

PROFILE OF PATIENTS WITH DIABETES MELLITUS IN THE EMERGENCY UNIT OF A UNIVERSITY HOSPITAL

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ABSTRACT

This cross-sectional study aimed to identify the profile of patients with diabetes mellitus cared for by the Emergency Room of a university hospital in the interior of São Paulo, Brazil, in 2009. The probabilistic sample was composed of 247 patients. A structured form addressing sociodemographic and clinical variables and those related to nursing orientation provided at discharge was used to collect data. The results show that patients admitted to the unit were predominantly women (53.4%), Caucasian (79.8%), with a low educational level (76.6%), and aged between 58 and 77 years old (50.2%); 62 years old on average with a standard deviation of 15.3 years. Regarding demand for care, the most prevalent diagnoses were cardiovascular (22.3%) and cerebrovascular (13%) conditions. Diabetes was considered the secondary reason for being admitted to the service, while the primary reason was related only to the patients' main complaints. The length of hospitalization was four days on average, with a median of nine days and a standard deviation of 21.7 days. The nursing orientations recorded in the discharge records were restricted to return visits. Cooperation between primary healthcare and hospital networks needs to be improved to decrease avoidable demand of patients with diabetes for the emergency room.

Keywords: Diabetes mellitus. Health Services Needs and Demand. Emergency Medical Services. Emergency Nursing.

INTRODUCTION

In order to advance the consolidation process of the Brazilian Health System (SUS), the Ministry of Health adopted the motto *Access and Quality* for the 2011-2015 period⁽¹⁾. In this direction, Healthcare Networks were created to put into operation the SUS' principles, the objective of which is to promote healthcare actions and services, ensuring equal and timely access to quality and humanized integral care with problem-solving capacity through the organization and development of these networks⁽²⁾.

In this context and to reorient healthcare, two networks that are being implemented stand out: non-transmissible chronic diseases and urgent and emergency services. The objective is to improve

the qualification of professionals, both those with a bachelor's degree and those with a high school education, in the public healthcare network, as well as to organize lines of healthcare⁽²⁻⁴⁾.

The reorganization of the primary healthcare (PHC) through the qualification of healthcare workers is a response to demands related to the constant overcrowding of urgent care and emergency rooms, fragmented work processes, disrespect for patients' rights, and a lack of cooperation among sectors in the service network, among others⁽³⁾.

In the process of organization of networks, diabetes was selected as one of the thematic axes, among which lines of care will be developed for the most prevalent diseases and risk factors. Diabetes is a chronic disease with high rates of morbidity and mortality, the complications of

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which may lead patients to seek and crowd urgent care and emergency rooms^(4,5).

Primary healthcare is structured to be the health system's entrance door and the place where patients first receive care and assistance⁽⁶⁾. Yet, when individuals seek healthcare, they show a preference for emergency rooms and hospitals^(7,8). One study shows that this preference is related to the individuals' perceptions that these facilities enable greater access to care, can be trusted and also have greater problem-solving capacity⁽⁷⁾. Another study investigating variables related to care provided in an emergency room reports that most of the care provided was of low complexity, especially when the patients resided within the hospital's coverage area⁽⁸⁾.

Diabetic patients can receive care at different levels of complexity, depending on their degree of metabolic control, so that there is a need to identify the profiles of patients cared for in emergency rooms and the factors related to this demand. Knowledge of these factors favors the reorganization of care delivery and enables the implementation of strategies intended to decrease the search for emergency services and related costs.

Given the previous discussion, this study's objective was to identify the profile of patients with diabetes *mellitus* cared for by the Emergency Room of a university hospital, according to the reasons that led to hospitalization, nursing orientation, and referrals for the patient to continue treatment after discharge.

METODOLOGIA

This cross-sectional descriptive study employed secondary data obtained from the Hospital Information System and SAME (Medical Record Service) of a university hospital located in Ribeirão Preto, São Paulo, Brazil.

Inclusion criteria used to select patients' medical records were: patients aged 18 years old or older (most patients under 18 years of age are referred to another sector); patients admitted to the Emergency Room, from January 1st to December 31st 2009, by the Medical Clinic, Surgical Clinic, Neurology or Orthopedics (specialties available in this hospital's specific service); with a record of DM or related problems, that is, all those described

in the International Classification of Diseases (ICD 10) chapter 4, from E10 to E16.

