

PROFILE OF CLINICAL EMERGENCIES IN THE EMERGENCY DEPARTMENT OF A TEACHING HOSPITAL

CARACTERIZAÇÃO DO PERFIL DAS EMERGÊNCIAS CLÍNICAS NO PRONTO-ATENDIMENTO DE UM HOSPITAL DE ENSINO

CARACTERIZACIÓN DEL PERFIL DE EMERGENCIAS CLÍNICAS EN LA GUARDIA DE UN HOSPITAL ESCUELA

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ABSTRACT

This study aimed to: investigate the demographic characteristics of patients seen in the emergency department of a teaching hospital; identify the most common clinical emergencies; and identify the ultimate destination of these patients (medical discharge, hospitalization or death). This retrospective, cross-sectional, quantitative study. Data were collected from patients' electronic medical records. Inclusion criteria were: adult patients 18 years or older, with a diagnosis of clinical emergency, seen in the period from January 2009 through May 2010. There was a predominance of: females (56.33%), of white ethnicity (86.95%), and mean age 48.74 ± 7.8 years. The most prevalent age group was 18-29 years. Most of the patients (99.65%) declared themselves to be active workers. 60.23% were married. The most frequent neurologic diseases found were: headache (29.03%); stroke (26.09%); and upper back pain (10.25%) and cardiologic diseases were: precordial pain (38.98%), heart failure (25.79%), hypertension (12.29%) and cardiac arrhythmia (8.67%). The ultimate destinations of patients seen in the emergency department were: medical discharge (55.8%) and hospitalization (43.26%). Among those patients who had been hospitalized, medical discharge was the most common outcome (87.99%), followed by death (11.47%). Further research is necessary in order to better understand the various aspects involved in the operation of an emergency department unit and to develop an institutional profile that encompasses other approaches, such as a better and more efficient health care delivery by health professionals.

Keywords: Emergencies; Emergency Medical Services; Emergency Treatment; Hospitals, University.

RESUMO

O objetivo desta pesquisa foi investigar as características demográficas dos pacientes atendidos no pronto-atendimento da emergência de um Hospital de Ensino, identificar as emergências clínicas predominantes e verificar o destino desses pacientes (alta, internação ou óbito). Trata-se de estudo transversal, retrospectivo, com análise quantitativa dos dados do prontuário eletrônico. A amostra foi constituída por 9.756 pacientes adultos com 18 anos ou mais, atendidos com diagnóstico médico de emergência clínica nos períodos de janeiro de 2009 a maio de 2010. Houve predominio do gênero feminino (56,33%), de etnia branca (86,95%), média de idade $48,74 \pm 7,8$ anos. A faixa etária prevalente foi entre 18 e 29 anos, a maior parte dos pacientes (99,65%) declarou-se ativo e 60,23% casados. As doenças mais encontradas na neurologia foram: cefaleia (29,03%), acidente vascular encefálico (26,09%) e dor lombar (10,25%). Na cardiologia as doenças mais comuns foram: dor precordial (38,98%), insuficiência cardíaca (25,79%), hipertensão arterial (12,29%) e arritmia cardíaca (8,67%). O destino final dos pacientes atendidos na emergência clínica foi: alta médica (55,8%) e internação (43,26%). Desses internados a alta médica foi a mais prevalente (87,99%), seguida de óbito, com 11,47%. Para tanto, novas pesquisas deverão surgir para melhor se conhecer os vários aspectos que envolvem o funcionamento de um serviço de emergência e traçar um perfil institucional que abranja outros enfoques, como o melhor atendimento pelos profissionais de saúde, com resolubilidade.

Palavras-chave: Emergências; Serviços Médicos de Emergência; Tratamento de Emergência; Hospitais Universitários.

