

The harsh reality of children and youth emergency care showing the health status of a city

A difícil realidade do pronto atendimento infantojuvenil mostrando a situação de saúde de uma cidade

La dura realidad del servicio de urgencias infantojuvenil mostrando la situación de salud de una ciudad

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ABSTRACT

Objective: To analyze the epidemiological profile of children and adolescents aged between 0 to 19 years, assisted by the emergency department of a City School Hospital in order to monitor the health care system of São Carlos, São Paulo, Southeast Brazil.

Method: This is a descriptive and cross-sectional study that collected data from medical records, from August 2008 to September 2009 (14 months). The random sample was taken from 15 days of each month, 50% of the total of 26,678 patients seen during that period of time, accounting for 13,339 medical records. The Epi-Info software was used to build the database; results were evaluated by descriptive statistical analysis.

Results: Among the analyzed medical reports, 48.3% were female patients, 55% of the patients were aged between 0 and 4 years. Most of the children (95%) came by spontaneous demand. During that period, 41% of the population aged 0 to 19 years-old sought for only this type of health care. The most prevalent diseases were respiratory diseases, which showed 48.5% incidence during fall and winter. Most patients came from the north, northeast, and northwest regions of São Carlos, which have high-population density.

Conclusions: The results showed a sad reality, with high spontaneous demand of children aged from zero to four years-old for pediatric emergency care. Most patients had not received prior care from other doctors. The health

network situation indicates the need for urgent measures to strengthen the primary care assistance for basic health care centers and family physicians.

Key-words: emergency care; health profile; emergency service; child health; Unified Health System.

RESUMO

Objetivo: Analisar o perfil epidemiológico de crianças e adolescentes na faixa etária de 0 a 19 anos atendidos no pronto atendimento do Hospital Escola Municipal, de maneira a monitorar a rede de saúde de São Carlos, no estado de São Paulo.

Método: Estudo descritivo e transversal com coleta dos dados de prontuários, entre agosto de 2008 e setembro de 2009 (14 meses), sendo uma amostra aleatória, ao acaso, de 15 dias dos atendimentos em 50% das consultas mensais, somando-se 13.339 prontuários de um total de 26.678 atendimentos. Foi construído um banco de dados no programa Epi-Info para análise descritiva.

Resultados: Do total, 48,3% dos pacientes eram do sexo feminino, 55% com idades entre zero e quatro anos e 95% oriundos de demanda espontânea. Isso corresponde a um esboço de 41% da população entre 0 e 19 anos de idade que teve somente este tipo de atendimento. Houve predomínio das doenças do aparelho respiratório (48,5%), nos meses de outono e inverno. As regiões que mais utilizaram o pronto

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Conflito de interesses: nada a declarar

Recebido em: 20/4/2012
Aprovado em: 10/11/2012

atendimento compreenderam bairros das regiões norte, nordeste e noroeste de São Carlos, as quais possuem ampla densidade populacional.

Conclusões: Os resultados apontaram a difícil realidade, com alta demanda espontânea, de crianças de zero a quatro anos no pronto atendimento pediátrico, sem acolhimento prévio a esses pacientes. A situação da rede de saúde aponta para a necessidade de medidas urgentes que fortaleçam a assistência das unidades básicas de saúde e de saúde da família.

Palavras-chave: atendimento de emergência; perfil de saúde; pronto-socorro; saúde da criança; Sistema Único de Saúde.

RESUMEN

Objetivo: Analizar el perfil epidemiológico de niños y adolescentes en la franja de edad de 0 a 19 años, atendidos en el Servicio de Urgencias (SU) del Hospital Escuela Municipal, de modo a monitorear la red de salud de esa ciudad.

Método: Estudio descriptivo y transversal con recolección de datos de prontuarios, entre agosto de 2008 y septiembre de 2009 (14 meses), con muestra aleatoria, al azar, de 15 candidatos de los servicios en 50% de las consultas mensuales, sumando 13.339 prontuarios de un total de 26.678 atenciones. Se construyó una base de datos en el EpiInfo para análisis descriptivo.

Resultados: Del total, el 48,3% de los pacientes eran del sexo femenino, el 51,7% del sexo masculino, el 55% con edad entre 0–4 años y el 95% originarios de demanda espontánea, correspondiendo a un bosquejo del 41% de la población entre 0 a 19 años de edad que tuvo solamente ese tipo de atención. En 48,5%, hubo predominio de las enfermedades del sistema respiratorio los meses de otoño e invierno. Las regiones que más utilizaron el SU comprendieron barrios de la región norte, nordeste y noroeste de la ciudad, que poseen gran densidad de población.

