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RESEARCH ARTICLE

IN-HOSPITAL CARE FOR THE VICTIMS OF EXTERNAL CAUSES AND THEIR OUTCOMES IN A HOSPITAL OF MEDIUM COMPLEXITY

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ABSTRACT

Objective: To evaluate the intra-hospital care to the victims of external causes and their outcomes in service of Medium Complexity. ***Method:*** Longitudinal, prospective study of quantitative approach. Data were collected by instrument, manual search in the medical record and direct interview with the victims. ***Results:*** Of these victims, 72.5% were young men, mean age 40.6 years, 67.0% of occurrences occurred during the day. The Charlson Comorbidity Index scored zero at 66.7%. The *Trauma and Injury Severity Score* (TRISS) demonstrated that 43.7% presented no risk of death, *Injury Severity Scores* (ISS) and *Revised Trauma Score* (RTS) evidenced mild trauma. The severity scales TRISS, ISS, RTS, Glasgow Coma Scale were not associated with the high discharge or transfer. The time of hospitalization and surgery was equal to or less than seven days for 60.6% and 55.1%, respectively. The surgery was statistically significant for the outcome of the patient. ***Conclusion:*** The victims of this study had characteristics of low health complexity, confirmed by the scales of lesions applied and low prediction of death. It is considered highly relevant and essential the service of care in the medium complexity, and the correct referral to an institution that behaves and resolves cases.

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INTRODUCTION

External causes have provoked many problems worldwide, affecting more than 5 million people, including children, youth and adults, who have been involved in the most varied mechanisms of injury. These are directly related to violent acts with victims from drowning to accidental road events, especially in low- and middle-income countries (World Health Organization, 2014). Brazil (Ministry of Health, 2018), in turn, highlights that among the external causes in the country, traffic accidents and homicides represent the main causes of hospitalizations and deaths. They emphasize that these violent acts are closely related to the attitudes and actions of those involved, contributing to increased risks and occasions linked to them. According to the Ministry of Health's Mortality Information System (SIM), men die more from external causes, especially in traffic accidents, occupational accidents and injuries from violence. According to Datasus (Ministry of Health, 2018), up to June of this year, SUS hospital morbidity related to external causes, by place of residence, totaled 88,606. The Southern Region accounted for 16,984 hospitalizations and the State of Paraná totaled 7,743 hospitalizations. It is noteworthy that, in the municipality where the research was conducted according to the *Paranaense* Institute of Economic and Social Development – IPARDES, morbidities related to external causes totaled 452 events, being three for children under one year and five for victims under five years. Therefore, events related to external causes correspond to morbidities and mortality implying in adequate care to victims, in which Sousa *et al.* (2011), Alvarez *et al.* (2016) and Pereira Junior *et al.* (1999) consider relevant the appropriate use of the scales available to assess trauma victims as well as the mastery of these by the care teams, as they will take actions regarding the severity of the event, preventing possible complications and reducing the risk of death. Regarding hospitalization-related care, the Ministry of Health (Ministry of Health, 2018) describes that the causes of morbidity and mortality have been ranked third in causes of death from zero to nine years and in the population over 50 years, while the first position is among the Young adults aged 10 to 49 years, this directly implies human losses, costs to the Unified Health System (SUS) as well as becomes a public health problem. Regarding the clinical outcome, Braga *et al.* (2016) demonstrated that the severity of cases leads to a high percentage of deaths, and this result is directly related to the type of event, time waiting for care and length of hospital stay. Therefore, it is observed that in Brazil there are several realities of medical-hospital care considering the level of health care and regulation of SUS users, but there are new studies involving the level of secondary health care. Thus, this study aimed to evaluate in-hospital care for victims of external causes and their outcomes in a medium complexity hospital.

