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Severity and traumatic injuries in traffic accident victims in a public hospital

Gravidade e lesões traumáticas em vítimas de acidente de trânsito internadas em um hospital público

La gravedad y las lesiones traumáticas en las víctimas de accidente de tráfico de pacientes internados en un hospital público

ABSTRACT

Objective: To identify the main injuries and their severity in the categories of traffic accidents victims. **Method:** This is a quantitative, cross-sectional study, with 276 hospitalized victims, based on data from medical records and interviews, with a logistical association for analysis. **Results:** There was a higher frequency of males (78.9%), aged 21 to 39 years (50.3%) and motorcyclists (74.6%). The most common injury: closed fracture (44.5%) in the lower limbs (41.9%). The occurrence of brain injury, chest injury and age increase the chance of serious trauma, while married marital status decreases the chance, regardless of sex. **Conclusion:** These data are fundamental for the nursing process in trauma, since lower limb injuries with fractures are the most common in the category of motorcyclists and that, together with brain and thoracic injuries, increases mortality in these occurrences.
Descriptors: Accidents; Traffic; Wounds and Injuries; External Causes; Analytical Epidemiology.

RESUMO

Objetivo: Identificar as principais lesões das categorias de vítimas em acidentes de trânsito e sua gravidade. **Método:** Estudo quantitativo, transversal, com 276 vítimas internadas e, a partir de dados de prontuários e entrevistas, foi realizada associação logística para análises. **Resultados**: Houve maior frequência do sexo masculino (78,9%), na faixa etária de 21 a 39 anos (50,3%) e motociclistas (74,6%). A lesão mais comum: fratura fechada (44,5%) em membros inferiores (41,9%). A ocorrência de lesão cerebral, lesão torácica e idade aumentam a chance de trauma grave, enquanto o estado civil casado diminui a chance, independente do sexo. **Conclusão:** Assim, vale destacar que os dados apresentados são fundamentais, para o processo de enfermagem no trauma, visto que as lesões de membros inferiores com fraturas são destaques na categoria de motociclistas e que juntamente com as lesões cerebrais e torácicas incrementam a mortalidade nessas ocorrências.
Descritores: Acidentes de Trânsito; Ferimentos e Lesões; Causas Externas; Epidemiologia Analítica.

RESUMEN

Objetivo: Identificar las principales lesiones de las categorías de víctimas en accidentes de tráfico y su gravedad. **Método:** Estudio cuantitativo, transversal, con 276 víctimas hospitalizadas, basado en datos de historias clínicas y entrevistas, con una asociación logística para análisis. **Resultados:** Hubo una mayor frecuencia de hombres (78,9%), de 21 a 39 años (50,3%) y motociclistas (74,6%). La lesión más común: fractura cerrada (44,5%) en miembros inferiores (41,9%). La aparición de lesiones cerebrales, lesiones en el pecho y la edad aumentan la posibilidad de un traumatismo grave, mientras que el estado civil casado disminuye la posibilidad, independientemente del sexo. **Conclusión:** Por lo tanto, cabe destacar que los datos presentados son fundamentales para el proceso de enfermería en traumatismo, ya que las lesiones en las extremidades inferiores con fracturas se destacan en la categoría de motociclistas y que junto con las lesiones cerebrales y torácicas aumentan la mortalidad en estos sucesos.
Descriptores: Accidentes de Tráfico; Heridas y Traumatismos; Causas Externas; Epidemiología Analítica.

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INTRODUCTION

Traffic Accidents (TAs) have been ranked as one of the main causes of death, occupying the 9th position in the world. Among the fatal victims, 50% are pedestrians, motorcyclists and cyclists; of the total victims, 75% are male, being the main cause of death in the age group between 15 and 29 years old[1-2]. In 2018, Brazil had a mortality rate of 16.1/100,000 inhabitants. In the national ranking, the North region occupied the fourth position (17.2/100,000 inhabitants)[3]. In 2018 in the state of Acre, mortality presented a rate of 1.19; and Rio Branco, the state capital, had a rate of 1.15 (both per 10,000 inhabitants). Regarding morbidity, rates were 11.8 and 17.2 per 10,000 inhabitants in Acre and Rio Branco, respectively[3-4]. With a reduced mortality rate, the state and municipality continue to stand out in the number of admissions, based on qualified pre-hospital and hospital care, which lead to increased survival; however, due to the severity of the trauma, sequelae were present in the traffic accident victims.