Conclusiones: Los resultados señalaron la dura realidad, con alta demanda espontánea, en niños de 0 a 4 años de edad en el servicio de urgencias pediátrico, sin acogida previa a esos pacientes. La situación de la red de salud apunta a la necesidad de medidas urgentes para el fortalecimiento de la asistencia en unidades básicas de salud y de salud de la familia.

Palabras clave: atención de emergencia; perfil de salud; servicios de emergencia; salud del niño; Sistema Único de Salud.

Introduction

The goals of decentralizing and hierarchizing pediatric care have not been as successful as expected, since there is still high demand for emergency care services^(1,2). This overcrowding of services highlights the difficulties of the system in achieving the goal of providing universal, equal and decentralized access to health care. The precarious referral and counter-referral system is a determinant factor for the high number of consultations on emergency care units. Few people prefer to seek a basic health care center when their child is sick and most use emergency care services, which is justified by liking/trusting the professionals, by geographic accessibility, by speed and quality of service, by previous personal experience, and by resolution⁽¹⁾.

The environment of emergency departments is characterized by the agglomeration of patients, which leads to time pressure and interferes directly in the pediatric care⁽²⁾; therefore, it is necessary to develop processes enabling to establish an adequate connection between emergency care units and the nearest place for the population of a certain locality, in order to ensure a fast and efficient admission⁽³⁾.

In New Haven, Connecticut, the link between basic health care services and emergency care departments points out the importance of the communication between physicians and staffs from both services, so that the patients are referred only when necessary, resulting in an appropriate referral and counter-referral system⁽⁴⁾. As for the referral and counter-referral pyramid recommended in Brazil, according to which the patient would be first assisted at a basic health care unit and then be referred to secondary and tertiary care centers, it is worth mentioning that, in practice, those who rely exclusively on the Unified Health System (Sistema Único de Saúde, SUS) — who represent nearly 80% of the population — have to set up their “menu” of services at their own risk, seeking for the care they need wherever possible. People access the system through the easier or possible way. Not surprisingly, health care is one of the major concerns of the “ordinary citizen”⁽⁵⁾.

There has been proposals to break down demand side barriers to the access to health care services in developing countries⁽⁶⁾. The use of clinical algorithms have helped to standardize and improve the quality of care and resolution in pediatrics over the last decade⁽⁷⁾, which is exemplified by an Israeli experience aiming to improve the performance of physicians through advanced life support courses⁽⁸⁾.

Receptivity is a proposal for reorganizing services in order to guarantee access, resolution and humanized care, in an

attempt to minimize barriers⁽⁹⁾. According to the “user embracement” concept, health care clients are the center of the health services’ organization, including the following: care for everyone seeking it, thus guaranteeing universal accessibility; and reorganization of the work process, such that its central thrust is shifted from the physician to the multiprofessional staff, or “user embracement team”, in charge of hearing users and becoming involved in solving their health problems.

Organizational barriers are important reasons why the population prefers to seek 24-hour services first. There are examples of Brazilian studies, such as those conducted in Volta Redonda, state of Rio de Janeiro⁽⁵⁾, at the emergency room of the Instituto Materno Infantil de Pernambuco^(10,11), and at the Hospital Menino Jesus, state of Rio de Janeiro⁽¹²⁾, showing that the population seeks the so-called emergency services first rather than basic health care services.

The use of an information system in emergency departments provided an overview of the flow of patients in SUS⁽¹³⁾, in order to assess its distortions. A study in Belo Horizonte, Brazil, analyzed the actual need for patients to seek for emergency care. Such issues, which portray the vulnerability of the pediatric population, cannot be ignored when considering the reorganization of the hierarchical health network.

In this context, the present study aims to perform a mapping of a children and youth emergency department included in the health network in a city in the countryside of the state of São Paulo, Brazil. We hope thereby to contribute to the design of new circuits within the health care system and to show how an emergency department integrated in a network may contribute in the evaluation of this network.

Method

The municipality of São Carlos is located at the geographic center of São Paulo state, Southeast Brazil, and has a mild climate, with an annual mean temperature of 19.6°C and two well-defined seasons, one of them showing lower temperatures and low rain rates, which lasts from May to September, and the other showing high temperatures and higher rain rates, which lasts from October to April⁽¹⁴⁾.