Data concerning patients were stored in the hospital's information system, but most information was recorded on paper forms. Because patients were screened according to the ICD recorded in this electronic system, we verified during data collection that many patients with an ICD designation of diabetes recorded in the system did not have a diagnosis or results of exams that confirmed such a diagnosis in their files. Hence, we opted to analyze the paper forms and compare the results with the information provided in the system to make sure the information was coherent. As a consequence, the records of patients whose DM diagnosis were mistakenly recorded were excluded.

After exclusions, the search in the information system resulted in a total of 643 records from January to December 2009. Of this total, 8% were used in a pilot study, which revealed the need to restructure the instrument to make the collection more dynamic, in addition to the need to reach a representative sample that would also make the collection a feasible task. An average of 15 minutes was estimated to analyze each patient record.

As the total population was known, we assumed maximum indetermination ($p = (1-p) = 0.5$). Based on this hypothesis and aiming to obtain a confidence interval of 95% and a level of precision of 5% ($\alpha=0.05$), the sample size was established at 384 medical records. When we corrected the sample calculation for a finite population, we reached a sample of 238 records; 69 of these had already died and 169 remained alive. Estimating an expected loss of 10%, the sample was composed of 247 records, 71 of which had already died and 176 were alive up through the collection of data. Figure 1 shows a synthesis of the sampling plan used in this study.

The 247 records were selected after three random drawings using the Statistical Package for Social Sciences – SPSS version 17.0. The first drawing was discarded and two other drawings were performed until a balanced monthly mean was reached. Note that the date of the last time the patient was admitted to the Emergency Room was used in the analysis because there were patients with more than one hospitalization in the period.

A form with 38 closed questions was used to collect data concerning sociodemographic and clinical variables, along with nursing orientation provided at discharge. Data were collected by the

researchers in the SAME room from January to July 2011. The average time to complete each form was 25 minutes.

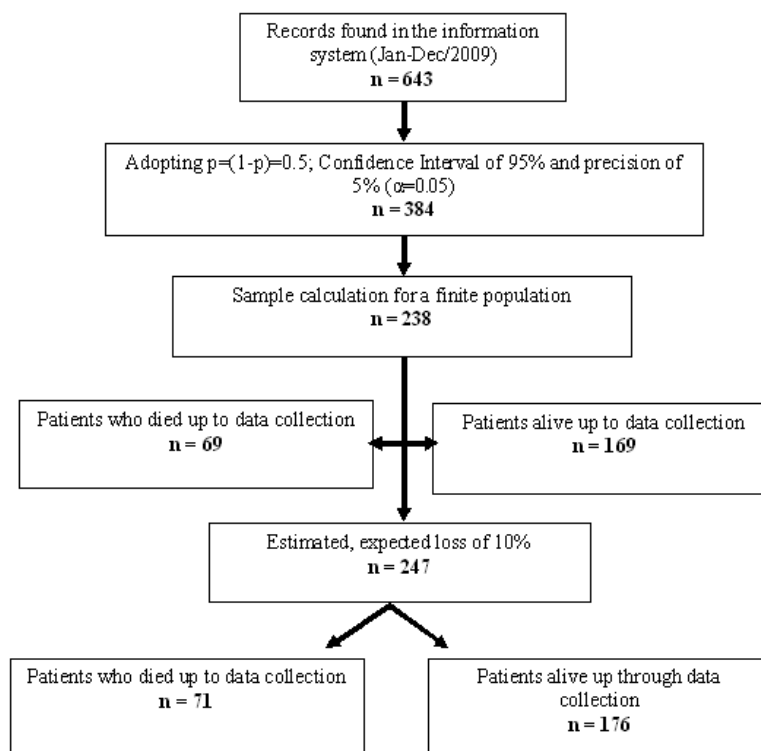


Figure 1. Sampling plan used in this study, Ribeirão Preto (SP), 2009.

Data were entered twice by two researchers and validated in Microsoft Office Excel 2007®. Afterwards, data were exported to the Statistical Package for the Social Sciences (SPSS) version 17.0, grouped into categories and analyzed descriptively.