Thus, TAs are responsible for a large number of non-fatal injuries, according to the World Health Organization (WHO). For every death in accidents, there are at least twenty other victims who suffer from this type of injury. In 2018, Brazil had 209,571 hospitalization cases and a large number of disability insurance cases paid by the Personal Injury Caused by Land Motor Vehicles (*Danos Pessoais Causados por Veículos Automotores de Via Terrestre*, DPVAT) insurance. The North region was responsible for 11% of the hospitalizations in this period, with 23,237 patients, of which 1,111 cases were in the state of Acre[1,4].

The most frequent injuries in traffic accidents are the following: fractures, bruises, dislocations, abrasions, and brain and spinal injuries. They affect numerous regions of the body, depending on the trauma mechanism, such as extremities, hips, head, face, chest and abdomen. Among the injuries resulting from this traumatic event, the ones that most affect motorcyclists are the musculoskeletal ones, mainly located in the lower limbs/hip, upper limbs, external surface and head. In pedestrians, more bruises, fractures and brain injuries occur, with the head, neck, face, extremities and chest being the most affected regions, making these the most frequent fatal victims. As well as pedestrians, cyclists mainly suffer bruises, fractures and brain injuries, and the regions most affected are the extremities, head and trunk. The closed vehicle passengers have, in particular, bruises, fractures and lacerations, and the parts of the body most affected are the face, chest, abdomen and extremities[5-7].

In this context, the care provided to the traumatized by the Nursing team requires a new form of action that breaks with the biomedical model, through Law 7,498 of 1986, in which the implementation of Nursing care systematization was established, pointing out the exclusive activities of the nurses, such as performing highly complex procedures and making Nursing diagnoses that, based on evidence, contribute to the choice of the best intervention and the best outcomes[8-10].

Knowledge of the type of injury and its severity level is decisive for guiding the conduct and the level of hospital complexity required in assisting the trauma victim. Thus, this study aims to identify the main injuries that affect the categories of pedestrian, motorcyclist, cyclist and car user in traffic accidents, as well as their severity.

METHODS

This is a quantitative study with a cross-sectional design, developed at the Urgency and Emergency Hospital, which is the only public emergency gateway in the municipality and a reference for neighboring municipalities such as, for example, the cities of the state of Amazonas, Rondônia, and neighboring countries like Peru and Bolivia. The sample was non-probabilistic by convenience, and consisted in 276 traffic accident victims, hospitalized from November 2016 to April 2017 in the municipality of Rio Branco, capital of the state of Acre.

Individuals who had suffered trauma due to traffic accidents were included in the research, and they should have an open Hospitalization Authorization (*Autorização de Internação Hospitalar*, AIH) guide. Cases with 24 hours of hospitalization were also included, which already had a daily medical prescription and awaited expert evaluation. The reasons for excluding cases were evasion, death and hospital transfer.

For data collection, a brief questionnaire and form were used, pre-tested, adapted and categorized to search for information inherent to victims and to the hospital records[11]. In a first approach, the questionnaire was applied to the injured victim and aimed to identify and qualify the victims involved in traffic accidents. This compilation of questions was divided into three

categories: 1. Identification, 2. Sociodemographic data, and 3. Data related to the traffic accident.

As for the data collected, from the medical records and service reports, a summary form was used, divided into: 1-General Data, 2-Data of trauma and injury, 3-Surgery and 4-Injuries and Codes, which guided the measurement of the injuries presented by the victims. For the categorization of the injuries, chapter XIX of the lesions in the International Statistical Classification of Diseases and Health-Related Problems (ICD-10) was used, in particular, those from S00 to T98, excluding categories that did not include the classification for victims of traffic accidents.