METHODS

Longitudinal and prospective study conducted in a public hospital of medium complexity in the state of Paraná. The institution had 117 beds, exclusively for the Unified Health System (SUS), is a reference in care of medium complexity and serves the northern region of the city (Paraná, 2018). For data collection, an instrument adapted from Menolli and Martins (Menolli *et al.,* 2018) based on the prehospital care report and the Charlson Comorbidity Index, Injury Severity Score (ISS) (Pereira Júnior *et al.,* 1999), Revised Trauma Score (RTS), Trauma and Injury Severity Score (TRISS) (Goulart, 2014) scales were used, as well as additional information obtained from the nurses in the service. Data collection took place from December 6th, 2017 to April 4th, 2018, in the summer season. An active search was performed every two days, identifying all victims of external causes who entered the service by direct demand, as well as victims attended at the hospital who were referred by the Mobile Emergency Care Service (SAMU), Integrated Trauma and Emergency Services System (SIATE) and other services. We verified the Charlson Comorbidity Index (Carvalho, 2014), a method that evaluates the clinical conditions of the secondary diagnosis to measure severity and its effect on prognosis. This index is classified into 18 predetermined medical situations and for each one there is a score ranging from zero to six and with results from zero to 36.

The higher the score the worse the clinical condition, being a prediction-related risk score of death used to suppose critical patient transfer and adjust to risk performance indicators, in order to allow comparison among providers. Injury Severity Score (ISS) (Pereira Júnior *et al.,* 1999) was also used, which assesses the severity of injuries in different areas of the body and are classified into: (ISS<15) mild (ISS between 16 and 24) moderate and (ISS>25) severe. The Revised Trauma Score (RTS) (Goulart, 2014), which identifies the severity of trauma and physiological changes caused by it: (RTS>7) mild, (RTS between 7 and 14) moderate and (RTS<4) severe, and Trauma and Injury Severity Score (TRISS) (Goulart, 2014) which assesses the victim's survival probability. We also evaluated the surgeries performed, the time to perform the surgery and the length of hospital stay, infection and outcome (transfer or discharge), and the service that provided the first care: SAMU and SIATE. Data were tabulated using a spreadsheet in Microsoft Office Excel® in version 2016, double-typed data. The data were then transported to the Statistics Package for Social Science program (SPSS® 20). Pearson's Chi-Square Test was performed for associations between the independent variables and the transfer or discharge outcome, and the level of statistical significance <0.05 was adopted for all tests, as well as descriptive analysis and the Shapiro wilk test p=0.006. This research was approved by the Research Ethics Committee with Opinion n. 2,258,907.

RESULTS

A total of 109 victims of external causes were admitted to the hospital under study, of which the Charlson, ISS, TRISS and RTS comorbidity index were applied only to individuals who sought the service directly (n=47), since the ideal time to obtain trauma scores is the initial approach. Of the 109 victims, 72.5% were young men and 27.5% were women. The following external causes were treated at the hospital: finger (s) injuries without a nail injury (S61.0), motorcyclist (any) traumatized in an unspecified traffic accident (V29.9), fall from the same level or steps (W01), aggression through body force (Y04) and other mechanisms. For the age group, the Shapiro wilk test p=0.006 was applied, that is, it presented a non-normal distribution, and the mean age of the victims who were discharged was 40.6 years, with a standard deviation of 13.6 and of the victims who were transferred, 41.9 years, with standard deviation of SD=11.5. Discharge or death showed no statistical difference ($p=0.790$). Likewise, there was no difference for high outcome or transfer with respect to gender ($p=0.120$) and time of search 67.0% ($p=0.708$). The medium complexity hospital receives victims of external causes daily in the most varied conditions.

Table 1. Distribution of victims of external causes received by the Medium Complexity service, according to the procedures performed and their influence on the outcome. Londrina - PR, 2018

Variables	Discharge		Death		Transfer		Chi-Square (p-value)
	N	%	N	%	N	%	
Cervical brace							0.052
Yes	9	8,.7	0	-	2	33.3	
No	94	91.3	0	-	4	66.7	
Board							0.218
Yes	15	14.6	0	-	2	33.3	
No	88	85.4	0	-	4	66.7	
Immobilization							0.060
Head Immobilizer	2	1.9	0	-	0	-	
RUL	23	22.3	0	-	5	83.3	
LUL	23	22.3	0	-	0	-	
RLL	29	28.2	0	-	1	16.7	
LLL	11	10.7	0	-	0	-	
Not recorded	15	14.6	0	-	0	-	
Oxygen							NA
Not recorded	102	100.0	0	-	6	100.0	
Intravenous access							0.808
Central	1	1.0	0	-	0	-	
Not recorded	102	99.0	0	-	0	-	

