accidents is also very high, approximately 88 thousand in 2012, with prominence in the Southeast and Northeast regions. In middle and low income countries this proportion is higher[1] and tends to intensify due to the likely increase in motorization indicators, without proportional investments in public road safety[7].

Assistance to LTA victims in Brazil is performed by the Pre-Hospital Service (PHS), with the Mobile Emergency Service (SAMU 192) and its Emergency Medical Regulation Centers being one of the components of the Care Network to the Emergency Department, in addition to the hospital component. SAMU 192 aims to provide early care to the victim and adequate transportation to a health unit integrated with UHS, after the occurrence of a health problem[8-9]. In addition to SAMU 192 as PHS, there is also the Military Fire Brigade, which aims to preserve life and the environment through some actions such as search, rescue, fire prevention and extinguishing and PHS[10].

In view of the prevalence of LTA specifically involving motorcycles, this research is justified in the search for factors related to accidents according to the area of occurrence, especially in regions of the interior of the state, where studies on the subject are scarce in the literature. This research aimed to analyze the prevalence and factors associated with motorcycle accidents according to the area of occurrence.

MATERIAL AND METHOD

It is a descriptive, analytical, documentary research with a quantitative approach. The study site was SAMU 192, the 4th Group of the Pernambuco Military Fire Brigade (CBMPE) and the University Hospital (UH), all located in the city of Petrolina, in the interior of the state of Pernambuco. The municipality of Petrolina is located approximately 721 km from the capital of Pernambuco, Recife, in the Northeast of Brazil. It has an estimated population of 343,219 and a territorial area of 4,561,874 Km2[11], the VIII Health Region of the state is integrated according to the Regionalization Master Plan[12].

The HU is a medium-sized unit, a reference for the 53 municipalities of the Interstate Health Care Network in the Sertão do Médio São Francisco - Pernambuco-Bahia (Rede PEBA). Provides care to urgencies and emergencies, which include trauma-orthopedics, neurology, neurosurgery (high complexity), among other specialties, with multidisciplinary care[13]. It has 152 beds, of which 131 are intended for hospitalization of clinical / surgical patients and 21 ICU beds. Of the total number of beds, 29 are from the trauma-orthopedics specialty[14].

All records of victims of motorcycle traffic accidents, which took place from June 2015 to June 2016, which were attended by SAMU 192 and / or by the 4th Group of CBMPE in Petrolina, were included in the survey, having followed for the Petrolina UH, as well as those that were attended and released at the place of occurrence. The final sample consisted of 1,039 victims; however, there were losses of some variables due to not filling in the forms, thus presenting quantitative differences between them.

Data collection took place by completing a semi-structured instrument made by the researchers. The variables of interest were: age, sex, accident area, victim as a driver, drinking alcohol, wearing a helmet, time between request and arrival of the PHS, time between request and hospital admission, type of PHS, other party involved, period of occurrence, accident shift, Glasgow Coma Scale (GCS), days of hospitalization, anatomical system involved and type of discharge from the victim.

For the variable period of occurrence of the accident, Monday, Tuesday, Wednesday, Thursday and Friday were considered weekdays; and as a weekend, Saturday and Sunday. For the variable shift of the accident, the time from 6 am to 12 pm was considered as morning; afternoon from 12 to 18 hours; night from 6 pm to midnight; and dawn from 24 to six hours.

Descriptive statistics were used for the frequency distribution and measures of central tendency and dispersion, and the inferential statistics applied through the appropriate hypothesis tests for each type of variable. Pearson's Chi-square and / or Fisher's exact tests were performed for qualitative variables, the total marginal product of the columns and lines divided by the total of cases being used as the criterion of choice, where Fisher's exact was used when more than 20% of the results obtained were less than five, and the Chi-square when at least 80 % of results were greater than five.

For quantitative variables, the analysis was performed using the non-parametric Mann-Whitney test, after the assessment of the distribution normality test by Shapiro Wilk. Confidence intervals for mean and proportion were calculated assuming the Binomial distribution. For all tests, a 95% confidence level and a 5% significance level were established. Secondary data were organized in a bank in the Microsoft Excel 2013 program and were analyzed using the statistical program Stata version 14.0.