After categorization, the severity of the injuries was analyzed using the Abbreviated Injury Scale AIS). This instrument classifies injuries resulting from trauma by anatomical region, assigning a severity score ranging from 1 to 6, with AIS 1 being mild, AIS 2 being moderate, AIS 3 being serious, AIS 4 being severe, AIS 5 being critical, and AIS 6 being maximum. After the classification, all the data analyzed were used to calculate the severity of the trauma by the New Injury Severity Score (NISS). The instrument considers the calculation of the three most serious injuries, regardless of the body region, classifying the trauma as severe, moderate and mild.

All data collected were coded and organized using Microsoft Excel (version 2013). In the descriptive analysis of the data, distributions of frequencies, means and standard deviations in the continuous variables were estimated. For the categorical variables, the proportions were estimated. The differences between the groups were considered using the Pearson's chi-square test and the Student t-test. A significance level of 5% was used in all the analyses. The analysis of the association was performed by means of multiple logistic regression, using the STATA 13.0 software with the adoption of a significance level of $p<0.05$ and 95% CI.

The study received a favorable opinion from the ethics and research committee (*Comitê de Ética e Pesquisa*, CEP) of the Federal University of Acre (opinion No. 1.820.536), obeying the criteria of Resolution 466/2012 of the National Health Council (*Conselho Nacional de Saúde*, CNS), preserving the anonymity of the participants.

RESULTS AND DISCUSSION

The result of the research was 276 victims, with predominance of the male gender (78.9%). Of the total victims, 17 were pedestrians, 25 cyclists, 23 closed vehicle passengers and, in greater number, 211 cases involving motorcyclists. With regard to age, most of the victims were young, 25.3% between 21 and 29 years old; the characteristics of the victims can be seen in Table 1.

As for the accidents, most occurred on weekdays (61.9%), during the afternoon (42%). The most common types of accidents were collisions/ crashes (61.2%). More data are presented in Table 2.

In the case of injuries, 459 were found, with a predominance of closed fractures (53.3%). Excoriations appeared in 11.5% of the cases. Traumatic Brain Injury (TBI) represented 7.8%; the categories that most presented this type of injury were motorcyclists (63.8%) and cyclists (19.4 %%), as can be seen in Table 3.

Table 1 - Characteristics of traffic accident victims hospitalized in a public hospital of the municipality of Rio Branco, AC, from November 2016 to April 2017.

Variable	Motorcyclist		Closed vehicle passenger		Pedestrian		Cyclist		Total	
	N	%	N	%	N	%	N	%	N	%
Gender										
Male	173	79.3	16	7.3	12	5.5	17	7.7	218	78.9
Female	38	65.5	7	12	5	8.6	8	13.7	58	21.1

(Continues)

Table 1 - Characteristics of traffic accident victims hospitalized in a public hospital of the municipality of Rio Branco, AC, from November 2016 to April 2017.

Variable	Motorcyclist		Closed vehicle passenger		Pedestrian		Cyclist		Total	
	N	%	N	%	N	%	N	%	N	%
Age group										
0-10	-	-	-	-	4	66.6	2	33.3	6	2.1
11-20	34	79	4	9.3	2	4.6	3	6.9	43	15.5
21-29	59	84.2	6	8.5	-	-	5	7.1	70	25.3
30-39	56	81.1	3	4.3	5	7.2	5	7.2	69	25
40-49	41	80.3	3	5.8	-	-	7	13.7	51	18.4
50-59	12	60	5	25	1	5	2	10	20	7.2
60-69	9	64.2	2	14.2	2	14.2	1	7.1	14	5
70-79	-	-	-	-	2	100	-	-	2	0.7
More than 80	-	-	-	-	1	100	-	-	1	0.3
Marital status										
Single	123	85.4	7	4.8	5	3.4	9	6.2	144	52.1
Married/Living together	68	71.5	11	11.5	4	4.2	12	12.6	95	34.4
Separated/Widowed	19	67.8	5	17.8	3	10.7	1	3.5	28	10.1
Others (underage individual)	1	11.1	-	-	5	55.5	3	33.3	9	3.2
TOTAL									**276**	**100**

Source: Field research.