RESUMEN

Investigar las características demográficas de los pacientes atendidos en el servicio de urgencias de un hospital escuela; identificar las urgencias clínicas más comunes y verificar el destino final de los pacientes (alta médica, hospitalización o muerte). Estudio transversal y retrospectivo. Se realizó

el análisis cuantitativo de datos extraídos de los registros médicos electrónicos. La muestra estaba formada por 9.756 pacientes. Los criterios de inclusión fueron: edad igual o superior a 18 años; tratarse de una urgencia clínica; en el período entre enero de 2009 y mayo de 2010. Predominaron el sexo femenino (56,33%), etnia blanca (86,95%), con media de edad de 48,74 ± 7,8 años. El grupo de edad más frecuente fue de 18-29 años. La mayoría de los pacientes (99,65%) declaró ser físicamente activo y 60,23% casado. Las enfermedades más frecuentes en neurología fueron: cefalea (29,035), accidente cerebrovascular (26,09%) y dorsalgia (10,25%) y en cardiología dolor en el pecho (38,98%), insuficiencia cardíaca (25,79%), hipertensión arterial (12,29%) y arritmia cardíaca (8,67%). El destino final de los pacientes atendidos varió entre alta médica (55,8%) y hospitalización (43,26%). Entre los pacientes hospitalizados, el alta médica fue el tipo de desenlace más frecuente (87,99%), seguido de muerte (11,47%). Se necesitan otras investigaciones para entender mejor los distintos aspectos que intervienen en el funcionamiento de un servicio de urgencias y para desarrollar un perfil institucional que incluya otros aspectos tales como atención más eficiente y de mejor calidad por parte de los profesionales de salud.
Palabras clave: Urgencias Médicas; Servicios Médicos de Urgencia; Tratamiento de Urgencia; Hospitales Universitarios.

INTRODUCTION

The emergency department (ED) unit is of central importance for the functioning of the health care system. This unit provides care to patients who arrive in severe conditions, and receives, screens and refers non-urgent cases to basic or specialized outpatient services of the existing health care network.¹ ED are prepared to see and treat a limited number of patients. Thus, the excessive volume of patients due to the high demand for emergency services often results in suffering for the population. Thus, there is a need for improvements in these services.²

In Brazil, 90% of emergency cases are clinical cases. Only 10% are trauma cases. Most cases, therefore, are low-complexity cases that could be treated in primary health care services.³

Changes in morbidity and mortality profiles caused by chronic noncommunicable diseases impact general and clinical emergency health care delivery in emergency departments. The latter represents the most frequent cases. Hospitals are still important gateways to medical assistance, which can be explained by difficulties in access to primary, specialized and diagnostic services.⁴

Moreover, the sense of urgency for the patient may not be the same as for health professionals. There must be an adequacy between emergency services and health care policies, in order to meet the population's needs for clinical emergency care.⁵ Studies conducted at clinical emergency services found that the most frequent diagnoses are related to the cardiovascular system, such as cerebrovascular lesions. The most frequent are ischemic stroke, followed by hemorrhagic stroke and cardiovascular lesions (left ventricular failure with pulmonary edema and acute ischemic heart disease).^{6,7}

Many strategies seek to incorporate specific therapeutic, technological and managerial advances to enable high-quality, efficient and accessible emergency care delivery for the stabilization of vital functions and proper referral of critical care patients.⁸

Thus, this study aimed to: investigate the demographic characteristics of patients seen in the emergency department of a teaching hospital; identify the most common clinical emergencies; and identify the ultimate destination of these patients (medical discharge, hospitalization or death).

METHODS AND MATERIALS

This retrospective, cross-sectional, quantitative study was conducted at the Emergency Department of a Teaching Hospital in São José do Rio Preto, SP. Data were collected from patients' electronic medical records.

The study sample consisted of 9,756 electronic medical records from patients admitted to a clinical emergency department. Patients were selected by convenience sampling. Inclusion criteria were: adult patients 18 years or older, with a diagnosis of clinical emergency, seen in the period from January 2009 through May 2010.

