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FACTORS ASSOCIATED WITH READMISSION AND NON-URGENT DEMAND IN AN EMERGENCY CARE: CROSS-SECTIONAL STUDY

FATORES ASSOCIADOS À READMISSÃO E DEMANDA NÃO URGENTE EM UM PRONTO ATENDIMENTO: ESTUDO TRANSVERSAL

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RESUMO

Objetivo: Caracterizar os fatores associados à readmissão e à demanda não urgente de pacientes atendidos no pronto atendimento. **Método:** Realizou-se um estudo transversal em um Pronto Socorro Referenciado paulista, utilizando dados secundários de pacientes com idade superior a 18 anos, atendidos de setembro de 2022 a fevereiro de 2023. A demanda não urgente foi avaliada conforme o protocolo de classificação de risco e desfecho. Procederam-se análises bivariadas. **Resultados:** Dos 12.096 atendimentos analisados, 66,5% foram considerados como demanda não urgente, estando essa condição associada ao gênero masculino e ao número de internações no último ano. Registrou-se um total de 94 readmissões, relacionadas ao gênero masculino, à idade avançada e à residência na região norte do município. **Conclusão:** A demanda não urgente mostrou-se mais frequente entre homens e teve uma redução conforme o aumento do número de internações prévias. As readmissões foram influenciadas pelo gênero, pela idade e pelo local de residência dos pacientes. Uma melhor articulação entre os serviços de saúde poderia contribuir para a redução dos atendimentos desnecessários e para a diminuição da superlotação dos serviços de urgência.

Descritores: Serviços Médicos de Emergência; Readmissão do Paciente; Continuidade da Assistência ao Paciente.

ABSTRACT

Objective: To characterize the factors associated with readmission and the non-urgent demand of patients attended at the emergency service. **Method:** A cross-sectional study was carried out in a referred emergency room in the state of São Paulo, using secondary data from patients older than 18 years, attended from September 2022 to February 2023. The non-urgent demand was evaluated according to the protocol of risk classification and outcome. Bivariate analyzes were carried out. **Results:** Of the 12,096 analyzed visits, 66.5% were considered as non-urgent demand, being this condition associated with male gender and the number of hospitalizations in the last year. A total of 94 readmissions were registered, related to male gender, advanced age and residence in the northern region of the city. **Conclusion:** The non-urgent demand was more frequent among men and had a reduction as the number of previous admissions increased. Readmissions were influenced by gender, age and place of residence of patients. A better articulation among health services could contribute to the reduction of unnecessary care and to the reduction of overcrowding of emergency services.

Descriptors: Emergency Medical Services; Patient Readmission; Continuity of Patient Care.

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INTRODUCTION

Health Care Networks (RAS) are organizational configurations that articulate health actions and services of different levels of technological complexity. These networks, connected by technical, logistical and management support systems, aim to ensure the integrity of care. The Urgency and Emergency Network (RUE) is integrated in the RAS with the aim of expanding and improving integral and humanized access to emergency services (SU), quickly and accurately, as well as articulating and integrating all existing health equipment in the territory. In order for these objectives to be achieved, integration among the existing components in the RAS is necessary, in particular those that make up the RUE[1-2].

The emergency medical service is one of the RUE's components. They operate uninterrupted, every day of the week, and are responsible for ensuring reception and intervention in the clinical conditions of patients, and can refer them to services of lower or higher technological density, as necessary[2-3].

Therefore, in addition to the population's lack of knowledge about the guidelines of these levels of care, patients with low severity clinical conditions begin to seek services of greater complexity in an inadequate way. Authors indicate that 61.1–65% of patients treated in the emergency hospital system could be treated by services of lower technological density, such as primary health care or specialty outpatient clinics[4-5].

This may result in increased demand characterized as non-urgent, users' dissatisfaction, overcrowding, longer waiting time for care, poor management of the health system and frailty in care[4-8]. Overcrowding is a global health problem and can affect the time of treatment and therefore the quality of care provided to the patient. In an international context, research has revealed that in countries in North America, Europe and Australia, SUs care grows by about 3–6% a year, with pre-hospital emergency services increasing by approximately 125% in England over the past 20 years. In these countries, the consequences do not differ from those mentioned above[7].