This research was approved by the Human Research Ethics Committee of the University of Pernambuco, with opinion nº 1680.141, and obeyed the precepts established in Resolution No. 466, of December 12, 2012, of the National Health Council. It was not necessary to use the Free and Informed Consent Term (FICT) because it is a study with secondary data, being presented the justification for not using the FICT and the Confidentiality Term of the data obtained.

The work in question had the consent of the institutions involved based on the Concession Terms of the data from SAMU 192 of Petrolina, of the 4th Group of

CBMPE and UH of Petrolina, and of the Letter of Consent from the Health Department of Petrolina, CBMPE and the UH.

RESULTS

The final sample consisted of 1,039 victims of motorcycle traffic accidents attended by CBMPE and SAMU in Petrolina-PE. The average age was 30 years (SD = 11.0), with a male gender (72.8%). Most of the occurrences had the urban area as prevalent (77.1%). Regarding the victim's characteristics, the prevalence was for those who were drivers of the vehicle (81.3%), had not drunk alcohol (87.8%) and used the helmet at the time of the accident (86.6%) (Table 1).

Table 1 - Sociodemographic, behavioral and spatial characteristics of victims of motorcycle traffic accidents treated at the pre-hospital level. Petrolina (PE), Brazil.

Variables	Average	Standard deviation	CI95%*	
Age	30.9	11.0	30.2	31.6
Variables	**n**	**%**	**CI95%****	
Sex				
Female	282	27.2	24.6	30.0
Male	755	72.8	70.0	75.4
Accident zone				
Rural	236	22.9	20.4	25.6
Urban	795	77.1	74.4	79.6
Victim as driver				
No	89	18.7	15.5	22.5
Yes	386	81.3	77.5	84.5
Drinking alcohol				
No	912	87.8	85.6	89.6
Yes	127	12.2	10.4	14.4
Helmet use				
No	68	13.4	10.7	16.7
Yes	439	86.6	83.3	89.3

*95% confidence interval for the mean.

**95% confidence interval for the proportion assuming the binomial distribution.

The average time between the PHS request and its arrival at the place of occurrence was 29.3 minutes (SD = 119.2), and between the PHS request and admission to the hospital was 57.7 minutes (SD = 134.5). Most consultations were performed by SAMU (72.3%), at the weekend (52.6%) and at night (35.5%). The other part involved in the motorcycle accident was prevalent for the car (49.4%) (Table 2).

Table 2 - Service and weather characteristics of victims of motorcycle traffic accidents attended at the pre-hospital level. Petrolina (PE), Brazil.

Variables	Average	Standard deviation	CI95%*	
Time between PHS request and arrival	29.3	119.2	21.8	36.8
Time between request and hospital admission	57.7	134.5	49.1	66.3

Variables	n	%	CI95%**	
PHS Type				
CBMPE	288	27.7	25.1	30.5
SAMU	751	72.3	69.5	74.9
Another party involved				
Motorcycle	145	20.1	17.3	23.2
Car	356	49.4	45.7	53.0
Pedestrian	4	0.6	0.2	1.5
Bicycle	14	1.9	1.2	3.3
Animal	199	27.6	24.5	31.0
Others	3	0.4	0.1	1.3
Period of occurrence				
Weekdays	493	47.5	44.4	50.5
Weekend	546	52.6	49.5	55.6
Accident shift				
Morning	273	26.7	24.1	29.5
Afternoon	301	29.5	26.7	32.3
Night	363	35.5	32.6	38.5
Dawn	85	8.3	6.8	10.2

*95% confidence interval for the mean.
**95% confidence interval for the proportion assuming the binomial distribution.

The average score of the victims, based on the GCS, was 14.7 (SD = 1.4), with the musculoskeletal system being the most affected (87.3%). The average length of stay of the victims was 2.7 days (SD = 9.0), and the type of discharge that was prevalent was due to improvement in the clinical condition (89.3%) (Table 3).

Table 3 - Clinical characteristics of victims of motorcycle traffic accidents attended at the pre-hospital level. Petrolina (PE), Brazil.

