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PROFILE OF INDIVIDUALS POLITRAUMATIZED BY TRANSIT ACCIDENTS IN STATE REFERENCE HOSPITAL

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ABSTRACT

Automobile accidents are the third leading cause of death in the world, causing individual aggravations and economic impacts. The high demand for emergency services, rehabilitation, and permanent or transitory disability of the victims generate high costs in the public sectors. Considering the relevance of the theme, this study aimed at investigating the profile of the occurrence of multiple trauma by automobile accident in the Associação Beneficente Santa Casa de Campo Grande MS, Brazil, a reference hospital in traumatology in the region. This is a descriptive, cross-sectional, and quantitative study, through the collection of data through the application of an individual interview to the patients admitted to the orthopedic ward of the cited hospital, from April to June 2016. The results showed a predominance of males (78.7%), aged between 26-50 years (54%), who had completed secondary education (81.4%), motorcyclists (86.7%) and a large proportion with relapse in traffic accidents (40.7%), corroborating with other current studies. The predominance of occurrences during the weekends (17.7%) was observed, affecting lower limbs and pelvis (84.1%). With this data it is possible to carry out interventions directed at the target public, in order to raise awareness and develop preventive measures that reduce the number of accidents.

INTRODUCTION

According to the World Health Organization (WHO), automobile trauma is the eighth leading cause of death in people of all ages and the leading cause of death among children and adults, accounting for 1.35 million deaths per year (World Health Organization, 2018). Therefore, it is considered one of the main public health problems, which, in addition to compromising the individuals involved, affects their performance in the social and economic sphere (Kfuri, 2011). Mortality rates are three times higher in low-income countries (World Health Organization, 2018) that have major

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infrastructure problems and an increase in their fleet of vehicles, mainly motorcycles, due to the lower cost and practicality of use as a means of work (Vieira *et al.,* 2011). Factors determining the origin and severity of motor vehicle accidents have been demonstrated in the medical literature, demonstrating that they do not occur at random, but are due to human failures, especially the inexperience and impulsive behavior of young people associated with alcohol abuse or drugs, in addition to seeking venture sensations (Bastos *et al.,* 2005). In Brazil, the victims of traffic accidents remain hospitalized for an average of 20 days in the orthopedics and traumatology sectors, occupying around 60% of hospital beds, generating an average cost of twenty thousand dollars per severe traumatized person, which shows the economic impact caused by the demand for emergency services and

rehabilitation (Pandovani *et al.,* 2014). Given this, it is fundamental to implement integrated and intersectoral public policies that seek to assess the profile of victims and accidents, as well as support and guide legislative and educational measures to prevent and control automobile traumas. Thus, the objective of the present study was to outline the socioeconomic profile of the victims, identifying the presence of the main significant variables, as well as the degree of influence in the accidents, through the population of polytrauma patients hospitalized in a high demand hospital.

MATERIALS AND METHODS

This is a descriptive cross-sectional quantitative study, developed in the orthopedic ward of the Associação Beneficente Santa Casa de Campo Grande. Data collection occurred from April to June 2016, with a sample of 113 patients, which was calculated from an estimate of 50 visits per month, with a confidence interval of 95% and a margin of error of 5%. Among the inclusion criteria, the patients selected were those who had polytrauma admitted to the Associação Beneficente Santa Casa de Campo Grande, victims of automobile accidents, as car drivers or pedestrians and who gave their informed consent to participate in the study or according to applicable legislation. In contrast, patients younger than 18 years, patients who were unconscious or unable to express themselves and those who did not agree to participate were excluded from the research. The analysis was based on a structured interview and completion of a questionnaire elaborated after a bibliographic review and application of a pilot project, with the following variables: identification data (name, age and sex), socioeconomic data (accident vehicle, accident period, pre-accident period, prevailing days and times, if you have a national driver's license, a previous traffic accident, major anatomical regions affected and an ingestion of alcohol), and life habits (use of illicit drugs and/or continuous medication, stress level, hours of sleep, presence of systemic, metabolic and/or neurological diseases). The data collected were tabulated and the analysis of the association between the variables evaluated in this study was performed using the chi-square test, and the same test was used, with Bonferroni correction, in the comparison between two proportions, when the association was significant in contingency tables greater than 2x2. Statistical analysis was performed using the statistical program SPSS, version 23.0, considering a level of significance of 5%. The project of this study was evaluated and subject to approval by the Research Ethics Committee involving Human Beings of Universidade Anhanguera Uniderp, and was approved under the number 50874215.9.0000.5161.