Table 2 - Characteristics of the traffic accidents in victims hospitalized in a public hospital of the municipality of Rio Branco, AC, from November 2016 to April 2017.

Variable	Motorcyclist		Closed vehicle passenger		Pedestrian		Cyclist		Total	
	N	%	N	%	N	%	N	%	N	%
Weekday										
Weekend	75	74.2	11	10.8	8	7.9	7	6.9	101	36.5
During the week	134	78.3	11	6.4	9	5.2	17	9.9	171	61.9
Does not know/Does not remember	2	50	1	25	-	-	1	25	4	1.4
Term										
Morning	60	81	5	6.7	4	5.4	5	6.7	74	26.8
Evening	87	75	11	9.4	8	6.8	10	8.6	116	42
Night	46	75.4	5	8.1	5	8.1	5	8.1	61	22.1
Late night	15	88.2	2	11.7	-	-	-	-	17	6.1
Does not know/Does not remember	3	100	-	-	-	-	-	-	3	1
Type of accident										
Collision/Crash/Collision with animal	140	82.3	11	6.4	-	-	18	10.5	169	61.2
Tipping/Overturning	24	72.7	6	18.1	-	-	2	6	32	11.5
Run over	-	-	-	-	16	100		-	16	5.7
Collision with a fixed object	17	85	2	10	-	-	1	5	20	7.2
Fall	20	83.3	1	4.1	-	-	3	12.5	24	8.6
Run off	5	71.4	2	28.6	-	-	-	-	7	2.5
Does not know/Does not remember	4	66.6	1	16.6	1	16.6	-	-	6	2.1
TOTAL									**276**	**100**

Source: Field research.

As for the anatomical segment, the most affected was the lower limbs (41.9%). The head and face region (13.4%) was more affected in motorcyclists and cyclists, with 70.1% and 15%, respectively, as shown in Table 3.

The severity of the injuries was verified by the AIS score and divided into three groups: severe, moderate and mild. There was a predominance of moderate (n=271), followed by severe (n=101) and mild (n=87) injuries. The most severe injuries with AIS > 3 were open fractures (n=33), followed by closed fractures (n=17) and TBIs (n=17). The pedestrian category presented 10% of victims with AIS > 3 injuries and 90% AIS < 3, motorcyclists had 20.1% lesions with AIS > 3 and 79.8% with AIS < 3, cyclists had 24.3% AIS > 3 and 75.6% AIS < 3;

finally, closed vehicles passengers had 36.5% of cases with AIS > 3 and 63.4% of AIS < 3.

Table 3 - Characterization of the injuries in traffic accident victims hospitalized in a public hospital of the municipality of Rio Branco, AC, from November 2016 to April 2017.