For data collection, we used a form with the following variables: demographic data (age, gender, ethnicity, occupation and marital status), clinical emergencies data (diagnosis and prevailing specialties) and ultimate destination (discharge, hospitalization or death).

The research project was approved by the Research Ethics Committee of FAMERP, according to Resolution CNS 466/12, under protocol No. 3696/2011. This study is part of a wider research project entitled "Epidemiological Study of Patients seen in the Emergency Department of a Teaching Hospital".

Data were processed in Excel 2007. Statistical analyzes were performed using the Statistical Package of Social Sciences software, SPSS, 2011, version 20.0. After descriptive analysis, we applied the chi-square test to the following variables: clinical emergencies, sex, marital status, age and type of emergency. A difference was considered significant when $p < 0.05$.

RESULTS

The 9,756 patients seen in the clinical emergency department of the Teaching Hospital from January 2009 through May 2010 had the following demographic characteristics: predominance of female gender (5496 - 56.33%), white ethnicity (8483-86.95%), and mean age of 48.74 ± 7.8 years. The most prevalent age group was 18-29 years. Minimum age was 18 years and maximum age was 104 years. Most patients (9,725 - 99.65%) were active workers and 5,876 (60.23%) were married (Table 1).

Table 1 - Distribution of demographic variables of clinical patients seen in the emergency department of a teaching hospital in São José do Rio Preto, Brazil, from January 2009 through May 2010

Variables	n	%
Gender		
Male	4260	43,67
Female	5496	53,66
Age group (years)		
18-29	2250	23,06
30-39	1469	15,06
40-49	1466	15,03
50-59	1356	13,90
60-60	1284	13,16
70 or older	1931	19,79
Ethnicity		
White	8483	86,95
Non-white	1273	13,05
Occupation		
Active	9725	99,65
Inactive	34	0,34
Marital status		
Married	5876	60,23
Divorced or separated or widowed	1946	19,95
Not specified	8	0,08
Single	1926	19,74

We found that most clinical emergencies seen during the studied period were emergencies of unknown causes (2,290 - 23.47%), followed by neurological emergencies (1,356 - 13.89%), cardiac emergencies (1,326 - 13.59%) and respiratory emergencies (10.3), as shown in Table 2.

Diseases found in neurological emergencies were: headache (385 - 29.03%), stroke (346 - 26.09%) and back pain (136 - 10.25%), as shown in Table 3. The most prevalent cardiac diseases were: chest pain (517 - 38.98%), heart failure (342 - 25.79%) and hypertension (163 - 12.29%), as shown in Table 4.

The ultimate destination of most patients seen in the emergency department was medical discharge (5444 - 55.8%) and hospitalization (4221 - 43.26%), while a minority of patients died. In addition, our study revealed an increase in the number of deaths after hospitalization (Table 5).

The chi-square test showed a statistically significant association (p <0.005) between the most common causes of clinical emergencies in the clinical emergency department (unknown causes, neurological and cardiac) and the variables gender, marital status, age, and type of medical discharge.

Among clinical emergencies, there was a prevalence of females and married subjects (p <0.01). Females accounted for 19.1% of cases of unknown cause; 6.9% in neurology and 7.3% in cardiology. Married people accounted for 9.3% of cases of unknown cause; 6.9% in neurology and 5.7% in cardiology. The chi-square test showed a statistically significant association (p <0.005) between the most common causes of clinical emergencies in the clinical emergency department (unknown causes, neurological and cardiac) and the variables gender, marital status, age group, and type of medical discharge.