Source: the author; NA = not applicable

Therefore, Table 1 shows the conditions of these victims received in the hospital under study, according to the performance of procedures and their influence on the outcome. The data showed that the victims treated in the study hospital had the predominant immobilizations in the upper limbs, being bilateral in 44.6% and, for the lower limbs, the right lower limb 28.2% and left lower limb 10.7% were immobilized. Performing procedures was not associated with the discharge outcome. Regarding tools to assist victims of external causes, they provide better management and their distribution is shown below, in Table 2, being associated with the outcome in the in-hospital service. Of the patients evaluated, 66.7% had a Charlson Comorbidity Index score of zero showing a reduced effect on the death prediction. The ISS evaluated the anatomical severity of the victims' injuries while RTS evaluated the physiological severity, and ISS 55.6%, RTS 43.7% presented trauma and minor injuries. The TRISS showed that 43.7% of the patients were not at risk of death. The statistical test performed was Pearson's Chi-Square, which makes a simple association, when the p-value is <0.05, and the results of the application of the severity scales were not associated with the high outcome or transfer, that is, there was no statistical association. Table 3 shows data on the length of hospital stay, the surgery performed, the time to perform the surgery and the sequelae outcome after discharge. The length of hospital stay and time to perform the surgery was equal to or

Table 2. Distribution of victims of external causes treated at a medium-complexity hospital, according to Charlson Comorbidity Index and trauma scales used in the in-hospital service and outcome. Londrina - PR, 2018

Variables	Discharge		Transfer		Chi-Square (*p*-value)
	N	%	N	%	
Charlson Comorbidity Index (n=47)					**0.613**
0	30	66.7	2	100.0	
1	9	20.0	0	-	
2	6	13.3	0	-	
ISS (n=47)					**0.461**
1	5	11.1	0	-	
4	25	55.6	2	100.0	
9	15	33.3	0	-	
RTS (n=47)					**0.619**
7841	45	43.7	2	33.3	
Not classified	58	56.3	4	66.7	
TRISS (n=47)					**0.619**
Above 95%	45	43.7	2	33.3	
Not classified	58	56.3	4	66.7	

Source: the author

Table 3. Distribution of victims of external causes, attended at a medium complexity hospital, according to length of stay, according to surgery performed, time to perform surgery and the sequelae outcome at discharge. Londrina - PR, 2018

Variables	Without sequelea on discharge		With sequelea on discharge	
	N	%	N	%
Length of stay				
≤7 days	66	60.6	0	-
≥8 days	43	39.4	0	-
Surgery performed				
No surgery	10	9.2	0	-
LL	41	37.6	0	-
UL	41	37.6	0	-
Shoulder/clavicle	15	13.8	0	-
Other	2	1.8	0	-
Time to perform surgery				
≤7 days	54	55.1	0	-
≥8 days	44	44.9	0	-

Source: the author; LL – Lower limbs; UL – Upper limbs

Table 4. Distribution of victims of external causes according to type of referral, in-hospital outcome related to sequelae. Londrina - PR, 2018

Variables	Direct search		SAMU		SIATE		UPA referral		Other		Total		p-value
	n=47	%	n=5	%	n=13	%	n=38	%	n=6	%	n=109	%	
Desfecho (n=109)													**0.296**
Discharge	45	95.7	5	100.0	11	84.6	37	97.4	5	83.3	103	94.5	
Death*	0	-	0	-	0	-	0	-	0	-	0	-	
Transfer	2	4.3	0	-	2	15.4	1	2.6	1	16.7	6	5.5	
Sequelae (n=109)													**NA**
Yes	0	-	0	-	0	-	0	-	0	-	0	-	
No	47	100.0	5	100.0	13	100.0	38	100.0	6	100.0	109	100.0	

Source: the author; *It was not included in the analysis model. NA - Not applicable to statistical analysis.

less than seven days, while the surgery performed, both in the upper and lower limbs were 75.2% and all without sequelae at discharge. It was observed that the length of stay and time to surgery were not associated with the outcome (discharge or transfer). However, the type of orthopedic surgery was associated with the outcome and not performing surgery was associated with a greater chance of transfer. Regarding the in-hospital outcome 94.5% were discharged, being transferred only 5.5% and of these 100% had no sequelae. The in-hospital outcome was not associated with the type of search and no sequelae were observed.