Variable	Motorcyclist		Closed vehicle passenger		Pedestrian		Cyclist		Total	
	N	%	N	%	N	%	N	%	N	%
Type of injury										
Amputation	4	100	-	-	-	-	-	-	4	0.8
Disjunction	1	100	-	-	-	-	-	-	1	0.2
Debridement	1	100	-	-	-	-	-	-	1	0.2
Crushing	1	100	-	-	-	-	-	-	1	0.2
Contusion	5	25	9	45	3	15	3	15	20	4.3
Excoriation	38	71.6	3	5.6	6	11.3	6	11.3	53	11.5
Open fracture	51	80.9	5	7.9	2	3.1	5	7.9	63	13.7
Closed fracture	184	75.1	28	11.4	15	6.1	18	7.3	245	53.3
Injury of soft tissues	-	-	3	50	3	50	-	-	6	1.3
Luxation	21	72.4	2	6.8	3	10.3	3	10.3	29	6.3
TBI	23	63.8	5	13.8	1	2.7	7	19.4	36	7.8
TOTAL	**329**	**71.6**	**55**	**11.9**	**33**	**7.1**	**42**	**9.1**	**459**	**100**
Anatomical segment										
Abdomen	5	50	3	30	1	10	1	10	10	2.3
Head and face	40	70.1	7	13.2	2	3.7	8	15	57	13.4
Upper limbs	66	94.2	-	-	2	2.8	2	2.8	70	16.5
Lower limbs	145	81.4	9	0.5	10	5.6	14	7.8	178	41.9
Cervical region	1	33	1	33	1	33	-	-	3	0.7
Lumbar region	1	33	-	-	-	-	2	66	3	0.7
Pelvic region	5	71	1	14.2	-	-	1	14.2	7	1.6
Thorax	15	65.2	3	13	2	8.6	3	13	23	5.4
More than one segment	69	94.5	8	10.9	4	5.4	3	4.1	73	17.2
TOTAL	**347**	**81.8**	**26**	**6.1**	**20**	**4.7**	**31**	**7.3**	**424**	**100**

Source: Field research.

The severity of the trauma was assessed using the NISS; the victims were classified as having severe, moderate and mild trauma. From the calculation of the NISS, the presence of 10 severe trauma patients was verified, 36 with moderate trauma and 221 with mild trauma. As to the association of the severity of the trauma with the characteristics of the injuries and the victim, according to Table 4, it was observed that age and the occurrence of brain and chest injuries increase the chance of severe trauma, while married marital status decreases the chance, regardless of gender. It is worth noting that brain injury increases 5.37 times the chance of severe trauma and that thoracic injuries do so 3.19 times.

Table 4 - Association between trauma severity and characteristics of the injuries and victims among patients hospitalized due to traffic accidents in the municipality of Rio Branco, AC, from November 2016 to April 2017.

Characteristics	Categories	Adjusted OR	95% CI	*p*
Brain injury	No	1.00		
	Yes	5.37	2.37 - 12.17	0.000
Thoracic injury	No	1.00		
	Yes	3.19	1.15 - 8.83	0.025
Marital Status	Single	1.00		
	Married	0.48	0.24-0.99	0.049
Age (years old)		1.03	1.00-1.06	0.033
Gender	Female	1.00		
	Male	0.89	0.38-2.08	0.794

Source: Field research.

Young men are the main victims when dealing with traffic accidents, a fact that appears in agreement with other studies and can be associated with greater exposure pertaining to the sociocultural behavior in this category[7,12].

Motorcyclists are most involved in accidents, followed by pedestrians, closed vehicle passengers and cyclists[3-4]. The growth in the number of accidents involving motorcyclists can be related to the increase in the motorcycle fleet in the country. Married marital status was a protective factor, as it is assumed that many married couples in the study are individuals who have a family and are in a more experienced age group and with less impetuosity in traffic[13].

Regarding the period of the week, the highest frequency of accidents was found from Monday to Friday, considering the sum of days in greater number, when compared to the weekend, thus increasing the chance of accidents. In addition, the concentration of work activities and road traffic during the week is greater[14].

Another point is the occurrence of accidents in the daytime, especially during the afternoon, which, according to other studies, can happen in this interval due to the fact that the driver drives tired, with accumulation of demands and pressures and even influenced by the climate[15-16].

The nature of the injuries and the severity of the trauma can be influencing factors in the following questions: length of stay, type of assistance provided, and conditions for hospital discharge. Thus, Nursing care is essential, with regard to the identification of appropriate diagnoses for systematic care, with positive results, namely: acute pain, impaired tissue integrity and risk of infection, expected repercussions, as traffic accident victims are often affected by multiple traumas, extensive and complex injuries with tissue perforation[17].

Similarly to other research studies[13,18], in the present study, fractures presented the highest number of cases, mainly affecting motorcyclists. Following the fractures, multiple injuries were also common; in addition, the involvement of several regions of the body was also common. Traffic accident victims are commonly characterized as with multiple trauma, a situation that can worsen their prognosis, requiring immediate evaluation[6]. Results like this can also be found in a study, in which 19.1% of the individuals were affected by more than one type of injury[7].