The project was approved by the Center for Emergency Health Studies at the Emergency Unit and the Institutional Review Board, both linked to the *Hospital das Clinicas* of the Medical School at the University of São Paulo at Ribeirão Preto (HC-FMRP-USP), according to Protocol No. 9524/2010.

RESULTADOS E DISCUSSÃO

Among the 247 (100%) patients, most were women (53.4%), Caucasian (79.8%), married (48.6%), and had attended primary school (76.6%). Ages ranged from 18 to 92 years old, 62 years old on average, with a standard deviation of 15.3 years. Note that 50.2% of the hospitalizations were of

patients aged between 58 and 77 years old. Data concerning the sociodemographic variables are consistent with those reported in other studies^(9,10).

The demand of women with diabetes for service in the Emergency Room (53.4%) is also in agreement with other studies that show that the search for health services is greater among women due to their greater concern with health^(5,6).

With regard to age, the demand by patients aged between 58 and 77 years old (50.2%) follows epidemiological data published in a study conducted in cities in the interior of São Paulo, in 2010. The study shows that the disease is more prevalent among individuals aged 60 years old or older, and gradually progresses as the population ages⁽¹¹⁾.

In terms of education, 76.6% of the patients had completed primary education. This information is often provided by family members who are experiencing a fragile situation due to the patient's urgent hospitalization. This finding demands greater attention since education is a important

variable in the understanding of health orientation regarding treatment follow-up and referral to counter-referral units⁽¹²⁾.

In regard to comorbidities, 78.9% of the patients had hypertension and only 11.7% did not present any record of DM-related comorbidities (Table 1).

Table 1. Distribution of patients cared for by the Emergency Room of a university hospital according to comorbidities reported in medical records. Ribeirão Preto, São Paulo, Brazil, 2009.

	Hypertension	Dyslipidemia	Heart diseases	Obesity
	n (%)	n (%)	n (%)	n (%)
Yes	195 (78.9)	74 (30.0)	60 (24.3)	40 (16.2)
No	52 (21.1)	173 (70.0)	187 (75.7)	207 (83.8)
Total	247 (100)	247 (100)	247 (100)	247 (100)

In regard to complications (Table 2), 18.2% of the patients had already experienced one or more strokes and 88 patients (35.6%) had recorded from one to three DM-related complications. This information is also in accordance with the results of cohort studies reporting increased risk of acute myocardial infarction, stroke and peripheral arterial disease among diabetic patients compared to non-diabetic patients⁽¹³⁾. Note that cardiovascular diseases are the primary cause of death worldwide and diabetes increases the risk of cardiovascular diseases by up to four times, which may explain the number of people with diabetes who are hospitalized because of acute myocardial infarction⁽¹⁴⁾.

Most (74.5%) patients were diagnosed with type 2 DM (DM2), which was considered the secondary cause of hospitalization in 55.5% of the cases. In general, the primary diagnosis that indicated the need for hospitalization in emergency rooms included: acute myocardial infarction (22.3%); stroke (13%); and feet-related problems (8.1%). Motives for hospitalization are

related to long-term, DM-related complications. This suggests that patients had poor control over the disease. Demand caused by DM-related chronic complications would probably decrease if a systematized educational program were implemented in healthcare units in the city, also improving the services' problem-solving capacity. Note that the control of DM goes beyond knowledge of the disease and its acute and chronic complications, so that educational programs that take into account the specificities of the disease and intrinsic and extrinsic factors involved in the process of treatment adherence are needed⁽¹⁵⁾.

According to the Recommendations of the American Diabetes Association, education in diabetes and self-care management is key to preventing or delaying complications from the disease. These resources are related to an increased use of primary and preventive services, improved treatment adherence, and reduction of costs^(16,17).