Table 2 - Distribution of causes of clinical emergencies of patients seen in the emergency department of a teaching hospital in São José do Rio Preto, Brazil, from January 2009 through May 2010

Causes	n	%
Unknown	2290	23,47
Neurological	1356	13,9
Cardiac	1326	13,59
Pneumological	996	10,3
Oncological	542	5,55
Infectious	493	5,05
Ophthalmological	489	5,01
Gastrological	393	4,02
Vascular	323	3,31
Nephrological	298	3,05
Urological	239	2,44
Dermatological	230	2,35
Hepatological	199	2,03
Endocrinological	142	1,45
Rheumatological	109	1,11
Otorhinological	98	1
Hematological	95	0,97
Psychiatric	95	0,97
Intoxications	38	0,38
Geriatric	4	0,04
Orthopedic	1	0,01
Total	9756	100

Table 3 - Distribution of neurological diseases of patients seen in the emergency department of a teaching hospital in São José do Rio Preto, Brazil, from January 2009 through May 2010

Neurological Diseases	n	%
Headache	385	29,03
Stroke	346	26,09
Upper Back pain	136	10,25
Total	1356	100

Table 4 - Distribution of cardiac diseases of clinical patients seen in the emergency department of a teaching hospital in São José do Rio Preto, Brazil, from January 2009 through May 2010

Cardiac diseases	n	%
Precordial pain	517	38,98
Heart failure	342	25,79
Hypertension	163	12,29
Arrhythmia	115	8,67
Total	1326	100

Table 5 - Distribution of the ultimate destinations of patients seen in the emergency department of a teaching hospital in São José do Rio Preto, Brazil, from January 2009 through May 2010

Emergency Department Destination	n	%
Discharge on request	12	0,13
Absconding	72	0,74
Death	7	0,07
Medical discharge	5444	55,8
Hospitalization	4221	43,26
Total	9756	100
Destination after hospitalization	n	%
Hospital discharge	3719	88,11
Death	484	11,47
Absconding	17	0,4
Transfer	1	0,02
Total	4221	100

The age group 21-30 years accounted for the highest number (9%) of 'unknown cause' cases ($p < 0.01$). Among neurology cases, 3.7% of subjects were aged over 70 years; 2.8% were 61-70 years old and 2.8% were 51-60 years old ($p < 0.01$). As for cardiac cases, the age group with the largest number of admissions (5%) was 31-50 years ($p < 0.01$).

With regard to discharge from emergency department, 18.1% of patients with unknown causes received medical discharge and 5.1% were hospitalized ($p < 0.01$). 5.6% of neurology cases were given medical discharge and 7.9% were hospitalized ($p < 0.01$). As for cardiology cases, 7.9% received medical discharge and 5.9% were hospitalized ($p < 0.01$).

DISCUSSION

Similar to studies conducted at a university hospital in Santa Catarina and at the hospital of the Federal University of Paraná, most clinical patients seen in the emergency department were females. The aforementioned studies have emphasized the need for professionals in the emergency departments to be competent in making diagnoses and in providing effi-

cient care.^{9,10} In practice, there is an increase in cardiovascular disease in women. This is accordance with the last census held in 2010 in the city where study was conducted.¹¹

As for the age groups, we found a higher prevalence of the age group 18-29 years, which corroborates the data of the national literature.¹² Regarding ethnicity, the majority self-identified as white. This is similar to the finding of a study on hypertensive crisis conducted at the same emergency department where this study was conducted. The study found 83.5% of cases of urgent hypertensive crisis, 86.6% of whom were white.⁶

Most patients (99.65%) self-declared being active workers. This disagrees with a study conducted at an emergency department of a general hospital in San Isidro, Buenos Aires province. The study aimed to characterize the sociodemographic profile of mentally affected patients. They found that 57% of patients experienced some kind of underemployment or were unemployed.¹³ With regard to the marital status, most patients seen in the emergency department were women in stable unions. We found an association between these two variables ($p < 0.01$). This finding is similar to the results of a study conducted from November 1999 to 2005 at a public teaching hospital responsible for high-complexity emergency care.¹⁴