Its population comprises 107,479 females and 105,477 males, totaling 212,956 inhabitants (2007 Estimate, Brazilian Institute of Geography and Statistics – Instituto Brasileiro de Geografia e Estatística, IBGE), and a fluctuating population of 20,000 inhabitants (source: Social Development Ministry). Its per capita income is 3.02 minimum wages, with an estimated GDP of BRL\$ 2,612,102.00. The Human Development Index

of São Carlos (IBGE – July 2000) is 0.841, placing the city in the 17th position within the state of São Paulo. Illiteracy rate is 5.6%. According to IBGE data, 2,973 live births were recorded in 2007, as well as 1,455 deaths per household and 1,524 per occurrence. Thus, the municipality has a population growth of 2.4% per year^(14,15).

The children’s population of São Carlos, i.e., aged between 0 and 19 years, comprises 64,921 inhabitants; 14,597 of them aged 0 to 4 years, 15,198 aged 5 to 9 years, 16,650 aged 10 to 14 years, and 18,476 aged 15 to 19 years, according to the IBGE –2000 Census^(14,15).

In the context of creating new conditions for the organization of health actions in the country, materialized with the regulation of SUS, and especially of implementing comprehensive actions, which stimulated the organization of the services⁽¹⁶⁾, the Hospital-Escola Municipal Prof. Dr. Horácio Carlos Panepucci (HEM) was set up in order to integrate the School Health Network of the Municipality of São Carlos.

Emergency care is provided based on the demand referred by the Mobile Emergency Care Service (Serviço de Atendimento Móvel às Urgências, SAMU) and follows the flow established by municipal authorities. The 24-hour Pediatric Emergency Department, opened in August 2008, had the purpose of supplementing the health care system of São Carlos by treating urgent and emergency cases referred both by SAMU and by Basic Health Units (Unidades Básicas de Saúde, UBSs), Family Health Care Units (Unidades Saúde da Família, USFs), and Emergency Care Units (Unidades de Pronto Atendimento, UPAs).

The present study can be classified as observational, retrospective, descriptive and cross-sectional, and was based on the analysis of medical records from patients assisted by the emergency department of HEM between August 2008 and September 2009, in order to analyze the seasonality of consultations in autumn and winter.

The study sample comprised medical records of 13,339 randomly selected patients, who represented 50% of the patients seen each month. From the monthly total of consultations, half of medical records were randomly selected. Ages ranged from zero to 18.9 years, including patients from São Carlos and its surroundings who were seen at HEM during the study period. There was no sample size calculation, since inclusion criteria consisted of all children seen at the ED during the study period. Patients whose medical records were illegible or incomplete were excluded from the study.

The following variables were obtained from the medical records of service users: age, gender, date of consultation,

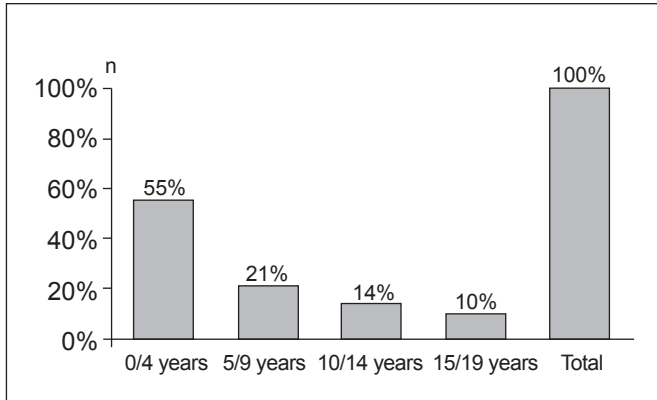


Figure 1 - Proportion of patients assisted at the Emergency Department of the Pronto Municipal School Hospital, according to age group

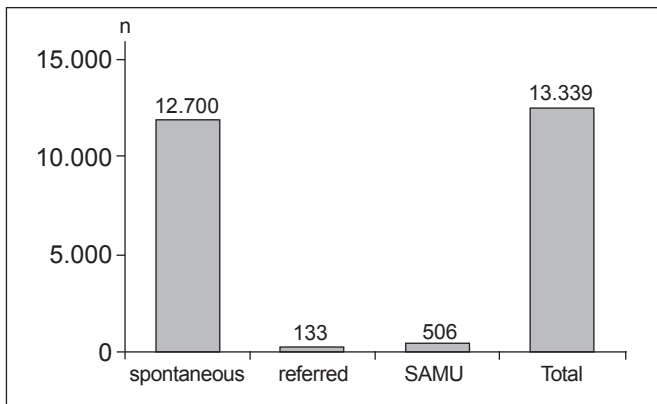


Figure 2 - Distribution of the absolute number of visits and way of access to Municipal School Hospital, between August 2008 and September 2009

origin (neighborhood), International Classification of Diseases 10 (ICD 10 – WHO) or diagnosis made by the physician, conduct (hospitalization, referral, and prescription), and demand (spontaneous, SAMU, and referred). Based on the data collected, univariate and multivariate analyses were conducted using Excel 8.0 and Epi-Info version 3.5.1. software, and results were evaluated by descriptive statistical analysis.