DISCUSSION

The prevalence of young men among victims of external causes involved in traffic accidents in the age group of 19 to 29 years was observed in this study, as well as the results presented by Gomes *et al.* (2014) Rodrigues *et al.* (2014) and Cavalcante *et al.* (2015) where the age ranged from 20 to 39 years. This confirms the prevalence of young men who have been involved in this type of external cause, and the authors agree that young people are less mature, are overconfident, and more likely to challenge the limits of life. In Teresina, Piauí, 81% of the victims who were involved in the accident were men, and the external cause of traffic accidents with motorcycles was 50% (Santos *et al.,* 2016). In a study conducted in northern Paraná by Menolli and Martins (Menolli and Martins, 2018), men (80.6%) were also the largest victims of motor vehicle traffic accidents; for the authors, regardless of the region where the study was conducted, men are at the top of the statistics. The data above are confirmed by Brasil[2] because among the external causes, traffic accidents are the main causes of hospitalization and death, generating high costs and human losses due to temporary and permanent sequelae, besides the emotional suffering of victims and their families. In this study, upper and lower limb injuries resembled the results

of Schoeller *et al.* (2016), Andrade and Jorge (2016), Araújo *et al.* (2017) and Silva *et al.* (2018), all of whom agree that motorcycle riders are more vulnerable than others individuals using other means of transports. In addition, limb exposures are higher favoring abrasions, fractures and other trauma and may be associated with factors such as alcohol and drug use, inexperience, inattention, speed not compatible with the road, among others. However, the evidence from this study was that performing procedures was not associated with the discharge outcome. According to Mendes (2018), RTS evaluates the physiological conditions of the victim in the reception; the Glasgow coma scale is relevant to neurological assessment and the ISS allows to classify different areas of the body affected by the event suffered and to verify late death, making it possible to calculate age-based TRISS, trauma mechanism and RTS. Pereira Junior *et al.* (1999), consider the use of valuable instruments to assess the quality of medical care provided to trauma victims. In this way, the combination of all instruments will favor the process of measuring the maintenance of life. A study by Coutinho (Coutinho, 2018), which evaluated two groups of patients in an intensive care unit, found that in group 2 the level of comorbidity assessed by the Charlson Index was higher, associated with prolonged bed immobility time, invasive mechanical ventilation, inflammation episodes, sedative drug use, and muscle weakness. This study is totally different from the author mentioned above, in which victims of external causes attended at the hospital where this study was performed had a zero-death rate, that is, there was no confirmed death in the analyzed period. The result is attributed to the fact that the research population consisted of young people who stated that they had no disease, which can be verified by the Charlson Index. However, trauma scales, trauma indexes (ISS), anatomical severity of injuries, physiological severity (RTS) and low risk of death (TRISS) prevailed because the scores pointed to mild trauma, confirmed by the zero-death rate.

