

Inter-hospital transfers of trauma victims performed by the mobile emergency care service

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Traslados interhospitalarios de víctimas de trauma realizado por el servicio móvil de atención de emergencias

RESUMO

Objetivo: caracterizar as transferências inter-hospitalares de vítimas de trauma realizadas pelo Serviço de Atendimento Móvel de Urgência. Método: estudo descritivo, quantitativo, realizado com as 204 transferências de vítima de trauma, ocorridas de 2014 a 2019. Foi utilizado instrumento para caracterização sociodemográfica e da transferência. Ocorreu análise descritiva dos dados. Resultados: observou-se predominância das transferências no mês de janeiro (14,70%), realizadas no turno da noite (42,2%), com pacientes do gênero masculino (83,3%), adultos (73,5%), acometidos por acidente automobilístico (38,7%), de destino para a cidade do Recife (61,2%). O procedimento mais realizado foi a punção venosa periférica (25,5%) e os medicamentos mais administrados foram a dipirona (18,0%) e o midazolam (18,0%). Conclusão: as transferências de vítimas por agravos traumáticos ocorreram, predominantemente, no mês de janeiro, durante a madrugada, com vítimas do sexo masculino, adultas, acometidas por acidente automobilístico e a punção venosa periférica foi o principal procedimento realizado.

DESCRIPTORIOS: Ambulâncias; Primeiros Socorros; Serviços Médicos de Emergência; Transportes de Pacientes; Traumatologia.

ABSTRACT

Objective: to characterize the inter-hospital transfers of trauma victims performed by the Mobile Emergency Care Service. Method: descriptive, quantitative study, carried out with 204 trauma victim transfers, which took place from 2014 to 2019. An instrument was used to characterize the sociodemographic and transference. Descriptive data analysis was performed. Results: there was a predominance of transfers in January (14.70%), carried out in the night shift (42.2%), with male patients (83.3%), adults (73.5%), affected by a car accident (38.7%), destined for the city of Recife (61.2%). The most frequently performed procedure was peripheral venipuncture (25.5%) and the most commonly administered drugs were dipyrone (18.0%) and midazolam (18.0%). Conclusion: transfers of victims due to traumatic injuries occurred predominantly in January, during the night, with male, adult victims, victims of a car accident and peripheral venipuncture was the main procedure performed.

DESCRIPTORS: Ambulances; First Aid; Emergency Medical Services; Patient Transport; Traumatology.

RESUMEN

Objetivo: caracterizar los traslados interhospitalarios de víctimas de trauma realizados por el Servicio Móvil de Atención de Emergencias. Método: estudio descriptivo, cuantitativo, realizado con 204 traslados de víctimas de trauma, que tuvieron lugar entre 2014 y 2019. Se utilizó un instrumento de caracterización sociodemográfica y transferencial. Se realizó un análisis descriptivo de los datos. Resultados: predominaron los traslados en enero (14,70%), realizados en el turno de noche (42,2%), con pacientes del sexo masculino (83,3%), adultos (73,5%), afectados por accidente automovilístico (38,7%) con destino a la ciudad de Recife (61,2%). El procedimiento realizado con mayor frecuencia fue la punción venosa periférica (25,5%) y los fármacos administrados con mayor frecuencia fueron dipirona (18,0%) y midazolam (18,0%). Conclusión: los traslados de víctimas por lesiones traumáticas ocurrieron predominantemente en enero, durante la noche, siendo hombres, víctimas adultas, víctimas de un accidente automovilístico y la punción venosa periférica fue el procedimiento principal realizado.

DESCRIPTORIOS: Ambulancias; Primeros Auxilios; Servicios Médicos de Emergencia; Transporte de Pacientes; Traumatología.