The isolated and punctual care offered by occasional consultations in primary health care and emergency services may not be sufficient to fully meet the patients' health needs, making exacerbations more frequent and, consequently, increasing the need for the search for SU, resulting in a repetitive cycle. This situation can negatively impact the quality of life of individuals and lead to unfavorable economic consequences for families, communities and for the whole of society[9-10].

Research on hospital readmissions and frequent users in SU is present both nationally [8-11] and internationally[12-15]. Although there is no consensus on the definition, a limit of four to five visits or more per year is used for such classification. These studies recognize readmissions as a relevant indicator of care quality, as they reflect both the impact of hospital care and the patient's condition after discharge and the continuity of care within RAS[12-16].

A survey conducted at a trauma reference center identified that, among readmissions in the SU, 61.19% were probably preventable, 19.47% possibly preventable, and 19.34% eventually preventable. Regarding time, 48.16% occurred within one week after initial readmission[17].

To ensure care for the patients' main health problems, it is necessary to know the epidemiological and demographic profile of the population attended. With the mapping of patients treated in the emergency department, it can be proposed strategies for prevention and articulation with other services in the municipality, thus strengthening important points known to ensure the effective transition and continuity of care in RAS[1-3,16].

Thus, the objective of the study was to characterize the factors associated with readmission and the non-urgent demand of patients attended at the emergency service.

METHOD

Type of study

This is a cross-sectional study using secondary data.

Location of the study

The study was conducted in a Referred Emergency Room (PSR) in the state of São Paulo. This is the unit of greatest complexity in emergency and emergency care of the Regional Health Department VI in Brazil, serving as a reference for approximately 68 municipalities[18].

Study population

Inclusion criteria: adult patients, over 18 years old, living in the studied city and who were attended at the PSR between September 2022 and February 2023.

Exclusion criteria: records with incomplete data.

Data collection

The authors of the study carried out data collection from secondary information provided by the Medical I.T. Center of Hospital das Clínicas.

The variables were divided into sociodemographic variables (gender, age, schooling, territorialization), and related to the patient's health status (main complaint, morbidities classified by ICD-10, risk classification, outcome, number of hospitalizations in the last year).

For the DNU's characterization, the risk classification according to the institutional protocol and the need for interventions in the PSR were considered. Thus, patients classified as "little urgent" and "non-urgent" and those who did not receive interventions in the service (such as conducting examinations, administering medications, bandages, referral to specialists or passing away) were characterized as "non-urgent". Readmissions were considered as four or more visits to the emergency department within one year[13].

The data were analyzed by the researcher and doubts about the inclusion criteria were solved in the periodic meetings of the research group. All medical records met the selection criteria.

Bivariate analyzes and associations by Poisson regression were performed to identify factors related to DNU and readmissions, being considered significant values below 0.05.

Ethical procedures

The study received approval from the Ethics Committee in Local Research, in accordance with Resolution No. 466/2012 of the National Health Council, obtaining favorable opinion No. 5.466.719 and CAAE 57910122.2.0000.5411.

RESULTS

During the study period, 12,096 patients received care at PSR. The sociodemographic analysis identified an average age of 49.44 years, with a prevalence of female gender (50.8%). Most of the individuals had complete high school (30.1%), and most of the services occurred to residents of the central region of the municipality (46.6%). According to the institutional protocol, all patients underwent a reception with risk classification, in order to determine the need for care and the degree of suffering. Thus, it was possible to identify the prevalence of patients classified as "urgent" (38.4%) and "non-urgent" (28.6%) (Table 1).

The most frequent symptoms were moderate pain, with 3,688 visits (30.49%); non-urgent procedures, 1,523 (12.59%); return to check exams, 657 (5.43%); and trauma, 643 (5.32%).