Variable	Average	SD	CI95%*	
GCS	14.7	1.4	14.6	14.9
Days of hospitalization	2.7	9.0	1.8	3.6

Variable	n	%	CI95%**	
Anatomical system involved				
Neurological	8	2.0	1.0	3.9
Musculo-skeletal	358	87.3	83.7	90.2
Gastrointestinal	2	0.5	0.1	1.9
More than one system	42	10.2	7.6	13.6
Victim discharge type				
Death	11	3.3	1.8	5.8
Improvement	296	89.3	85.5	92.2
Released on site	24	7.4	5.1	10.8

*95% confidence interval for the mean.
**95% confidence interval for the proportion assuming the binomial distribution.

The average GCS score, in the rural area (RZ), was 14.3, and in the urban area (UZ), 14.9 points. The averages of the time between the request of the PHS and the arrival at the place of occurrence, and, between the request of the PHS and the hospital admission were prevalent for RZ, being, respectively, 37.6 and 85.3 minutes. There

was no significant difference between the average age and the area where the accident occurred (Table 4).

Table 4 - Bivariate analysis of the average values of the association of motorcycle traffic accidents with the area of occurrence. Petrolina (PE), Brazil.

Variables	Accident zone						p-value*
	Rural			Urban			
	Average	CI95%		Average	CI95%		
Age	30.5	29.0	32.0	31.0	30.2	31.7	0.243
GCS	14.3	13.9	14.7	14.9	14.9	15.0	**0.010**
Time between PHS request and arrival	37.6	25.0	50.1	25.3	17.8	32.9	**< 0.001**
Time between request and hospital admission	85.3	70.4	100.3	51.4	42.6	60.1	**< 0.001**

*Mann-Whitney test.

In the bivariate analysis of the association of motorcycle traffic accidents with the area of occurrence, the variables that showed a significant association were: sex, alcohol consumption, helmet use, other part involved, period of occurrence, accident shift, type of accident, PHS and type of discharge from the victim. Of the accidents that occurred, both in RZ and UZ, most victims were male (RZ: 80.4%; UZ: 70.4%). In both areas, most victims reported not having drunk alcohol (RZ: 80.9%; UZ: 89.8%) and having used safety equipment (RZ: 55.1%; UZ: 94.1%). The other party involved in motorcycle accidents with the highest occurrence in the RZ was the animal (51.8%) and in the UZ the car (54.6%) (Table 5).

As for the period of occurrence, in the RZ accidents occurred more during the weekend (61.9%), and in the UZ during the days of the week (50.1%). In both zones, the night shift was the most frequent (RZ: 45.1%; UZ: 32.6%), and requests were made in greater numbers by SAMU (RZ: 84.3%; UZ: 68.8%). In addition, both at RZ and UZ the reason for most hospital discharge was the improvement (RZ: 87.8%; UZ: 89.9%). The variables victim as driver and anatomical system involved were not significant, since the p value was greater than 0.05. Thus, it cannot be said that the victim is the driver or not of the vehicle and that the anatomical system involved is related to the area of the accident (Table 5).

Table 5 - Bivariate analysis of the association of motorcycle traffic accidents with the area of occurrence. Petrolina (PE), Brazil.

Variables	Accident zone						p-value
	Rural		Urban		Total		
	n	%	n	%	n	%	
Sex							
Female	46	19.6	235	29.6	281	27.3	**0.002***
Male	189	80.4	559	70.4	748	72.7	
Victim as driver							
No	15	17.2	74	19.2	89	18.9	0.670*
Yes	72	82.8	311	80.8	383	81.1	