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INTRODUCTION

The Mobile Emergency Care Service (SAMU - Serviço de Atendimento Móvel de Urgência) consists of a mobile pre-hospital component that integrates the Emergency Care Network.¹ In this network, according to the health regions, some resolution services of medium and high complexity are not available in all municipalities, thus, the patients who are assisted often need to be transferred to surrounding regions.²

Among the services that provide this type of transfer, in addition to the private sector and hospital ambulances, there is SAMU, that performs Pre-Hospital Care (APH - Atendimento Pré-Hospitalar) and also transfers victims to the hospital or, when necessary, transfers from one hospital to another. Regarding the possibilities of types of SAMU vehicles, there are two terrestrial modalities: the Basic Support Unit (USB), which is necessarily manned by a driver and a nursing technician, and the Advanced Support Unit (USA - Unidade de Suporte Avançado) which is manned by a driver, nurse and doctor, both carry out patient transfers.³

Health situations that require patient transfer can be clinical, obstetric, psychiatric or traumatic. Among these, trauma stands out due to the increase in external

causes, accidents and violence, which culminate in the need for health care, consisting of the second largest demand for SAMU care,⁴ and may require inter-hospital transfers to resolve the situation.

The state of the art on the subject is composed of studies that characterize the profile of care/occurrences, as observed in an integrative literature review on SAMU.⁵ Thus, it is pointed out that researches that specifically investigate the transfers that this service performs are necessary.

There is a need for a greater quantity of scientific studies on SAMU, in order to contribute to the Evidence-Based Practice of this service. In this way, it is necessary to investigate the profile of the transfers that SAMU performs so that possible seasonalities are known and to subsidize the planning and training directed to the real demand met/transferred.

Thus, the present study aimed to characterize the inter-hospital transfers of trauma victims performed by SAMU.

METHOD

This was a descriptive study, with a quantitative approach, carried out in the municipality of Pesqueira-PE, in February 2020. The population consisted of victims, whose information was recorded in the SAMU files. The following inclusion criteria were

defined: being trauma victims, transferred between the years 2014 to 2019. This period is justified because it is the time frame for which the files were available for consultation. The exclusion criterion was to be unavailable for consultation, due to legal reasons. Thus, it accounted for a total of 204 transfers.

Data collection took place from July to November 2019 using the Google platform. Through this, an electronic form was developed, based on the variables existing in the transfer form, consisting of 10 questions: year, month and transfer shift; gender, stage of the life cycle, grievance/complaint, procedures performed and medications administered to the victim; health professionals present in the transfer and destination municipality.

Data were descriptively analyzed using R software, version 3.2.2. The study followed resolutions 466/12 and 510/16, with approval by the Research Ethics Committee of the Belo Jardim Educational Association (AEB), according to opinion No. 011654/2019 and CAAE: 07774818.6.0000.5189. There was waiver of signing the Free and Informed Consent Term because it was the collection of secondary data, obtained from the SAMU transfer registration form.

RESULTS

Regarding the years in which the transfers took place, there was a lack of linearity, an increasing or decreasing situation, as described in Figure 1.

As for the flow in those months, the four quarters of the years under study were analyzed. The first quarter highlighted 63 (30.85%) transfers, the second 35 (17.15%), the third 52 (25.5%) and the fourth 54 (26.5%). It is worth mentioning the months of January 30 (14.70%) and October 25 (12.25%) with the highest volume of transfers.

Regarding the shifts, it was observed that most transfers occurred at night, with 86 (42.2%), then the morning shift predominated 39 (19.1%), the afternoon occurred 38 (23.5%) and at dawn 31 (15.2%).

Among the genders, the predominance of males stood out, corresponding to 171 (83.3%) transfers. Regarding the victims' life cycle, it was possible to identify four types: Pediatric (1 to 11 years old), adolescents (12 to 18 years old), adults (19 to 59 years old) and elderly (> 60 years old). It was observed that the public that was most transferred by SAMU, affected by a traumatic condition was the adult, which corresponded to 150 (73.55%) transfers, followed by adolescents with 25 (12.25%), later it was the elderly with 20 (9.80%) and the smallest audience was pediatric, with nine (4.40%).