Some studies point to the frequent occurrence of abrasions, since this type of injury affected 28.7% of the cases[7]. Other research study[19] also presented similar results with 25.5% of abrasions and cuts, differing from what was found in the present study, in which only 11.5% of the cases presented this injury. This can be justified by the research methodology, whose data on injuries were taken from the patients' medical records that were not always complete.

Another injury commonly found in trauma is TBI, which is also an important aggravating factor in the victims' prognosis[6]. In the present study, the most affected by this type of injury were motorcyclists followed by cyclists; these two categories of victims were also those that had the head/face region most affected. A number of research studies already point to the high involvement of the head region in both motorcyclists and cyclists[5,20].

With regard to the anatomical regions, the most affected was that of the lower limbs, a result confirmed by other studies, which point to this region as the most frequently injured in traffic accidents[5,20]. Motorcyclists are the type of victim most affected by injuries in the extremities and pelvic region, because these are the most unprotected regions, since the safety equipment offers protection only for the head[5,12-13].

As for the trauma mechanism, in closed vehicle passengers in the event of a head-on collision, the head is the first point of impact against the windshield, the trunk is propelled against the steering wheel of the car, and the members also collide with the bottom part of the panel[5]. Thus, it is common to find injuries in the region of the lower limbs, head/face, abdomen and chest, as was the case in the present study, in addition to others[6,21].

Taking into account the AIS, there was a higher occurrence of moderate lesions, followed by severe and ultimately mild injuries. Motorcyclists presented mainly AIS < 3 injuries, and the category that presented the least serious injuries, this result corroborates studies that indicate a higher rate of mild and moderate injuries in this category[22]. Motorcyclists had mainly AIS < 3 injuries, being the category that least presented serious injuries.

The victims with the highest number of AIS > 3 cases were car passengers, with 36.5%. The injuries that most presented AIS > 3 were open fractures, closed fractures and TBIs, although several studies indicate the prevalence of severe injuries in extremities and in the head region, mainly in motorcyclists[20].

Trauma severity could be assessed by the NISS, as there were more cases of mild trauma, but age and brain and chest injuries were related to a higher occurrence of severe trauma. Age is pointed out as exerting an influence on prognosis, in

different trauma situations and, as pointed out in a number of studies, brain trauma is the most frequently found in severe and fatal cases[6,23].

It is noteworthy that the death or sequelae outcomes of the injuries, presented by the trauma victim, can be directly influenced by the assistance provided, and this care requires a set of articulated, integrated and continuous actions, prioritizing measures aimed at preventing and repairing injuries, providing humane and holistic care, from limb immobilization to body hygiene for successful treatment and good prognosis[24].

Observing the data found, it is possible to perceive the importance of the Nursing professional, in assisting multiple traumatized victims, which influences their survival. Knowledge, based on the Nursing diagnoses and on the NIC (Nursing Interventions Classification) interventions, favors the promotion of specialized, qualified and comprehensive assistance with an assessment of the care provided, based on a pathophysiological and semiological understanding, added to the clinical experience. Thus, the nursing process is a primordial instrument, as it provides a systematic guide for conducting clinical judgment[8-10].

CONCLUSION

In general, this study gathered data to trace the profile of the victims and of the traffic accidents, as well as the main injuries and their severity. It was possible to perceive the prevalence of young men; separated by category, motorcyclists represented the highest number of cases, and they were also the ones that presented more victims with severe trauma.

With regard to the injuries, there was a higher frequency of fractures, and the largest number of serious injuries was in closed vehicle passengers. The most affected region was the lower limbs, and cyclists had a large number of injuries in the head region.

In the case of pedestrians, the small number of individuals in this category leads us to think that, due to the severity of the injuries, the vast majority die, either at the accident site or on the way to the hospital, thus exposing their fragility and vulnerability as road users and urging the immediate need for coherent preventive measures of respect and responsibility for pedestrians.