Drinking alcohol							
No	191	80.9	714	89.8	905	87.8	< 0.001*
Yes	45	19.1	81	10.2	126	12.2	
Use of a helment							
No	44	44.9	24	5.9	68	13.5	< 0.001*
Yes	54	55.1	382	94.1	436	86.5	
Another party involved							
Motorcycle	24	17.5	121	21.0	145	20.3	
Car	36	26.3	315	54.6	351	49.2	
Pedestrian	1	0.7	3	0.5	4	0.6	<
Bicycle	5	3.7	9	1.6	14	2.0	0.001**
Animal	71	51.8	126	21.8	197	27.6	
Others	0	0	3	0.5	3	0.4	
Period of occurrence							
Weekdays	90	38.1	398	50.1	488	47.3	0.001*
Weekend	146	61.9	397	49.9	543	52.7	
Accident shift							
Morning	38	16.2	233	29.9	271	26.7	
Afternoon	60	25.5	238	30.6	298	29.4	< 0.001*
Night	106	45.1	254	32.6	360	35.5	
Dawn	31	13.2	54	6.9	85	8.4	
Type of PHS							
CBMPE	37	15.7	248	31.2	285	27.6	< 0.001*
SAMU	199	84.3	547	68.8	746	72.4	
Anatomical system involved							
Neurological	3	3.5	5	1.6	8	2.0	
Musculoskeletal	73	83.9	281	88.4	54	87.4	0.293**
Gastrointestinal	1	1.2	1	0.3	2	0.5	
More than one system	10	11.5	31	9.8	41	10.1	
Victim discharge type							
Death	7	9.5	4	1.6	11	3.3	
Improvement	65	87.8	231	89.9	296	89.4	0.001*
Released on site	2	2.7	22	8.6	24	7.3	

*Pearson's chi-square test.
**Fisher's exact test

DISCUSSION

The motorcycle is the vehicle that is most involved in traffic accidents. Such fact may be related to the ease of acquisition of the motorcycle, added to the low cost of maintenance, practicality and agility of this means of transport[1,4]; however, these advantages become worrisome in view of the precarious quality of education focused on traffic evidenced in the country[1,15].

The results of this research showed a predominantly male sample and in the age group corresponding to young adults, the victim being the driver of the vehicle at the time of the accident. This profile converges with other research results[1,15-17], and that it may be related to the fact that younger men feel more secure and self-confident,

performing risky maneuvers and disrespecting current traffic rules[18]. In addition, this reality is reflected in the local socioeconomic situation, as it involves individuals of productive age for the labor market[15].

The urban area was prevalent in the number of recorded accidents, which may be related to the industrialization process existing in Brazil, which causes the mobility of part of the population from the rural to the urban area. The expressive increase in motorized individual transport in urban centers contributes to the existence of congestion, which also favors the occurrence of more prevalent accidents in the urban area[6].

The majority of the sample reported not having drunk alcohol before the incident, and it can be inferred that this result reflects one of the positive aspects resulting from the application of more severe penalties of Law No. 11,705, of June 19, 2008, popularly known as Dry Law, for the driver who drives under the influence of alcohol[19]. As found in another study[17], the results of this survey revealed that the majority of victims reported wearing a helmet at the time of the incident. However, there is a need to intensify awareness and inspection campaigns on this topic[15].

In this research, the average time between the PHS request and its arrival at the place of occurrence was 29.3 minutes; and between request and hospital admission was 57.7 minutes. However, the current literature is scarce about ideal parameters of response timeout, being identified a reference that determines a maximum time of 60 minutes after the event[20]. A study carried out in Campinas, São Paulo, is based on an American model that establishes a maximum time of ten minutes for urban areas and 30 for rural areas[21]. Most of the assistance was performed by SAMU, which may be related to the fact that it is an PHS that has advanced support[9].

Regarding the other party involved in the motorcycle accident, the car obtained the highest prevalence in this research, as observed in other studies[17,1], showing the danger involved in this type of vehicle in accidents. A survey reports the existence of the praise of the media focused on the speed of the cars, added to the self-confidence of the drivers in driving a safer vehicle when compared to the motorcycle[18].

Accidents that occurred on the weekend and at night were prevalent in this research, as well as in other studies observed[4,22]. These characteristics may be related to factors such as the occurrence of festive events, commonly associated with drinking alcohol; speeding and decreased inspection during this period. In addition, the night shift has less visibility due to lower lighting, and fatigue and nighttime sleepiness can be added due to the work overload experienced by the driver[1,4,23].

In this research, according to the average of the GCS results of the individuals involved, their trauma was classified as mild, since the average is close to the maximum total score. GCS is a neurological assessment used to identify the level of consciousness and trauma[24]. It is suggested that the average GCS score may be related to the average number of days of low hospital stay and the type of discharge from the victim for improvement. The musculoskeletal system was prevalent in the occurrence records. This data corroborates with results present in another research on the topic, in which the majority of LTA involves musculoskeletal complications resulting from the traumatic event[25].