Table 1 - Profile of patients admitted to the emergency room referenced from September 2022 to February 2023 according to gender, age, schooling, territory, risk classification and relevance (n=12096). Botucatu, SP, Brazil, 2024

Variables	n	%
Gender		
Female	6142	**50.8**
Male	5952	49.2
Schooling		
Master/PhD	7	1.0
Complete Higher Education	1267	10.6
Incomplete Higher Education	870	7.3
Complete High School	3601	**30.1**
Incomplete High School	945	7.9
Elementary 5–8	1024	8.5
Incomplete Elementary 5-8	2344	19.6
Complete Elementary 1-4	629	5.2
Incomplete Elementary 1-4	755	6.3
Only Literate	322	2.7
Non-literate	219	1.8
Omitted	113	9.0
Territory		
Center	5642	**46.6**
North	2526	20.9
South	1639	13.5
East	1291	10.7
West	932	7.7
Rural	66	0.5
Risk Classification		
Urgent	4643	**38.4**
Non-urgent	3454	28.6
Little urgent	2846	23.5
Very urgent	1094	9.0
Emergency	59	0.5
Pertinence		
Non-urgent demand	8047	**66.5**
Urgent demand	4049	33.5
Total	**12096**	**100.0**

Regarding the outcome of the visits, 6,902 (57%) patients were discharged after consultation; 1,963 (16%) were discharged after examination; and 1,887 (15.6%) were referred to the hospitalization sector. The other outcomes were discharge after medication (6.3%), dropout (3.6%) and discharge by voluntary withdrawal (0.4%). Three cases of deaths were recorded in the period. In addition, there was referral to specialty, 1,889 (15.62%), and flow redirection to primary healthcare unit, 124 (1.03%).

Of the total sample analyzed and according to the inclusion criteria, 8,047 (66.5%) patients were classified as DNU. It was verified that the DNU was associated with male patients and with the number of hospitalizations in 2022, that is, the DNU decreased with the increase in hospitalizations (Table 2).

Table 2 - Factors associated with the non-urgent demand in the emergency room referenced from September 2022 to February 2023 (n= 12096). Botucatu, SP, Brazil, 2024

Variable	RP	IC95%		*p*
Male gender	**1.07**	**1.00**	**1.14**	**0.037**
Age (years)	1.00	1.00	1.00	0.588
Not literate	2.14	0.30	15.43	0.450
Literate only	2.24	0.31	16.05	0.422
Incomplete Elementary 1-4	2.38	0.33	16.98	0.386
Complete Elementary 1-4	2.18	0.31	15.56	0.437
Incomplete Elementary 5-8	2.32	0.33	16.49	0.400
Complete Elementary 5-8	2.33	0.33	16.60	0.398
Incomplete High School	2.29	0.32	16.30	0.408
Complete High School	2.26	0.32	16.06	0.415
Incomplete Higher Education	2.33	0.33	16.62	0.398
Complete Higher Education	2.81	0.40	20.00	0.302
Schooling (Regarding: Master/PhD)	1.00			
Rural	1.27	0.87	1.84	0.214
North	0.99	0.91	1.07	0.825
East	1.00	0.90	1.11	0.939
West	0.92	0.81	1.04	0.170
South	1.05	0.95	1.15	0.345
Territory (Regarding: Center)	1.00			
Hospitalizations in the year 2022	**0.80**	**0.77**	**0.83**	**0.000**

PR: Poisson Regression.

It was also evidenced that the highest prevalence of DNU, according to the grouping of the International Classification of Diseases (ICD-10), were characterized by complaints such as: "Factors that influence health status and contact with the health service", with 51.5%; "Symptoms, signs and abnormal findings of clinical and laboratory tests, not elsewhere classified", with 45%; "Diseases of the musculoskeletal system and connective tissue", with 26%; "Diseases of the genitourinary system", with 25.8%; and "Diseases of the digestive tract", with 24.4% (Table 3).