It is worth emphasizing that all measures were taken to ensure privacy and anonymity of confidential data obtained in the research. This study was approved by the Human Research Ethics Committee of the Universidade Federal de São Carlos, process CAAE – 0181.0.135.000-09.

Results

A total of 13,339 patients seen between August 1st, 2008 and September 30th, 2009 were analyzed, who were selected from 15 days of each month and represented 50%

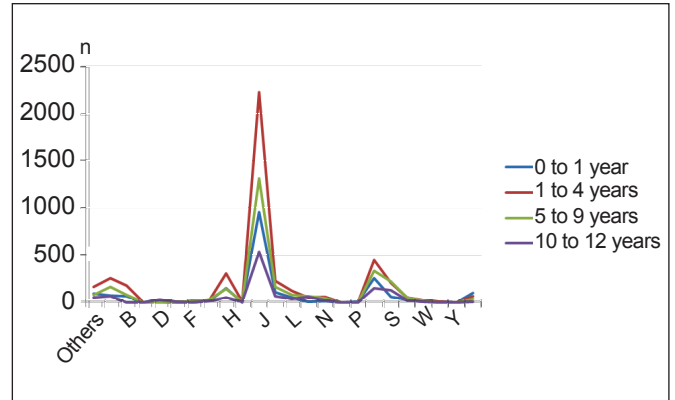


Figure 3 - Distribution of patients assisted at the Emergency Department of the Municipal Hospital according to cause, classified by ICD 10 chapter. Chapter 1 (Certain Infectious and Parasitic Diseases: A-B); Chapter 3 (Diseases of the Blood and immune disorders: D); Chapter 5 (Mental and Behavioral Disorders: F) ; Chapters 7 and 8 (Diseases of the Eye and Diseases of the Ear: H); Chapter 10 (Diseases of the Respiratory System: J); Chapter 12 (Diseases of the Skin: L); Chapter 14 (Diseases of the Genitourinary System: N); Chapter 16 (Certain conditions originating in the perinatal period: P); Chapter 18 (Symptoms, signs and abnormal findings: R); Chapter 19 (Injury, poisoning of external causes: S-T); Chapter 20 and 21 (External Causes of Morbidity and Mortality: V-W-Y)

of the total 26,678 patients seen during that period of time. Among the analyzed medical records, 6,447 (48%) were from female patients and 6,892 (52%) from male patients, with ages between 0 and 19 years. The age groups that showed higher demand for the ED of São Carlos HEM were 0–4 years (7,337 – 55%), 5–9 years (2,828 – 21%), 10–14 years (1,814 – 14%), and 15–19 years (13,600 – 10%) (Figure 1).

Considering the consultations during this period of 14 months, 12,700 (95%) of them came from spontaneous demand, 133 (1%) were referred by Emergency Care Units (Unidades de Pronto Atendimento, UPAs), and 506 (3.8%) by SAMU (Figure 2).

The evaluation of diseases classified according to ICD 10 showed that most prevalent diseases were respiratory diseases (code J – chapter 10), which accounted for 48.5% of diseases during the entire study period. There was an increase in the number of cases in the months of September (61.5%), August (58.3%) and May (56.8%) of 2009 and August (54.7%) of 2008. The second more prevalent ICD code was that referring to symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (code R - chapter 18), which corresponded to 11.2% of consultations). Thus,

a great difference was observed between the percentage of codes J and R, which indicates a high prevalence of respiratory diseases in children assisted by the HEM. Due to difficulties in understanding medical records, along with the omission of diagnostic hypotheses, there was also a high percentage (3.4%) of diagnoses assigned into the category “other” (Figure 3).

The study also revealed that the months of April, May, June, August and September of 2009 were those with higher demand at the HEM, which may be associated with climate changes.