There were 11 injuries/complaints that required the transfer of trauma victims, in which traffic accidents and traumatic brain injuries were predominant, with 38.7% and 15.19%, respectively, as detailed in table 2.

Regarding the hospital units that received the patients, it was noted that they were located in different regions, alternating between the Metropolitan Region of Recife (RMR - Região Metropolitana de Recife), Agreste and Sertão. The RMR predominated, with 125 transfers (61.2%) to Recife. The municipality of Caruaru, in the state's countryside, was the second destination to which there were the most transfers, totaling 37 (18.15%). The third city to which there were most transfers was Arcoverde,

Figure 1 - Trauma transfers performed by SAMU, per year. Pesqueira, PE, Brazil, 2020.

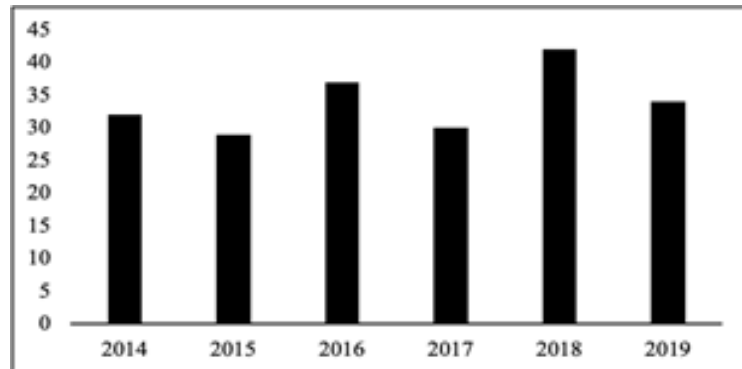


Table 1- Aggravations and complaints of trauma victims transferred by SAMU. Pesqueira, PE, Brazil, 2020.

Aggravation / Complaint	n (%)
Car accident	79 (38,70)
Brain cranium trauma	31 (15,19)
Gunshot wound	30 (14,70)
Fall	24 (11,75)
White weapon injury	17 (8,33)
Polytraumatism	6 (2,94)
Physical aggression	5 (2,45)
Hit by a car	5 (2,45)
Burn	4 (2,0)
Femur fracture	2 (1,0)
Abdominal trauma	1 (0,49)

Source: Survey data, 2020.

Table 2 - Procedures performed during transfers. Pesqueira, PE, Brazil, 2020.

Procedures performed	n (%)
Peripheral Venipuncture	109 (25,80)
Oxygen Administration	62 (14,70)
Neck brace	56 (13,30)
Immobilization of limbs	39 (9,25)
Dressing	32 (7,60)
Bladder probe	29 (6,90)
Orotracheal intubation	28 (6,64)
Mechanical ventilation	23 (5,45)
Hemorrhage control	15 (3,55)
Cardiac monitoring/oximetry	10 (2,37)

in the state's backlands, with 22 (10.77%). The remaining transfers were 10 (4.90%) to Sanharó, 4 (2.0%) to Belo Jardim, the municipalities of Alagoinha and Limoeiro had 1 (0.49%) transfer, each and in 4 transfers (2.0%) there was no municipality of destination registered.

Since in some transfers more than one procedure was performed on the patient, there was a record of the performance of 422 procedures, among which the peripheral venous puncture, performed in 109 (25.80%) transfers, and the oxygen administration, in 62 (14.70%), as detailed in table 2.

In 11 (5.39%) transfers, medication administration was recorded, among which midazolam, noradrenaline and dipyrone predominated, administered in two (18.0%) transfers, each.

Among the professionals who made up the health team in the consultations, technicians and drivers were in 204 (100.0%), the doctor in 123 (60.3%) and nurses in five (2.45%).

DISCUSSION

Of the 204 transfers, it was found that the predominance of transfers at night was similar to that found in a study from the city of Maceió, which took place in a reference center for emergency care, which analyzed the epidemiological profile of victims of firearm wounds, stabbing wounds and assaults.⁶ Thus, it is observed that traumatic injuries seem to occur during the night shift. Another fact that may contribute to the fact that most transfers took place in this shift refers to the time elapsed between the injury, the arrival of the victim at the hospital, stabilization and the search for a vacancy in the state bed center.