RESULTS

The final sample of the study was 113 interviewees, 103 being the number of drivers, 9 pedestrians and 1 cyclist. Table 1 shows the socioeconomic profile of the interviewees according to age group and schooling. The majority of young individuals (34.7 ± 13.50 years), aged between 18 and 74 years, 89 males and 24 females, had completed high school (81.4%), were single (53.1%) and with per capita income up to R$ 1200.00 (82.3%). There was a predominance of motorcyclists (86.7%), and of these, only 18.6% worked as courier motorcycle, freight motorcycle, taxi motorcycle, taxi driver or driver. The data

regarding the distribution in relation to the period and the days of the week are present in Charts 1 and 2, respectively.

Table 1. Distribution of traffic accident victims according to age, schooling, marital status, per capita income and whether or not they work as a courier motorcycle, freight motorcycle, taxi motorcycle, taxi driver or driver

Variable	n (%)
Age group	
Up to 25 years	37 (32,7)
Between 26 and 50 years	61 (54,0)
More than 50 years	15 (13,3)
Schooling	
Illiterate	4 (3,5)
Incomplete or complete elementary education	38 (33,6)
Incomplete or complete high school	50 (44,3)
Incomplete or complete higher education	20 (17,7)
No information	1 (0,9)

When considering only the part of the sample composed of drivers (103), 35% did not have a National Driver's License, which is a large number of drivers who are not qualified to drive vehicles. There was a significant association (p = 0.001) between income variables and the presence of a National Driver's License. The proportion of respondents who used a helmet and seat belt (85.0%) was high, contributing to the fact that 84.1% of the regions of the body affected were the lower limbs and pelvis, followed by the upper limbs, with 28.3%.
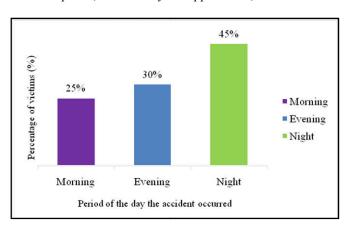

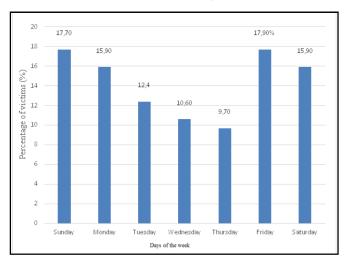**Figure 1. Distribution of victims of traffic accidents according to the time of day**

Figure 2. Distribution of victims of traffic accidents according to the day of the week in which the accident occurred

Correlating the vehicle of the accident with the sex, a greater percentage of male victims was observed in motorcycle use, as shown in Graph 3. Regarding the relationship between the vehicle of the accident and the anatomical region affected (p = 0.002), the lower limbs were predominantly involved (75%) in motorcyclists. In addition, among motorcycle accidents, the percentage of victims wearing helmets (89%) was higher than those who did not use it (3.8%).
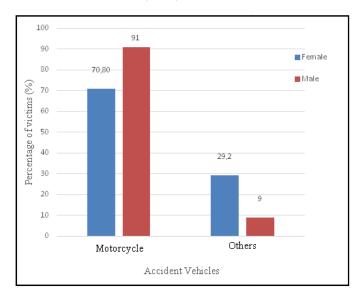

Figure 3. Distribution of victims of traffic accidents according to sex and accident vehicle

Regarding the interviewees' living habits, the low and medium stress level (85.4%), and the absence of illicit drug use (96.5%) and continuous medication (84.1%) prevailed. In addition, most of the interviewees did not present systemic, metabolic or neurological diseases (82.3%). Of all the victims, only 11.5% of them reported being drunk at the time of the accident, and a significant part of the sample reported having traffic accidents previously (40.7%). There was a significant association between the schooling of the victims and the possession of the National Driver's License (p=0.007). The percentage of victims who had completed schooling and had a National Driver's License (84.2%) was higher than the victims who had only completed elementary education and had the license (45,9%) (p<0,05).