The medical records were organized according to the Regional Health Authorities (Administrações Regionais de Saúde, ARES) of the municipality of São Carlos, and neighborhoods not included in this list, as well as patients from other cities, states and countries were classified into the category “others”. There was a high prevalence of patients from regions belonging to ARES 4 and 5 (58%), respectively 3,847 and 3,864 medical records, which comprise neighborhoods from the north, northeast and northwest regions of the city — places with high population density. Patients from ARES 1, which comprises peripheral neighborhoods, do not use this pediatric emergency department very often, probably because this ARES is located at the opposite end of the city and has its own Emergency Care Unit (ECU). The number of consultations of patients from ARES 2 and 3 remained relatively constant during the study period, ranging between 100 and 200 consultations per month. As for non-registered areas, a mean of 37 consultations per month was observed. However, there was a great flow of patients coming from other localities in the months of November 2008 and June 2009, but data do not allow to find the reason for this finding.

Discussion

São Carlos is a medium-sized city located in a region of the state of São Paulo with better socioeconomic conditions compared to other regions in the country. The evaluation of medical records from the ED of the HEM allowed to have an overview of the situation of the health care system of the entire city. It is worth emphasizing that one of the limitations for studies such as that presented here refers to the fact that, when retrospectively reviewing medical records of 15 random days of each month, it was not possible to determine which children had already been included and/or had been seen assisted by the service more than once. There were also

difficulties in understanding some medical records, although the omission of diagnostic hypotheses was small, only 3.4% of the medical records.

When studying any site of a health network from a locality, it is possible to infer the situation of the health system network and how it is interconnected. A study⁽¹⁷⁾ at the Emergency Unit of Hospital das Clínicas da Faculdade de Medicina de Ribeirão Preto, Brazil (UE-HC) shows that, after measures to control demand through medical regulation were implemented in 2000, this unit managed to equate the number of consultation and occupancy rate, leading the UE-HC to become a referral center for high-complexity cases and be able to form and qualify professionals dealing with emergencies.

As for age groups, the age group with higher frequency of use was 0–4 years, followed by 5–9 years, considering a distribution close to 25% for each age group, according to the IBGE^(14,15). That is, infants are those with higher demand for the HEM emergency department, confirming data from several studies that assessed the utilization the different health care services (primary, secondary, and tertiary) by preschool children, especially from 0 to 2 years old⁽¹⁸⁻²¹⁾.

According to the collected data, it was found that most patients assisted by the HEM during the study period came from high densely-populated neighborhoods.

On the other hand, the main reported diseases were those related to respiratory problems (CID 10 - J) in autumn and winter, coinciding with the period of cold weather and low air humidity in the city, similarly to what has been reported in other localities, such as the university hospital of Mato Grosso do Sul⁽¹⁸⁾.

With a spontaneous demand of 95%, these results raise great concerns, because they demonstrate that the health network is disfigured. In other Brazilian states, demand rates varied at lower ranges, for example: 35% in Mato Grosso do Sul⁽¹⁸⁾, 33% in Londrina⁽²¹⁾, 71% in the Children’s Hospital of Pernambuco⁽¹⁰⁾, and 57% in Hospital Municipal Jesus, state of Rio de Janeiro⁽¹²⁾. Organizational barriers are important reasons why the population prefers to seek 24-hour services first⁽¹¹⁾, especially when triage does not prioritize children nor employ risk-focused practices⁽¹²⁾. That is, the results obtained here allow to infer the health situation of this city, providing an overview of this system, i.e., a guide showing how the remaining network is working⁽¹⁹⁾.

Alessandrini and Knapp suggest methods for the effective evaluation of the quality of emergency services and showed that there is the need for establishing a contact

between those who work in pediatrics with health managers and the public for the effective improvement in the quality of emergency care⁽²²⁾. It is also interesting to mention the Children's Hospital of Michigan experience⁽²³⁾, which managed to reduce the admission time at the emergency department by 83% and also decrease the length of stay at the site by 48%, eliminating waiting lines. At this hospital, initially specific data on quality of care were obtained, creating an efficiency operation. The already existing health care routes were aligned in order to improve the interpretation of data on morbidity and mortality, using opportunities of consultation, transfer of care, and regulatory rules. This was possible thanks to the use of individual

or small-group simulation models to predict intervention routes before changes are implemented. This is the goal to be achieved in Brazilian cities, which deals daily with the sad reality of overcrowding, lack of patient's risk classification, and absence of creation of a strong network between basic and tertiary care centers.

In conclusion, the data presented here allowed us to describe the profile of the 0–19-year population assisted at the HEM during a 14-month period, which indicates the pressing need for implementing measures aimed to strengthen basic health centers, family physicians, and emergency units, in order to refer care to sites that could also provide prevention and health promotion.

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