Thus, it is observed that traumatic injuries seem to occur during the night shift. Another fact that may contribute to the fact that most transfers took place in this shift refers to the time elapsed between the injury, the arrival of the victim at the hospital, stabilization and the search for a vacancy in the state bed center.⁷ These similarities may be related to behavioral as-

Sedation	10 (2,37)
Oropharyngeal cannula	4 (0,95)
Defibrillation/cardioversion	2 (0,45)
Gastric tube	2 (0,45)
Cardiac massage	1 (0,22)

Source: Survey data, 2020.

pects more commonly found in men, such as alcohol consumption, recklessness in traffic and lack of use of protective equipment.⁸ Therefore, it is worth emphasizing the need for knowledge and implementation of the National Policy for Integral Attention to Men's Health, which aims to promote health actions that contribute to the understanding of the unique male reality in their sociocultural, political and economic contexts.⁹

Regarding the life cycle, the adult audience was the most transferred. This result demonstrates compliance with a study carried out in a public hospital in Piauí, which showed that 97.0% of the patients were adults, victims of car accidents.¹⁰ The explanation for this compatibility of data can be given by the greater exposure of adults to risk factors and diseases that demand emergency care and, therefore, inter-hospital transfer.

Regarding injuries/complaints, there was a superiority of traffic accidents. Contrary to this result, a study carried out in Portugal, which investigated the inter-hospital transport of critically ill patients, pointed out that neurological complaints were the causes of 67.9% of all cases.¹¹ The difference between the findings may be the result of sociocultural and behavioral particularities of each location, however, it is pointed out that the high prevalence of accidents, found in the Brazilian scenario, is anchored in data from the World Health Organization, according to which the deaths caused by automobile accidents occupy the eighth position among the biggest causes of death in the world. From this perspective, when considering that factors that can contribute to such events include speeding, recklessness and consumption of alcoholic beverages, the relevance of inter-

sectoral interventions that seek to confront the problem is pointed out.¹²⁻¹³

Among the procedures performed, a high rate of peripheral venous punctures was found. This finding differs from a study carried out in Rio Grande do Sul, referring to interventions carried out by the SAMU USA team, in which superiority was found in the number of oxygen therapy procedures.¹⁴ The high rate of peripheral venous access in PHC may be due to the relevance of maintaining an access route for infusion of solutions or administration of medications. In view of the duration of the patient transport process, the need for a peripheral access route in most cases is understandable, which may justify the high performance of this procedure.

Among the most recurrent drug administrations in the treatment of victims, the use of dipyrone, midazolam and noradrenaline stood out. Research promoted by the Aerodrome Operations Battalion of the state of Santa Catarina showed similarity in the high use of dipyrone¹⁵, which can be justified due to the need for pain relief, which is common in traumatic events and their possible injuries. Another fact that may contribute to the high use of this drug is the fact that it is easily accessible and inexpensive in health services. Furthermore, the predominance of midazolam and noradrenaline administration are also justifiable in the routine of trauma health care, given the possibility of hemodynamic instability that requires reversal of hypotension and/or sedation for invasive procedures.

It was possible to observe the predominance of the health team composed of drivers and nursing technicians, who were in all transfers. This finding contrasts with research from England, which found a predominance of doctors and nurses in inter-

-hospital transfers. 16 It is pointed out that this difference may have occurred in view of the difference in severity of the victims since, as recommended by the federal councils of medicine and nursing, in Brazil, only the transfer of critically ill patients must be accompanied by medical and nurse professionals. This need is supported when it is considered that the Nurse and his/her duties in the care of critically ill patients are relevant to patient safety. 17

It should be noted that this study has as a limitation the fact that the data were collected in a service that only had a basic life support unit linked to the public health service, as well as, because it dealt with transfers carried out exclusively in the land transport segment. . Therefore, the findings may diverge from the realities of advanced

support, private transport and the air and/or sea sections of patient transfer.