Table 3 - Prevalence of diseases, according to ICD-10 groups in the emergency room referenced from September 2022 to February 2023 (n = 12096). Botucatu, SP, 2024

Diseases according to ICD-10 classification	DNU	
	n	%
Factors that influence the health status and contact with the health service	6226	51.5
Symptoms, signs and abnormal findings of clinical and laboratory tests, not elsewhere classified	5441	45.0
Diseases of the musculoskeletal system and connective tissue	3151	26.0
Diseases of the genitourinary system	3122	25.8
Diseases of the digestive system	2946	24.4
Injuries, poisoning and some other consequences of external causes	2925	24.2
Diseases of the respiratory system	2906	24.0
Diseases of the circulatory system	2508	20.7
Eye diseases and attachments	2416	20.0
Skin and subcutaneous tissue diseases	2135	17.7
Some infectious and parasitic diseases	2096	17.3
Mental and behavioral disorder	1634	13.5
Fracture of other bones and limbs	1786	14.8
Infections by the herpes virus	1632	13.5
Diseases of the nervous system	1492	12.3
Endocrine, nutritional and metabolic diseases	1376	11.4
Neoplasms and tumors	1304	10.8
Others	3202	26.4

Others: *in situ carcinoma* of the cervix; pregnancy, childbirth and puerperium; falls; congenital malformations, deformities and chromosomal abnormalities; codes for special proposals; exposure to smoke, fire and flames; external causes of morbidity and mortality; some diseases originating in the perinatal period.

In relation to readmissions, more than four returns to the emergency department were observed in 94 patients (0.77%), with the lowest amount of four and the highest of 27 readmissions over a period of one year.

Through Poisson regression, it was verified that these readmissions were associated with male gender ($p = 0.0008$ 0.0000), advancing age ($p = 0.0000$) and patients from the northern region of the city ($p = 0.038$) (Table 4).

Table 4 - Factors associated with patient readmissions to the referenced emergency room from September 2022 to February 2023 (n = 12096). Botucatu, SP, 2024

Variable	RP	IC95%		*p*
Male gender	**1.50**	**1.18**	**1.90**	**0.0008**
Age (years)	**1.013**	**1.007**	**1.019**	**0.0000**
Rural	0.00	0.00	.[a]	1.000
North	**0.70**	**0.49**	**0.98**	**0.038**
East	0.98	0.66	1.45	0.926
West	1.36	0.92	2.01	0.122
South	0.97	0.68	1.39	0.879
Territory (Regarding: Center)	1			

PR: Poisson Regression.

DISCUSSION

In the studied population, there was a mean age of 49.4 years, homogeneity in relation to gender, prevalence of schooling at the complete high school level and a higher rate of the resident population in the central territory of the city. Another investigation, carried out in the same municipality in 2022, also evidenced prevalence of the female gender[19], a characteristic that can be considered an epidemiological mark of this RAS. However, studies indicate a prevalence for males in the emergency and emergency service, a discrepancy that can be attributed to cultural, biological factors and differentiated access to health services, since men tend to seek medical assistance in more advanced stages of the disease[20-21].

As for the age group, research indicates that most of the population attended in emergency services is between 18–30 years[21-22], while this study found a significantly higher mean age, of 49.4 years. International data suggest that older adults make more frequent use of emergency services due to chronic diseases and their complications [23], a finding that reinforces the importance of more effective prevention and follow-up policies in primary care to prevent overcrowding of SUS.

Regarding schooling, the literature presents divergent results: some studies indicate a higher prevalence for incomplete elementary school[3,20], while in this research most participants had complete high school. In general, schooling and economic situation are predictors of the use of health services, since they are related to the level of knowledge about health and adherence to healthier behaviors[24]. A survey on inequalities in access to health between urban and rural areas in Brazil reveals that, in rural regions, the demand for health services increases with the level of education[25].

Schooling also impacts the adoption of self-care actions and occupational and work conditions, making low-income people have a lower understanding of health status and, consequently, lower demand for services in a preventive manner[24-25].

The central region of the municipality was the one with the highest prevalence of patients in the emergency department (46.6%). This region has coverage of Basic Health Units (UBS) and a Municipal Emergency Room for Adults. On the other hand, it was in the North region that there was an association with readmission, an area also assisted by UBS and services of the Family Health Strategy, with hours of attendance from 07:00 am to 10:00 pm. This result gives rise to reflection on the solubility and access of the population to RAS services, since about 42.4% of the sample confirmed that the emergency service from the UBS [21] is not differentiated, indicating a high frequency to the emergency service, even with primary care services.