Table 2. Distribution of patients cared for by the Emergency Room of a university hospital according to DM-related complications reported in medical records. Ribeirão Preto, São Paulo, Brazil, 2009

	Stroke	Nephropathy	Acute myocardial infarction	Neuropathy	Retinopathy
	n (%)	n (%)	n (%)	n (%)	n (%)
Yes	45 (18.2)	28 (11.3)	25 (10.0)	12 (4.9)	9 (3.6)
No	202 (81.8)	219 (88.7)	222 (90.0)	235 (95.1)	238 (96.4)
Total	247 (100)	247 (100)	247 (100)	247 (100)	247 (100)

Together with increased prevalence of diabetes and hypertension, there is also an increase in hospitalization rates motivated by cerebrovascular and cardiovascular diseases,

conditions associated with poor metabolic control and hypertension. Intensive control is primarily a responsibility of PHC workers through the implementation of preventive

measures. Randomized clinical trials have shown the effectiveness of intensive control of hypertension in decreasing complications among patients with diabetes and hypertension⁽¹⁸⁾. It seems, however, that this control has become one of the critical knots in PHC, which ends up overloading emergency and urgent care services⁽¹⁹⁾.

Another complication found was nephropathy, which appears in 11.3% of the medical records. One study conducted in Paraná, Brazil, reports a progressive increase in the prevalence of diabetes

in patients admitted for chronic dialysis treatment over the course of 20 years of observation, while the incidence of diabetic nephropathy is associated with an increased incidence of DM2 in the obese and sedentary population⁽²⁰⁾.

Of the 247 (100%) patients, 71 (28.7%) died; 67.6% of these died during hospitalization and 32.4% died between the first and the 19th month after hospitalization, while 6.9% died less than a month after discharge (Table 3).

Table 3. Distribution of deaths of patients cared for by the Emergency Room of a university hospital according to the period in which death occurred. Ribeirão Preto, São Paulo, Brazil, 2009.

Death	n	%
During hospitalization	48	67.6
Up to 30 days after hospitalization	12	16.9
Between 31 days and the 19 th month after hospitalization	11	15.5
Total	71	100

Most hospitalizations were of elderly individuals with DM-related complications, who also experienced fragility inherent to the aging process.

Note that the demand on the part of elderly individuals for urgent care services has increased considerably, changing the profile of care provided. This requires managers in the PHC network to pay greater attention to the care provided to this clientele because of the cognitive and physiological changes these individuals experience, which can interfere in the effectiveness of measures intended to prevent DM-related complications and also delay proper treatment when the patient is affected by other comorbidities^(9,10).

Most (56.3%) patients included in the study lived in Ribeirão Preto, SP, while information regarding the origin of patients was not reported in 24.3% of the files. We verified that 74.9% of the patients were referred to the Emergency Room by PHC Units (33.6%), hospitals within the city (13.4%), Mobile Health Services (SAMU) or spontaneous demand (1.6%).

Regarding a classification system for severity, we verified that 47.4% of the medical files did not report this information; in 38.9% of the cases, the patient was classified by the Medical Classification Center and accepted by the hospital. In 12.1% the

cases, the patients were classified as “zero vacancy”. The concept of “zero vacancy” was provided in Decree GM/MS No. 2048 from November 5th 2002, and is supposed to be applied when there is a risk of death but all possibilities of obtaining a bed are exhausted⁽²¹⁾.

In practice, there has been a distortion of the concept “zero vacancy”. Patients with DM and referred according to “zero vacancy” presented a health condition that was characterized as clinically urgent.

In regard to the admission of patients with DM to the Emergency Room, most (64.8%) were admitted to Adult Clinical Care, a sector of low complexity intended for patients who demand clinical observation, or are awaiting a bed in the nursing ward for diagnostic investigation, clinical treatment, or recovery; 56.7% of the patients were admitted through the Medical Clinical service. Regarding discharge, 45.9% of the patients were discharged from one of the wards, while 42.6% remained in the stabilization room in the Emergency Room from admission to discharge.

A total of 74.9% of the patients were referred to the Emergency Service by healthcare services in Ribeirão Preto and PHC Units referred 33.6% of the patients. Therefore, PHC Units have been the main entrance door to the SUS, however, support has been provided by emergency and hospital services, revealing the fragility of the PHC model

in terms of preventive measures and health promotion.

Duration of hospitalization ranged from 1 to 306 days, nine days on average, with a standard deviation of 21.7 days and a median of four days. With regard to length of stay in the Emergency Room, 28% of the patients remained in the hospital for only one day and 61.1% were discharged up to five days of hospitalization; 60.5% of the patients admitted in the Emergency Room were discharged up to 24 hours later.