In the bivariate analysis of the average values of the association of motorcycle traffic accidents with the area of occurrence, the variables that showed a significant difference were: the GCS; the time between the request and the arrival of the PHS; and the time between request and hospital admission.

Regarding the average GCS score, there was a slight difference between the zones, being greater for patients who had an accident in the UZ, reinforcing the importance of quality response time for the victim's prognosis[9,26]. It can be inferred that this higher score for appointments in the UZ may be related to the average time variable, either between the request and the arrival of the PHS, or between the request and the hospital admission, because, for both cases in this research, the average time to receive care was greater for patients located in the RZ. In addition, the SAMU and CBMPE bases in the analyzed municipality are located in the UZ, thus reaffirming that the waiting time for this area is shorter.

In the bivariate analysis of the association of motorcycle traffic accidents with the area of occurrence, the variables that showed statistical significance were: sex, alcohol consumption, helmet use, other part involved, period of occurrence, accident shift, type of accident, PHS and type of discharge from the victim.

The male victim prevailed both in accidents that occurred in the UZ and in the RZ, revealing that regardless of the area of occurrence, men are more affected. This data reaffirms the assumption that the feeling of self-confidence is present most of the time, making driving more risky for them[18].

In both areas, the majority of victims reported not drinking alcohol and using safety equipment in recorded events. However, the prevalence of those who consumed alcoholic beverages and did not use safety equipment was higher in the RZ, probably due to insufficient enforcement of traffic laws in these locations. In addition, in areas furthest from urban centers it is common to have a greater number of motorcycles added to the high number of drivers who do not have the National Driver's License[4,27].

Regarding the other party involved in motorcycle accidents, the car was prevalent in the UZ and the animal in the RZ. These results show peculiarities regarding the victim's exposure to the accident[27], where animals are frequently found in greater quantities in rural locations. Thus, it is evident the need to create strategies aimed at the particularities related to traffic in the most different scenarios[15], because the legislation that establishes the rules involving the presence of animals on the roads is unique for urban and rural areas[28].

The occurrence of accidents in the UZ was prevalent during the week, showing a significant difference. This association may be related to the high amount of individual transport circulating on the roads and the frequent commuting from work to drivers[1,6]. In the RZ, the association was significant for the most prevalent accidents during the weekend. This result reflects the influence of factors that favor the occurrence of accidents on weekends, such as greater alcohol consumption, greater number of festive events and drivers' speeding[1,23].

In this research, in both zones the majority of accidents occurred during the night shift with a significant difference for this variable. Studies bring some circumstantial explanations for its occurrence, such as insufficient street lighting, limited visibility,

accumulated physical tiredness during the day, use of drugs and alcohol, less traffic inspection and more infractions committed by the driver during this period[1,4,23].

Regarding the type of PHS, for both zones, there was a significant difference prevalent for the care provided by SAMU. It can be inferred that, due to the insufficient knowledge of the population in knowing how to differentiate the demands on attending to occurrences on public roads, it culminates in the uncertainty of which PHS would be more appropriate[26]. The type of discharge due to the victim's improvement was significant and prevalent in both zones. It is assumed that this result reflects the non-severity of most occurrences, regardless of the area where the accident occurred.

The limitations found for carrying out this research were related to the description of some variables of interest whose information was missing and / or incomplete in the care records. In addition, the sample was specific to the interior of Pernambuco, and it is not possible to extrapolate the conclusions to the context of other Brazilian regions or worldwide.

CONCLUSION

The research results showed a high prevalence in the occurrence of motorcycle accidents, with the urban area predominating.

The average GCS score for the urban area was slightly higher than the rural area, with a significant difference. The averages of the time between the request of the PHS and the arrival at the place of occurrence, as well as between the request of the PHS and the hospital admission were significant, being higher for rural areas.

In the bivariate analysis of the association of motorcycle traffic accidents with the area of occurrence, the variables that showed a significant association were: GCS, time between the request and the arrival of the PHS time between the request of the PHS and hospital admission, sex, drinking alcohol, wearing a helmet, other party involved, period of occurrence, accident shift, type of PHS and type of discharge from the victim. This study allowed for the knowledge of the peculiarities of motorcycle accidents between the areas of occurrence and their associated factors, enabling the construction of strategies to face this public health problem.

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