Regarding the risk classification, the most prevalent categories were “urgent” (38.4%) and “not urgent” (28.6%). This finding is in line with other studies that identified a prevalence of non-urgent and little urgent classifications[21-22], suggesting a need for reorganization of primary care to avoid overloading the SUS and ensure more effective care.

ICD-10 diagnoses are divided into chapters, and the most prevalent in this study are chapters Z, R, M, N, K, S and J, respectively. Group Z is defined as “Factors that influence the health status and contact with the health services”. The R and M groups refer to "symptoms, signs and abnormal findings of clinical and laboratory tests, not elsewhere classified" and "musculoskeletal system and connective tissue diseases", respectively. Group N comprises "diseases of the genitourinary system", group K "Diseases of the digestive system" and group S "Injuries, poisoning and some other consequences of external cause"[24]. A survey in the south of the country identified as the main reasons for the emergency service search for complaints such as respiratory symptoms, trauma and abdominal pain, found in diagnostic groups ICD-10 J, S and R, respectively[21].

Group Z includes several ICD diagnoses, highlighting “People in contact with health services for examination and investigation” and “People in contact with health services for specific care and procedures”, a fact which corroborates the findings of this research on “non-urgent procedures” and “return to check exams”.

Complaints of moderate pain and intense pain align with studies that point to acute pain as the most frequent reason for emergency consultations[27-28].

The demand for the service due to trauma may be related to the fact that it is a PSR, covering 68 municipalities in the region and serving as a reference for the Mobile Pre-Hospital Care Services and for the Center for Regulation and Supply of Health Services[18].

Regarding the outcome, a prevalence of 57% of patients who were discharged after the consultation was observed, followed by 16% who were discharged after the examination. The prevalence of hospital discharge after consultation, combined with the classification of cases as non-urgent or low urgency, reinforces the hypothesis that this population could be attended in primary care, solving its problems at the same level of care. The care of cases that do not meet the criteria of urgency or emergency by SUS and emergency may compromise the functionality of these services, according to the medical perspective[4,8].

This pattern of use highlights, once again, the need to expand the provision of services in primary care to avoid unnecessary consultations in emergency care units.

Regarding readmissions, these were associated with male gender($p = 0.0008$), increased age ($p = 0.0000$) and patients living in the northern region of the city ($p = 0.038$). A study indicates that male individuals tend to be more affected by diseases, especially those severe and chronic, leading to greater use of intensive care services[20].

Research indicates that the return to emergency services occurs mainly due to early discharge, to insufficient home support in the management of chronic diseases (e.g. heart failure), to the feeling of weakness at discharge, insufficient instructions for the discharge and complexity of the medication regimen[13-14]. Although a low percentage of readmissions has been identified over a period of one year, it is pertinent to reflect on the transition care offered to these patients, as well as on the continuity of care and access to the other components of RAS.

Limitations and implications of the study

As a limitation of the study, the use of secondary data from the Medical Informatics Center of the Hospital is highlighted, limited to a single unit. The analysis of the factors associated with DNU and readmission in ready-to-care services is relevant for several fundamental reasons for the health system, patients and professionals, promoting the optimization of health resources, the improvement of the quality of care in terms of patient safety and satisfaction, in addition to cost-effectiveness. The results can also contribute to the identification of deficiencies in primary care and in the planning and management of public health. Minimizing unnecessary readmissions and admissions can favor better health outcomes, since patients receive more appropriate and effective care, reducing complications and facilitating recovery.

CONCLUSION

It was concluded that the non-urgent demand in the Emergency Care was associated with the male gender and the number of hospitalizations in the year 2022. Regarding readmission, this was related to male gender, age, and the northern region of the municipality in which the study was conducted.

It is essential to articulate the various components of the care network, as well as the evaluation and planning of high school, health education for the management of home health problems and the specific discharge guidelines. These findings emphasize the need to strengthen transition care and expand access to RAS services to ensure more comprehensive and efficient care.

Finally, it is necessary to carry out new research on the non-urgent demand, the transition of care and hospital readmissions, since they are indicative of the quality of care dispensed. Investigating this theme enables these services to be continuously prepared to meet current demands, preventing fragmentation of care and ensuring quality care. In addition, it encourages reflections for the elaboration of educational actions in health on the flow of care in the RAS.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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