In addition, the data can also serve as subsidies for new research studies and conduct guidelines in Nursing care, as well as in the systematization of trauma care within the trauma XABCDE mnemonic, since knowledge of injuries helps in the perception of risk, for immediate intervention and a good prognosis. Regarding the limitations found in the study, it was possible to perceive the precarious supply of information, regarding the injuries suffered by the victim; there was also difficulty in capturing data in some hospital records, in which there was absence of information about medical diagnoses and procedures performed, as well as the illegibility of certain data, being one of the great challenges when working with instruments for daily notifications of hospital care.

REFERENCES

1 - World Health Organization (WHO). Global status report on road safety 2015. Geneva: WHO; 2015 [cited 2017 Sept 19]. Available in: https://www.who.int/violence_injury_prevention/road_safety_status/2015/en/

2 - World Health Organization (WHO). Injuries and violence: The facts 2014. Geneva: WHO; 2014 [cited 2017 Sept 19]. Available in: http://www.who.int/violence_injury_prevention/media/news/2015/Injury_violence_facts_2014/en/

3 - Ministério da Saúde (BR). Óbitos por causa externas – Brasil 2018. Brasília: Ministério da Saúde; 2018a [citado em 18 abr 2020]. Acesso em: http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sim/cnv/ext10uf.def

4 - Ministério da Saúde (BR). Morbidade Hospitalar do SUS por Causas Externas – Brasil 2018. Brasília: Ministério da Saúde; 2018b [citado em 18 abr 2020]. Acesso em: http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sih/cnv/fiuf.def

5 - Batista SEA, Baccani JG, Silva RAP, Gualda KPF, Vianna Júnior RJA. Análise comparativa entre os mecanismos de trauma, as lesões e o perfil de gravidade das vítimas, em Catanduva – SP. Rev Col Bras Cir. 2006;33(1):6-10. DOI: 10.1590/S0100-69912006000100003 ISSN 0100-6991

6 - Calil AM, Sallum EA, Domingues CA, Nogueira LS. Mapeamento das lesões em vítimas de acidentes de trânsito: revisão sistemática da literatura. Rev Latino-Am Enfermagem 2009;17(1):121-7. DOI: 10.1590/S0104-11692009000100019

7 - Gomes ATL, Silva MF, Dantas BAS, Dantas RAN, Mendonça AEO, Torres GV. Caracterização dos acidentes de trânsito assistidos por um serviço de atendimento móvel de urgência. J Res Fundam Care 2016;8(2):4269-79. DOI: 10.9789/2175-5361.2016.v8i2.4269-4279

8 - Cyrillo RMZ, Dalri MCB, Canini SRMS, Carvalho EC, Lourencini RR. Diagnósticos de enfermagem em vítimas de trauma atendidas em um serviço pré-hospitalar avançado móvel. Ver Latino-Am Enfermagem 2009;11(4):811-9. DOI: 10.5216/ree.v11i4.33235

9 - Caritá EC, Nini RA, Melo AS. Sistema de auxílio aos diagnósticos de enfermagem para vítimas de trauma no atendimento avançado pré-hospitalar móvel utilizando as taxonomias NANDA e NIC. J Health Inform. 2010 [citado em 15 mar 2020]; 2(4):87-94. Acesso em: http://www.jhi-sbis.saude.ws/ojs-jhi/index.php/jhi-sbis/article/view/108/36

10 - Bertoncello KCG, Cavalcanti CDK, Ilha P. Diagnósticos reais e proposta de intervenções de enfermagem para os pacientes vítimas de múltiplos traumas. Rev Eletrônica Enferm. 2013;15(4):905-14. DOI: 10.5216/ree.v15i4.19497

11 - Rocha, GS. Fatores associados, gravidade do trauma e sequelas de acidentes de transporte terrestre [tese]. São Paulo: Universidade de São Paulo; 2015.