Similar data were found by Dantas *et al.* (2017) in their study conducted in Rio Grande do Norte, in a secondary care unit whose RTS identified most respondents as victims of mild trauma. In turn, a study by Parreira *et al.* (2017) found "significant difference in the comparison of trauma indexes between the different mechanisms", that is, it was observed that the severity of trauma differs among the groups under study. Paffrath, Lefering and Flohé (Paffrath *et al.,* 2014) recommended the importance of defining the severity of each lesion, using various indexes and scales. It is noteworthy that the professional knows how to judge the different types of injuries presented by the victims and their specific scenarios, and this information is provided in the risk classification performed in the service, prioritizing the in-hospital care, as well as the appropriate referral to the victims of this study. It is noteworthy that during the study period there were no deaths, the lesions were classified as mild and resolved in the medium complexity hospital and there was no statistical association with the discharge outcome or transfer. In the hospital where this study was conducted, the hospitalization time of the victims was equal to or less than seven days (60.6%) and there was no situation of surgical site infection, except for a case involving a knife injury to the patient while cleaning fish, where the action taken by third parties was to grounded coffee on in to stop the bleeding. The search for specialized service occurred only on the fourth day due to pain plus phlogistic signs on the site. Silva *et al.* (2018) obtained in their results an average of seven days of hospital stay; these were associated with low severity of predominant limb injuries, while longer stay (95 days) was associated with surgical site infection. The mean length of stay reported by Braga *et al.* (2016) was zero to 10 days, considered relatively short by the authors. As observed in the Trauma Center of a state hospital in Rio de Janeiro, a means of 11.4 days was found by Silveira and O" Dwyer (Silveira *et al.,* 2017). The authors considered the result satisfactory when relating to the average length of stay of other victims of external causes in metropolitan region II, accredited by SUS, because the profile of the visits was of high complexity. For Andrade and Jorge (2017) and Belmonte *et al.* (2017), the length of stay is influenced by the type of event, the severity of the injury and the need for surgical correction, which are directly related to the cost of the treatment when compared only to clinical treatments. Another fact evidenced in the results was related to the time to perform the surgical procedure; 55.1% occurred equal to or less than seven days, also evidenced by Silva *et al.* (2018).

The justification for the length of stay and surgical procedure was less than or equal to seven days, in this service, since most victims of external causes presented mild score on the scales used. The service is a reference in low and medium complexity care, whose referrals are made by the Mobile Emergency Care System (SAMU) and the Integrated Trauma and Emergency Care System (SIATE) that direct cases of mild trauma, as well as being able and has the human resources, materials and physical structure to respond quickly and efficiently to the cases attended (Paraná, 2018). Santos *et al.* (2016) and Silva *et al.* (2018) identified a higher occurrence of orthopedic surgical procedures in the limbs, corroborating with this study. Regarding the type of surgery performed, victims who required more complicated surgeries or orthopedic specialties not attended at the study hospital had their outcome transferred to more complex services. The victims of minor surgical complexity remained, or the hospital had an orthopedic specialist. Predominant upper limb (UL) and lower limb (LL) surgery were performed at the secondary hospital. Braga *et al.* (2016) obtained death as the main outcome in 48.3% of the victims, attributed to the severity of the cases. In another study conducted in Goiania by Mandacarú *et al.* (2018), the severity of the victims presented death as outcome in vulnerable groups (motorcyclists), totally different from the outcome obtained in this research. The results of this research showed that the type of surgery was associated with the high outcome without sequelae and transferred only in cases of complications. The victims who were referred to the medium complexity hospital of this study and its in-hospital outcome related to the sequelae confirmed the predominance of discharge. Comparing with the outcomes of other researchers such as Vaez *et al.* (2015), 96.1% of victims were discharged from hospital and did not infer any sequelae. Padovani[31] reports that 60.4% of the victims under study needed immediate care after discharge, probably due to motor deficits and reduced functional capacity, while Braga *et al.* (2016) obtained death as the main outcome in 48.3%. For the authors, the sequelae are directly related to the severity of the cases, differing from those found. Vieira (2016) analyzed the victims rescued by CBMDF aero-medical service and their outcome in the hospital unit, with 65% of patients discharged; his conclusion was that care in prehospital settings reflects in-hospital evolution. Thus, depending on the conditions of the victims, the most severe and serious need advanced support and agility in transport that will have a direct influence on the outcome and sequelae after discharge. The in-hospital outcome was not associated with the way of search

and no sequelae were observed in all victims of this study. It is therefore verified that the external causes can cause some illnesses or even death, any type of accident or violence will cause some physical or mental injury, and that its outcome will not always result in death.

Conclusion

The profile of the victims of this study was young adult men, suffering from injuries and fractures of the upper and lower limbs, involving motorcycle transportation, in which orthopedic surgery predominated. The injuries presented by the victims were mild, confirmed by the scales, showing that they were not at risk of death with discharge outcome without sequelae. It was observed that the victims who composed this study had characteristics of low health complexity, confirmed by the scales of injuries applied and low prediction of death. The type of surgical procedure and relatively short hospital stay, and non-surgery was associated with a higher chance of transfer of the victim in the in-hospital outcome. It is considered highly relevant and essential the care service in medium complexity, and the correct referral to the institution which encompasses and solve cases.