These findings corroborate another study showing that length of stay in the an urgent care or emergency service was shorter than six hours, while in 27.4% of the cases, it was between 24 and 30 hours⁽²²⁾. Patients admitted to the service are stabilized within the first hours, however, need to be referred to another sector to continue their treatment. This study's findings show that 60.5% of the patients admitted to the Emergency Room were discharged up to 24 hours after admission.

These results lead us to consider the possibility that many of these cases could have been resolved in the unit of origin itself, which would certainly decrease the demand for healthcare in the Emergency Room, in addition to questioning what were the criteria used for this type of referral. Even so, we do acknowledge that a lack of structure in the services, as well as the qualification of the professionals working in the healthcare network, remains a challenge for the implementation of the PHC model.

In regard to the demand for care in the Emergency Room, the most prevalent diagnoses were related to cardiovascular (22.3%) and cerebrovascular (13%) diseases, especially congestive heart failure and stroke. Severe glycemic imbalances, such as diabetic ketoacidosis and hypoglycemia, appear in 8.1% of the cases. The same percentage was found among those seeking care because of diabetic conditions of the foot.

The most prevalent diagnoses were related to and/or triggered by poor metabolic control. Metabolic control depends on the education of patients, their adherence to treatment, changes in lifestyle, and self-care management⁽¹²⁾. These factors can be addressed within PHC services and in educational groups. Data provided in this study indicate a failure in this process and has been widely discussed in the documents of the

American Diabetes Association, especially in terms of disease self-management⁽¹⁸⁾. The impact of such a failure is apparent in the overcrowding seen in emergency care services due to the low problem-solving capacity of PHC and hospitals' poor quality of services⁽⁵⁾.

No records of nursing orientation regarding DM were found in 57.5% of the cases; 25.6% of orientation provided was related to return visits; and in 2.0% of the cases records were unreadable.

Orientation provided by the nursing staff when discharging patients from the Emergency Room is of concern. Most files (57.5%) did not present any record regarding nursing guidance provided, while 25.6% of orientations recorded were related to return visits. Therefore, data did not allow establishing whether orientation was effectively provided or the patient only received a referral form and medical prescription.

These findings corroborate those reported in a study in which the reports of patients indicate that hospital discharge includes medical prescription, verbal orientation regarding medication, referral for specific care, and return visits, which led to the conclusion that patients leave the hospital unsure of follow-up and that orientation regarding discharge should be initiated at the time of admission and be gradually provided over the course of hospitalization⁽²³⁾.

One study analyzing the work of nurses at hospital discharge shows that it basically consisted of handing medical prescriptions and providing verbal information concerning medication, referral for specific care, and finally, a return visit⁽²³⁾. A lack of preparation on the part of the healthcare staff regarding the importance of proper recording is a potential explanation for missing information concerning the discharge of patients^(22,23).

Most (61.5%) patients were counter-referred to other healthcare units so that treatment of the condition that originally motivated the hospitalization would continue. Counter-referring patients for the exclusive follow-up of diabetes appeared in only 24 (9.7%) files.

Of the 24 cases in which counter-referral appeared, 75.0% (18) of the patients were counter-referred to continue DM treatment in the PHC network and 12.5%⁽³⁾ were hospitalized in a secondary-level hospital.

Regarding the referral of DM patients, most were counter-referred to other healthcare units so

treatment would be provided for the condition that motivated the hospitalization, however, only 9.7% were counter-referred to continue diabetes control. Note that the need for a cure is still very frequent in hospital facilities. As the analysis shows, counter-referrals are intended to follow-up the condition that motivated the hospitalization, tending to exclude follow-up of primary diseases such as diabetes and hypertension, which are often the conditions indirectly responsible for the hospitalization.

With regard to the counter-referral unit, 18 patients were counter-referred for follow-up of DM in the PHC network, but most medical records did not report to where the patient was referred or even if the patient received any referral. One study indicates that a lack of records regarding the unit to which the patient was referred was observed in 51.8% of the cases⁽²²⁾, indicating the fragility of the hospital's information system and the patients' files, which hinders monitoring the flow of patients within the SUS, revealing there is a gap between the PHC network and the hospital network, as if they operated separately.