The present study can help to understand the characteristics of transfers of trauma victims and, thus, contribute to the characterization of the real demand for the services performed, in order to guide the respective practices and professional training. In addition, its method can be replicated in other realities, in order to expand the state of the art on the subject and enable the comparison of results from different geographic locations.

CONCLUSION

The inter-hospital transfers of trauma victims carried out by SAMU were, in their majority, destined to the male public,

aged between 19 and 59 years, affected by car accidents. Such transfers occurred predominantly in the months of January and October, during the night shift. In addition, the most performed procedure was peripheral venipuncture, the most used drugs were dipyrone, midazolam and norepinephrine, as well as the predominant presence of the technical nursing and medical professionals.

In view of the above, it is suggested that further research be carried out to investigate transfers carried out by advanced support units, by air and sea transport, as well as possible repercussions of the procedures and characteristics of transfers on survival, severity of sequelae and health costs.

REFERENCES

- Freire ILS, Vasconcelos QLDAQ, Araújo RQ, Melo GSM, Costa IKF, Torres GV. Perfil de potenciais doadores segundo a efetividade da doação. *Rev Enferm UFSM*. 2013;3(N Esp):709-18. doi: 10.5902/2179769210998
- Bousquat A, Giovanella L, Campos EMS, Almeida PF, Martins CL, Mota PHS, et al. Atenção primária à saúde e coordenação do cuidado nas regiões de saúde: perspectiva de gestores e usuários. *Cien Saude Colet* [Internet], 2017. [Citado em 2020 Out 01], v.22, n.4, p.1141-1154. Disponível em: <https://www.scielo.org/article/csc/2017.v22n4/1141-1154/pt/>
- Ministério da Saúde (BR). Portaria n. 2.048, de 5 de novembro de 2002. Aprova o Regulamento Técnico dos Sistemas Estaduais de Urgência e Emergência. Brasília (DF); 2002. [Citado em 2020 Out 03]. Disponível em: https://bvsms.saude.gov.br/bvs/saudelegis/gm/2002/prt2048_05_11_2002.html
- Battisti GR, Branco A, Caregnato RCA, Oliveira MMC. Perfil de atendimento e satisfação dos usuários do Serviço de Atendimento Móvel de Urgência (SAMU). *Rev Gaúcha Enferm* [Internet], 2019 [Citado 2021 Ago 01]; v. 40, n. e20180431, p. 1-8. Disponível em: <https://www.scielo.br/j/rgenf/a/9pJcZdb5cBGwymtLxHSf8QK/?lang=pt&format=pdf>.
- Marques TO, Melo LD, Taroco FE, Duarte RML, Lima HD. Serviço de Atendimento Móvel de Urgência (Samu): uma revisão integrativa. *Research Society and Development* [Internet], 2021 [Citado 2021 Ago 01] v. 10, n. 2, p.e38310212522. Disponível em: <https://www.rsdjournal.org/index.php/rsd/article/view/12522/11388>.
- Antão, KL, Pinheiro MS, Maria FHOS, Santos TS, Trindade RFC, Bragagnollo GR, Guimarães MN, Carvalo LWT. Perfil epidemiológico de vítimas de violência atendidos em hospital de emergência. *Revista Eletrônica Acervo Saúde* [Internet], 2019. [Citado 2020 Ago 10] v.11, n.10, p.e395. Disponível em: <https://www.acervomais.com.br/index.php/saude/article/view/395>
- Mehrdad M, Fazel MR, Sehat M, Khosravi G, Mohammadzadeh M. Perfil epidemiológico de fraturas e luxações de extremidades em acidentes de trânsito em Kashan, Irã: um olhar sobre as deficiências relacionadas. *Arch Bone Jt Surg* [Internet], 2017. [Citado em 2020 Ago 11] v.5, n.3, p. 186-192. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5466864/>
- Silva BJC, Santos JDM, Santos AMR, Madeira MZA, Gouveia MTO. Acidentes com motocicletas: características da ocorrência e suspeita do uso de álcool. *Cogitare Enferm* [Internet], 2017. [Citado em 2020 Out 04], v.22, n.4, p.e50715. Disponível em: <https://revistas.ufpr.br/cogitare/article/view/50715/pdf>
- BRASIL. Ministério da Saúde. Política Nacional de Atenção Integral à Saúde do Homem: princípios e diretrizes. Brasília, DF, 2009. [Citado em 2020 Out 01] Disponível em: http://bvsms.saude.gov.br/bvs/saudelegis/gm/2009/prt1944_27_08_2009.html
- Damasceno IS, Alves TM, Santos LRO, Fianco MC, Bastos SN-MAN, Silva MNL. Caracterização clínica e epidemiológica de pacientes vítimas de acidentes motociclísticos. *Enferm. foco (Brasília)* [Internet], 2018. [Citado em 2020 Ago 13] v.9, n.2, p.13-17. Disponível em: <https://pesquisa.bvsalud.org/portal/resource/pt/bde-34061>
- Graça ACG, Silva NAP, Correia TIG, Martins MDS. Transporte inter-hospitalar do doente crítico: a realidade de um hospital do nordeste de Portugal. *Revista de Enfermagem Referência* [Internet], 2017. [Citado em 2020 Ago 17], v.4, n.15, p.133-144. Disponível em: http://www.scielo.mec.pt/scielo.php?script=sci_arttext&pid=S0874-02832017000400014
- Ribeiro LA, Pimentel JL, Ribeiro H, Benedito KLR, Análise das causas dos acidentes automobilísticos nas rodovias federais da Bahia entre 2014 e 2017. *Revista De Medicina* [Internet], 2020. [Citado em 2020 Ago 25], v.99, n.1, p.27-34. Disponível em: <http://www.periodicos.usp.br/revistadc/article/view/158034>
- Silva DO, Oliveira MA, Fernandes FECV, Mola R. Acidentes de