DISCUSSION

In the present study, there was a predominance of males, confirming the results found in studies conducted in different years, with percentage increase over time (Barros *et al.,* 2003; Ascari *et al.,* 2013). This high incidence may be related to a culture in which men assume greater risk in the direction, their more aggressive and self-confident behavior, as well as their greater exposure in the traffic. The highest percentage of victims was young adults, with a mean age of 34.7 years, similar to the work done in the state of Paraíba in 2012 (Soares *et al.,* 2012). The involvement of this age group has a great economic repercussion in the country, since it represents the economically active population, generating higher costs to the economy, since, besides the expenses related to hospitalization and hospital costs, it generates a deficiency in the productive force. According to a report by the insurance company Líder, responsible for Insurance for Personal Injury Caused by Land Motor Vehicles (DPVAT, acronym in Portuguese), in 2017,

7,454 indemnities were made in the state of Mato Grosso do Sul, of which 1,955 were directed to the population between 25 and 34 years. The vast majority of accident victims were using motorcycles; however, the numbers presented in this article were quite high when compared to other literatures (Ascari *et al.,* 2013; Caixeta *et al.,* 2010). This prevalence can be explained by analyzing the expressive fleet of motorcycles in the city of Campo Grande/MS, which corresponds to the city that has the tenth largest motorcycle fleet in Brazil, according to DENATRAN data from 2018 (Departamento Nacional de Trânsito, 2018). The lower purchase and maintenance cost compared to that of an automobile and the ease of travel provided are some of the factors that justify the large number of motorcycles. There was a significant correlation between sex and vehicle of the accident, where the percentage of male motorcyclists is higher than that of females. This predominance is frequent in motorcycle accident surveys, as in a study carried out in a public hospital in Rio de Janeiro, due to the masculinization of the vehicle itself and a tendency for men to drive at a higher speed(Soares *et al.,* 2015).

The characteristics of the accidents regarding the period of the day in which they occurred indicate a greater number of victims at night, a prevalence already described in previous studies (Bastos *et al.,* 2005). Several factors may be related to the large number of accidents during this period, including fatigue at the end of a work period, increased vehicle flow, less visibility due to low lighting, speeding, traffic lights, and the use of alcohol and drugs. There was a decrease in the incidence of accidents from Sunday to Thursday, similar to several studies (Bastos *et al.,* 2005; Mascarenhas *et al.,* 2016) that showed a rise in accidents from Friday to Sunday. Possibly relating the predominance of the weekend to the ingestion of alcoholic beverages, illicit drugs, and speeding, thus pointing to the need for more vigorous surveillance strategies. In the year 2017 in Campo Grande/MS, the equipment that controls the speed of the drivers remained inoperative throughout the year. Data provided by the State Department of Transit of Mato Grosso do Sul on this period show a reduction of 21.28% in the number of traffic accidents in the capital in the year 2017 in relation to the previous year. However, there was an increase in the number of fatalities, which shows the greater violence of the accidents. This comparison shows the possible relationship between the adoption of risk behaviors and the sensation of impunity as determinants of the severity of the accidents.