REFERENCES

Alvarez BD, Razente DM, Lacerda DAM, Lother NS, Von-Bahten LC, Stahlschmidt CMM. Avaliação do Escore de Trauma Revisado (RTS) em 200 vítimas de trauma com mecanismos diferentes. *Rev Col Bras Cir.,* 2016; 45(5):334-40.

Andrade SSCA, Jorge MHPM. 2017. Internações hospitalares por lesões decorrentes de acidente de transporte terrestre no Brasil, 2013: permanência e gastos. *Epidemiol Serv Saúde,* 26: 31-8.

Andrade SSCA, Jorge MHPM. Estimativa de sequelas físicas em vítimas de acidentes de transporte terrestre internadas em hospitais do Sistema Único de Saúde. *Rev Bras Epidemiol.,* 2016; 19: 100-11.

Araújo DC, Pinheiro FGM, Menezes MGV, Lima SGS, Tavares CSS, Vaez AC. 2017. Perfil e fatores associados ao trauma em vítimas de acidentes de trânsito atendidas por serviço móvel de urgência. *Arq. Ciênc. Saúde,* 24(2): 65-70.

Belmonte LM, Lange BAA, Silva CM, Silva TO, Belmonte AO. 2017. Levantamento do perfil das vítimas de acidentes motociclísticos internadas em um hospital público de Santa Catarina. *Rev Saúde Públ Santa Catarina,* 10(1): 8-22.

Braga APPO, Correia CA, Abreu RNDC, Freitas JG, Monteiro MGS. 2016. Tempo de internamento e desfecho de vítimas de traumas por causas externas. *Rev. Enferm. UFPI,* 5(4): 46-50.

Carvalho I. 2011. Estudo do risco de óbito por meio da análise de comorbidade nos pacientes internados nos hospitais gerais do DRS XIII em, [tese]. São Paulo: Universidade de São Paulo; 2014.

Cavalcante ACB, Holanda VM, Rocha CFM, Cavalcante SW, Sousa JPR, Sousa FHR. 2015. Perfil dos acidentes de trânsito atendidos por serviço pré-hospitalar móvel. Rev Baiana Enf., 29(2): 135-45.

Coutinho WM. 2018. Funcionalidade de paciente crítico na alta da unidade de terapia intensiva. [dissertação]. Porto Alegre: Universidade Federal do Rio Grande do Sul.

Dantas BAS, Gomes ATL, Silva MF, Dantas RAN, Torres GV. 2017. Avaliação do trauma nos acidentes com motocicletas atendidos por um serviço pré-hospitalar móvel de urgência. *Rev. Cubana Enferm.,* 33(2).

Gomes SL, Santos YA, Dourado SBPB, Coêlho DMM, Moura MEB. 2014. Perfil das vítimas de acidentes motociclísticos admitidas nas terapias intensivas de um hospital público. Rev Enf. UFPE, 8(7): 2004-12.

Goulart AFG. 2014. Utilidade de scores de trauma na avaliação do doente politraumatizado: artigo de revisão. [dissertação]. Coimbra: Universidade de Coimbra.

Instituto Paranaense De Desenvolvimento Econômico E Social. Caderno Estatístico Município de Londrina. [Internet]. Curitiba; 2018. [citado 2018 ago. 19]. Disponível em: http://www.ipardes.gov.br/cadernos/MontaCadPdf1.php?Municipio=86000.

Mandacarú PMP, Rabelo IVM, Silva MAA, Tobias GC, Morais Neto OL. 2018. Óbitos e feridos graves por acidentes de trânsito em Goiânia, Brasil-2013: magnitude e fatores associados. *Epidemiol. Serv. Saúde,* 27: e2017295.

Mendes CA. 2018. Fatores preditores de complicações na drenagem de tórax pós-trauma. [dissertação]. Campinas: Universidade Estadual de Campinas.