FINAL CONSIDERATIONS

The results indicate a large demand of DM patients with chronic complications for emergency services, showing that the PHC network is still in a process of consolidation to ensure the effectiveness of diabetes care. Poor nursing orientation and gaps in the counter-referral of patients indicate a lack of cooperation between the PHC and hospital networks, as well as a need to properly qualify workers to provide care to this population.

In this sense, given the high demand of DM patients for emergency services, we need to rethink the qualification of professionals according to the principles of the PHC model. Greater cooperation among the services can also contribute to shared responsibility between professionals and patients concerning care provided for diabetes and the prevention of its chronic complications, in order to minimize the need for future hospitalizations of an emergency nature.

DEMANDA DE PACIENTES COM DIABETES MELLITUS EM UNIDADE DE URGÊNCIA DE UM HOSPITAL UNIVERSITÁRIO

RESUMO

Este é um estudo transversal, cujo objetivo foi identificar o perfil de pacientes com diabetes mellitus em Unidade de Urgência. A amostra probabilística foi constituída por 247 pacientes de um hospital do interior paulista, Brasil, em 2009. Um formulário estruturado, contendo variáveis sociodemográficas, clínicas e relacionadas às orientações de enfermagem, oferecidas na alta hospitalar, foi utilizado para obtenção dos dados nos prontuários de saúde. Para análise dos dados, foi utilizada estatística descritiva. Os resultados mostraram que os pacientes admitidos eram predominantemente do gênero feminino (53,4%), brancos (79,8%), com baixa escolaridade (76,6%) e idade entre 58 e 77 anos (50,2%); média de 62 anos e desvio-padrão de 15,3 anos. Quanto à procura pelo atendimento, os diagnósticos mais prevalentes foram: problemas cardiovasculares (22,3%) e cerebrovasculares (13%). O diabetes foi considerado motivo secundário para admissão no serviço, o primário foi relacionado apenas à queixa principal do paciente. O tempo de internação foi, em média, de quatro dias, com mediana de nove dias e desvio-padrão de 21,7. As orientações de enfermagem registradas em prontuário na alta hospitalar se restringiram aos retornos ambulatoriais. Há necessidade de melhor articulação da rede de atenção primária e hospitalar para redução da demanda evitável de pacientes com diabetes em unidade de urgência.

Keywords: Diabetes mellitus. Necessidades e demandas de serviços de saúde. Serviços Médicos de Emergência. Enfermagem em emergência.

PERFIL DE LOS PACIENTES CON DIABETES MELLITUS EN EL SERVICIO DE URGENCIAS DE UN HOSPITAL UNIVERSITARIO

RESUMEN

Este es un estudio transversal, cuyo objetivo fue identificar el perfil de pacientes con diabetes mellitus en Unidad de Urgencias. La muestra probabilística fue constituida por 247 pacientes de un hospital del interior del estado de São Paulo, Brasil, en 2009. Un formulario estructurado, conteniendo variables sociodemográficas, clínicas y relacionadas con las orientaciones de enfermería, ofrecidas en el alta hospitalaria, fue utilizado para la recolección de los datos en los registros médicos. Para el análisis de los datos fue utilizada la estadística descriptiva. Los resultados señalaron que los pacientes ingresados eran predominantemente mujeres (53,4 %), blancos (79,8 %), con un bajo nivel de educación (76,6 %), y de edades comprendidas entre 58 y 77 años (50,2 %); promedio de 62 años y desviación estándar de 15,3 años. En cuanto a la demanda por la atención de salud, los diagnósticos más frecuentes fueron: problemas

cardiovasculares (22,3 %) y cerebrovasculares (13%). La diabetes fue considerada la segunda razón para el ingreso en el servicio; el objetivo primario fue relacionado solo a la queja principal del paciente. La duración de la hospitalización fue de un promedio de cuatro días, con una media de nueve días y una desviación estándar de 21,7 días. Las orientaciones de enfermería encontradas en los registros médicos en el alta hospitalaria se restringieron a los regresos al hospital. Es necesaria una mejor coordinación entre la red de atención primaria y hospitalaria para reducir la demanda evitable de los pacientes con diabetes en la unidad de urgencias.

Palabras clave: Diabetes mellitus. Necesidades y demandas de servicios de salud. Servicios Médicos de Urgencias. Enfermería de urgencias.

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