The results indicated that a significant percentage of drivers did not have a National Driver's License; a similar study in Fortaleza pointed out similar results (Andrade *et al.,* 2009).These data call attention to failures in the control of traffic regulations, which contribute to a sense of impunity and to the high number of unqualified drivers, even when they are subject to a fine for such infraction. In addition, among the victims who did not have a National Driver's License, the percentage of those who earned less than R$ 700.00 was higher than among the victims who had the document, noting that, in addition to recklessness, the difficulty of acquiring the first driver's license due to its high cost is also a factor that supports this statistic. As to the most affected anatomical regions, lesions in the lower limbs and pelvis are first, followed by upper limbs. This result corroborates some literatures. In one of them, a higher prevalence of limb involvement (lower and higher) was reported (Soares *et al.,*

2010) and, in another study, head, face and neck involvement was prevalent (Vieira *et al.,* 2011). Such a study stated that there was no record of helmet use, suggesting that they were unprotected, leading to cranioencephalic trauma. The relationship between the vehicle of the accident and the most affected anatomical regions was verified by the study. In motorcycle accidents, lesions in the lower limbs were more frequent. Motorcycle accidents hit the extremities more frequently due to limb exposure and the fact that the safety equipment used only provides protection for the head region (Neta *et al.,* 2012). A good part (40.7%) of the interviewees reported having been involved in a traffic accident previously. This means that, although these are smaller numbers when compared to the study carried out in the city of São Paulo between January 2001 and July 2002(Debiux *et al.,* 2010), they still represent an alarming factor considering the smallest population of drivers in the city of Campo Grande/MS, along with the fact that the comparative study was performed only with motorcyclists. Fewer people reported being drunk at the time of the accident, representing a similar incidence to the study carried out in Pernambuco17 and a smaller number in relation to another study carried out in João Pessoa in 2012 (Soares *et al.,* 2012). Data from the Surveillance System for Risk Factors for Chronic Diseases by Telephone Inquiry (Vigitel), between 2007 and 2013, demonstrated a reduction in the habit of associating alcoholic beverage intake with the act of driving in Brazilian capitals after legislative limits to restrain such an act (Malta *et al.*, 2014). Regarding this variable, it is also necessary to consider the subjection to the victims' report, unlike the study carried out in Sorocaba, which considered the medical evaluation of alcohol and Glasgow indications, even though it affirmed the subjectivity of this evaluation (Rodrigues *et al.,* 2010). Most motorcyclists, victims of traffic accidents, used a helmet, in agreement with the study carried out in Pernambuco (Souto *et al.,* 2016). In another study carried out in Goiânia the results were divergent (Caixeta *et al.,* 2010) in that the majority did not wear a helmet. The data of the present study can be confirmed by analyzing the regions of injury, where the minority suffered head and neck wounds, indicating that there was protection. The prevalence of helmet use among motorcyclists may be a result of traffic police surveillance, as well as an increase in the population's awareness of the importance of helmet for the prevention of traumatic brain injury.

Conclusion

The results of this study allow us to conclude that the majority of people involved in traffic accidents are young male adults who use the motorcycle as a means of transportation and that a significant portion of the victims have a history of previous accidents. Accidents are more prevalent on weekends and at night, and, although these are not the majority, the large number of motorcyclists who do not have a driver's license is alarming. This is an alarming fact for the need for a more rigorous inspection. A prevalence of lesions in lower limbs and pelvis in motorcyclists was noted. Most of the victims used PPE and denied alcohol consumption on the day of the accident, evidencing the effectiveness of public policies and enforcement of laws related to accident prevention in the area investigated, such as the *Lei Seca* (Alcoholic Beverage Prohibition law), which had a great impact on the habits of vehicle drivers.

It was evident in this study the importance of implementing measures to reduce the number of accidents, which includes stricter inspection, improvement of lighting and signaling of public roads, educational campaigns regarding the risks of association between alcohol consumption and management, besides better information on the benefits of using PPE for personal protection and injury reduction in case of an accident. Therefore, it is important to note the relevance of this work as a support tool for the development of public policies and actions by the transit authorities (DETRAN – State Department of Transit of Mato Grosso do Sul and AGETRAN – Municipal Transport and Transit Agency) of the city of Campo Grande/MS.

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