Menolli GA, Martins EAP. 2018. Caracterização do atendimento pré-hospitalar a vítimas de acidente motociclísticos encaminhadas para um hospital de grande porte do norte do Paraná. REAS, 10(6): 2280-7.

Ministry of Health, (Brasil). Acidentes e Violências. [Internet]. Brasília; 2018. [citado 2018 ago 19]. Disponível em: http://portalms.saude.gov.br/saude-de-a-z/acidentes-e-violencias.

Ministry of Health, (Brasil). Morbidade hospitalar do SUS por causas externas: por local de residência – BRASIL. Período: jun/2018. [Internet]. Brasília; 2018. [citado 2018 ago. 19]. Disponível em: http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sih/cnv/fruf.def.

Padovani C. 2015. Avaliação da capacidade funcional de pacientes vítimas de trauma um ano após alta hospitalar. [tese]. São Paulo: Universidade de São Paulo.

Paffrath T, Lefering R, Flohé S, Trauma Register DGU. 2014. How to define severely injured patients? An Injury Severity Score (ISS) based approach alone is not sufficient. *Injury*., 45: S64-S69.

Paraná. Secretaria do Estado de Saúde. Hospital Dr. Anísio Figueiredo – Zona Norte de Londrina. [Internet]. Curitiba; 2018. [citado 2018 jul. 21]. Disponível em: http://www.hdaf.pr.gov.br/modules/conteudo/conteudo.php?conteudo=7.

Parreira JG, Rondini GZ, Below C, Tanaka GO, Pelluchi JN, Arantes-Perlingeiro J, *et al.* 2017. Trauma mechanism predicts the frequency and the severity of injuries in blunt trauma patients. *Rev Col Bras Cir.,* 44(4):340-7.

Pereira Júnior GA, Scarpelini S, Basile-Filho A, Andrade JI. Índices de trauma. *Medicina*, 1999; 32(3): 237-250.

Rodrigues APB, Santos AMR, Machado DG, Moura MEB. 2014. Caracterização dos acidentes motociclísticos atendidos pelo serviço de atendimento móvel de urgência. Rev Enf., UFPI, 3(3): 73-8.

Santos LFS, Fonseca JMA, Cavalvante BLS, Lima CM. 2016. Estudo epidemiológico do trauma ortopédico em um serviço público de emergência. *Cad. Saúde Coletiva,* 24(4):397-403.

Schoeller SD, Bonett A, Silva GA, Rocha A, Geldcke FL, Khan P. 2016. Características das vítimas de acidentes motociclísticos atendidas em um centro de reabilitação de referência estadual do sul do Brasil. *Acta Fisiát,* 18(3): 141-5.

Silva AD, Alves GCQ, Amaral SEM, Ferreira LA, Dutra CM, Ohl RIB, *et al.* 2018. Vítimas de acidente motociclístico atendidas em hospital público de ensino. *Rev. Min. Enferm.,* 22: 1-7.

Silveira ES, O'Dwyer G. 2017. Centro de trauma: modelo alternativo de atendimento às causas externas no estado do Rio de Janeiro. *Saúde em Debate,* 41: 243-54.

Sousa NA, Paiva JA, Fonseca SA, Raposo FJ, Loureiro AM, Valente LF, Gonçalves AM, *et al.* Trauma scores na avaliação de politraumatizados. Acta Med Port. 2011; 24(6):943-50.

Vaez AC, Vasconcelos JM, Jesus LKA, Pinheiro FGMS, Paula CPP, Araújo DC. 2015. Perfil Clínico Epidemiológico das Vítimas de Trauma Crânio encefálico no Intra-hospitalar de um Hospital Público do Estado de Sergipe. Cad. Grad. Ciênc. Biol. Saúde, 3(1): 113-26.

Vieira RP. 2016. Serviço aeromédico do Distrito Federal: caracterização e desfecho das vítimas atendidas. [trabalho de conclusão de curso]. Brasília: Universidade de Brasília; 2016.

World Health Organization. Injuries and violence: the facts 2014. [Internet]. Washington; 2014. [cited 2018 Aug. 19]. Available from: http://www.who.int/violence_injury_prevention/media/news/2015/Injury_violence_facts_2014/en/.