12 - Silveira JZM, Sousa JC. Sequelas de acidentes de trânsito e impacto na qualidade de vida. Saude e Pesqui. 2016;9(2):373-80. DOI: 10.17765/2176-9206.2016v9n2p373-380

13 - Soares LS, Sousa DACM, Machado ALG, Silva GRF. Caracterização das vítimas de trauma por acidente com motocicleta internadas em um hospital público. Rev Enferm UERJ 2015;23(1):115-121. DOI: 10.12957/reuerj.2015.15599

14 - Dias LKS, Vasconcelos AMB, Bezerra WMT, Albuquerque IMN, Lira GV, Pierre LPP. Caracterização dos acidentes de trânsito atendidos pelo serviço de atendimento móvel de urgência. Sanare 2017 [citado em 15 mar 2020]; 16(1):6-16. Acesso em: file:///C:/Users/Francinara/Downloads/1133-2760-1-SM%20(1).pdf

15 - Albuquerque AM. Vítimas de acidente de moto com traumatismo. Rev Enferm UFPE 2016; 5(10):1730-8. DOI: 10.5205/reuol.9003-78704-1-SM.1005201620

16 - Santos WJ, Coelho VMS, Santos GB, Ceballos AGC. Caracterização dos acidentes de trânsito envolvendo trabalhadores motociclistas em Pernambuco - 2016. J Health Biol Sci. 2018;6(4):431-6. DOI: 10.12662/2317-3076jhbs.v6i4.2113.p431-436.2018

16 - - Cavalcanti CDk, Ilha P, Bertoncello KCG. O cuidado de enfermagem a vítima de trauma múltiplos: Uma revisão integrativa. UNOPAR Cient Ciênc Biol Saúde 2013;15(1):81-8. DOI: 10.17921/2447-8938.2013v15n1p%25p

17 - Sousa KM, Oliveira WIF, Alves EA, Gama ZAS. Fatores associados ao acesso à reabilitação física para vítimas de acidentes de trânsito. Rev Saude Publica 2017;51(54):1-13. DOI: 10.1590/S1518-8787.2017051006429

18 - - Medeiros WMC, Galvão CH, Guedes ISC, Carício MR, Macedo EMF, Ribeiro LM. Perfil epidemiológico das vítimas de acidentes de trânsito atendidas num serviço público de emergência da região metropolitana de Natal/RN. Holos 2017;33(7):213-24. DOI: 10.15628/holos.2017.4876

19 - Paiva L, Monteiro DAT, Pompeo DA, Ciol MA, Dantas RAS, Rossi LA. Readmissões por acidentes de trânsito em um hospital geral. Rev Latino-Am Enfermagem 2015;23(4):693-9. DOI: 10.1590/0104-1169.0242.2623

20 - Santos SMJ, Souza MA, Rocha FL, Souza VP, Muniz MAS, Rodrigues JÁ. Caracterização dos fatores de risco para acidentes de trânsito em vítimas atendidas pelo serviço móvel de urgência. Rev Enferm UFPE 2016;10(10):3819-24. DOI: 10.5205/1981-8963-v10i10a11448p3819-3824-2016

21 - Petenuti A, Lopes L, Volpato RJ, Pessini MA. Caracterização das sequelas das vítimas de acidentes de trânsito com motocicleta em vias urbanas numa cidade da região noroeste do Paraná. Akrópolis 2016;24(2):131-42. DOI: 10.25110/akropolis.v24i2.6332

22 - Santos AMR, Rodrigues RAP, Diniz MA. Trauma no idoso por acidente de trânsito: Revisão integrativa. Rev Esc Enferm USP 2015;49(1):162-72. DOI: /S0080-62342015000010002110.1590

23 - Santos, MAS da; Santos, LGES dos; Oliveira GFSM; Miranda LN. Assistência de enfermagem ao paciente politraumatizado. Ciências Biológicas e de Saúde 2018 [citado em 2 nov 2020]; 4(2):11-22. Acesso em: https://periodicos.set.edu.br/fitsbiosaude/article/view/4648/2777

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