In this study, most cases of clinical emergencies (23.47%) had unknown causes. This is in line with a study conducted at a emergency department in Alagoas. The authors found that, in 89% of cases, the clinical care was judged inadequate to make a diagnosis.¹² Neurology was the prevailing clinical specialty in our study, accounting for 13.90% of cases, followed by cardiology with 13.59%. These data differ from the findings of a previous study conducted at the emergency department of a teaching hospital, which found a higher incidence of circulatory diseases in clinical care.¹¹

In neurology, headache accounted for the majority of cases: 29.03%. This coincides with studies conducted at emergency departments in southern Brazil.^{7,8} Ischemic stroke and acute pulmonary edema were the most frequent lesions in target organs treated in clinical emergency departments.⁴ Another study aimed to compare the neurological diagnoses of young and elderly patients seen in the emergency unit of a tertiary hospital. The authors found that cerebrovascular diseases were the most common diagnoses (59.6%) among patients over 50 years of age.¹⁰ We found similar results in our study: the higher the age group, the higher the percentage of clinical emergencies with neurological causes.

As for cardiac causes, precordial pain was the most prevalent complaint among adults of working age - between 31 and 40 years. This agrees with the findings of a literature review on thoracic pain in emergency departments. The review also highlights that the evaluation of patients suffering from thoracic pain is a challenge for health professionals in emergency departments

and requires the adoption of standardized protocols to prevent misdetection of acute coronary syndrome. The latter is also relevant for reducing morbidity and hospital costs of these cases.¹⁵

Another study that aimed to evaluate the effectiveness of a systematic model of care for patients with thoracic pain and no ST-segment elevation observed that 119 out of 1,003 subjects who had been admitted with precordial pain in the period of one year and three months were referred to a specialized unit and 660 subjects remained in the emergency department.¹⁶

According to a study conducted at a university hospital, cardiovascular diseases are among the leading causes of emergency care in the elderly. This is due to the increase in life expectancy and maintenance of eating habits and physical activity.¹⁷

Precordial pain is highlighted as one of the most prevalent cardiovascular diseases in the elderly. The results of a study conducted at a precordial pain unit agree with these data. Moreover, the authors observed that the age group with the highest prevalence was 60 years or over.¹⁸

We found that most patients seen in the clinical emergency department were medically discharged and many patients (43.26%) were hospitalized. This diverges from a survey also performed in a teaching hospital, which found that only 5% of the 2,417 cases seen in clinical emergency resulted in hospitalization.¹⁹ This may be justified because the teaching hospital is a reference hospital in northwest Sao Paulo.

The most common causes of clinical emergencies were unknown causes in young adults aged 21-30 years (9% of patients – $p < 0.01$). This is consistent with a study that justifies the large number of ill-defined diagnoses. The authors reveal the provisional nature of the care provided and show that the set of tests used does not contribute significantly to the accuracy of diagnosis.²⁰

The emergency health care team should deliver systematized and fast care to patients, because the emergency unit is the gateway for patients in emergency situations involving the various specialties.⁴ The high number of patients seen and medical discharges may indicate a failure in medical regulation and in the screening process of these patients, leading to a high demand for emergency care services. We would like to highlight that investments in training of health professionals, proper completion of medical records, and adequate and well-equipped physical structure are required for an effective care delivery in emergency departments.

Thus, health professionals should be able to make rapid, accurate diagnoses and provide high-quality and efficient health care.

CONCLUSION

The demographic characteristics of most clinical emergency cases were: young adult, female, of white ethnicity, mar-

ried and active worker. The most prevalent causes of emergencies were unknown causes, and the prevailing clinical specialties were neurology, cardiology and pulmonology, respectively.

The most frequent diagnoses were chest pain, headache and stroke. Finally, medical discharge was the most common ultimate destination of patients seen in the clinical emergency department. We found little difference between patients who had been hospitalized and later discharged. Moreover, 11.5% of patients died.

It is important to characterize patients specifically and meaningfully, identify main clinical emergencies, as well as the final destination (discharge, death or hospitalization) involving the operation of an emergency care service. These actions will assist health professionals in planning care and consequently improve the quality of health care delivery.

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