REFERECES

- trânsito e sua associação com o consumo de bebidas alcoólicas. *Enfermagem global* [Internet], 2018. [Citado em 2020 Set 01], v.17, n.4, p.365-400. Disponível em: <https://revistas.um.es/eglobal/article/view/eglobal.17.4.301021>
14. Carvalheiro KA, Rodrigues AMR, Schmidt CR, Pluta P, Alves DFA, Kolankiewicz ACB. Serviço de atendimento móvel de urgência: diagnóstico pré-hospitalar. *Revista Vigilância em saúde* [Internet], 2019. [Citado em 2020 Set 07], v.3, n.5, p.08-20. Disponível em: <https://www.publicacoeseventos.unijui.edu.br/index.php/conintsau/article/view/10871/9544>
15. Schweitzer G, Nascimento ERP, Nascimento KC, Moreira AR, Amante LN, Malfussi LBH. Emergency interventions for air medical services trauma victims. *Rev Bras Enferm* [Internet], 2017. [Citado em 2020 Set 10], v.7, n.1, p.48-54. Disponível em: https://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-71672017000100054&lng=pt&tlng=pt
16. Grier S, Brant G, Gould TH, von Vopelius-Feldt J, Thompson J. Critical care transfer in an English critical care network. *Journal of the Intensive Care Society*. [Internet], 2019. [Citado em 2020 Set 12], v. 21, n. 1, p. 33-39. Disponível em: <https://journals.sagepub.com/doi/10.1177/1751143719832175>
17. Oliveira AR, Souza LCB, Gambarine RCM, Oliveira WS, Freitas KA, Nunes MAC. Segurança do paciente no pronto atendimento de Marataízes-ES: cultura e resultados de eficiência e qualidade. *Saúde Coletiva (Barueri)* [Internet].2020 [Citado 2021 Ago 01]; v.10, n.56, p.3214-3225. Disponível em: <http://revistas.mpmcomunicacao.com.br/index.php/saudecoletiva/article/view/907/1015>.