

### **Pediatric prehospital assistance conducted by the mobile emergency care service (SAMU)**

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## RESEARCH

## PEDIATRIC PREHOSPITAL ASSISTANCE CONDUCTED BY THE MOBILE EMERGENCY CARE SERVICE (SAMU)

ASSISTÊNCIA PRÉ-HOSPITALAR PEDIÁTRICA REALIZADA PELO SERVIÇO DE ATENDIMENTO MÓVEL DE URGÊNCIA (SAMU)

ASISTENCIA PREHOSPITALARIA PEDIÁTRICA REALIZADA POR EL SERVICIO DE ATENCIÓN MÓVIL DE URGENCIA (SAMU)

Pollyana Correia Costa<sup>1</sup>, Juliana de Oliveira Freitas Miranda<sup>2</sup>, Kleize Araujo Oliveira Souza<sup>3</sup>

## ABSTRACT

**Objective:** Describe the prehospital pediatric assistance conducted by the Mobile Emergency Care Service (SAMU) in the town of Feira de Santana, Bahia, Brazil, in 2009. **Method:** This is a quantitative, retrospective, and descriptive research, based on the records of pediatric treatments conducted by SAMU in the town of Feira de Santana. **Results:** One identified 372 treatments; 43.5% for children from 5 to 10 years; 57.1% of occurrences took place at home; falls (28.7%) and running over cases (22.9%) were the most usual external causes; the most prevalent clinical causes were respiratory problems (40.0%) and convulsive crises (27.9%). **Conclusion:** The study allowed knowing the reality of pre-hospital assistance for children in the town, and it can contribute to public policies aimed at this clientele; besides, it collaborates to the scientific production related to the prehospital child assistance, a theme poorly explored among this population. **Descriptors:** Emergency medicine, Emergency nursing, Child health.

## RESUMO

**Objetivo:** Descrever o atendimento pré-hospitalar pediátrico realizado pelo Serviço de Atendimento Móvel de Urgência (Samu) no município de Feira de Santana-BA, em 2009. **Método:** Trata-se de pesquisa quantitativa, retrospectiva e descritiva, baseada nos registros dos atendimentos pediátricos realizados pelo Samu no município de Feira de Santana. **Resultados:** Foram identificados 372 atendimentos; 43,5% a crianças de 5 a 10 anos; 57,1% das ocorrências foram no domicílio; quedas (28,7%) e atropelamentos (22,9%) foram as causas externas mais comuns; as causas clínicas mais prevalentes foram agravos respiratórios (40,0%) e crises convulsivas (27,9%). **Conclusão:** O estudo permitiu conhecer a realidade da assistência pré-hospitalar à criança no município, podendo contribuir com políticas públicas voltadas a essa clientela; além disso, colabora com a produção científica relacionada ao atendimento pré-hospitalar infantil, tema pouco explorado nessa população. **Descritores:** Medicina de emergência, Enfermagem de emergência, Saúde da criança.

## RESUMEN

**Objetivo:** Describir el atendimento pre-hospitalario pediátrico realizado por el Servicio de Atención Móvil de Urgencia (Samu) en el municipio de Feira de Santana, Bahia, Brasil, en 2009. **Método:** Esta es una investigación cuantitativa, retrospectiva y descriptiva, basada en los registros de los atendimientos pediátricos realizados por el Samu en el municipio de Feira de Santana. **Resultados:** Fueron identificados 372 atendimientos; 43,5% a niños de 5 a 10 años; 57,1% de las ocurrencias fueron en el domicilio; caídas (28,7%) y atropellos (22,9%) fueron las causas externas más comunes; las causas clínicas más prevalentes fueron problemas respiratorios (40,0%) y crisis convulsivas (27,9%). **Conclusión:** El estudio permitió conocer la realidad de la asistencia pre-hospitalaria al niño en el municipio, pudiendo contribuir con políticas públicas dirigidas a esa clientela; además, colabora con la producción científica relacionada con el atendimento prehospitalario infantil, tema poco explorado en esa población. **Descriptor:** Medicina de emergencia, Enfermería de emergencia, Salud del niño.

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## INTRODUCTION

In emergency situations, the victim's evaluation and the assistance for her/him should be quickly, objectively, and effectively performed, providing increased survival and decreased sequelae. Life support includes steps to rescue the victim in an emergency situation posing a risk to her/him and, in most cases, this assistance may be started at the prehospital environment.<sup>1</sup>

Prehospital assistance may be defined as any and every attention provided at a first care level for patients undergoing acute conditions, with a clinical, traumatic, or psychiatric nature, when they occur outside the hospital environment, and with the possibility of resulting in sequelae or even death.<sup>2</sup>

In Brazil, pre-hospital assistance is ruled by two *portarias* which took effect in 2003; Portaria 1,863 GM establishes the National Policy for Emergency Care, which has as one of its components the prehospital mobile assistance, whereas Portaria 1,864 GM put into force the implementation of the Mobile Emergency Care Service (SAMU) in towns and regions throughout the Brazilian territory.<sup>3</sup>

This way, SAMU is aimed at the emergency and urgency assistance at homes, workplaces, and public areas for patients from any age group. The rescue is performed after a free call to the phone 192. The call is answered by technicians in the regulating center and transferred to the regulating physician, which will diagnose the situation and drive care, advising the patient or the person who called the regulating center, something which allows establishing the communication between the population and the health system; the call for help should be welcomed, prioritized, and assisted at the shortest time possible time and at the most appropriate site to solve the health problem.<sup>4,5</sup>

For the prehospital urgency and emergency assistance for children, there's a need for a specialized team for caring for this age group, due to the biological and psychological peculiarities, the characteristics inherent to this population group, stressing that the adequate first assistance is crucial for a favorable patient's evolution. However, in addition to team training, it's of paramount importance, especially in the case of general accidents, developing prevention actions.<sup>6,7</sup>

Adequate care for the child is more than just applying the principles of caring for adults to a little person. Children have specific patterns, particular physiological responses, and their own special needs based on their size, maturity, and psychosocial development. Although it's important that the rescuer understands the characteristics inherent to children, the basic and advanced measures of life support, using the primary and secondary examination, they're similar for any patient, regardless of their size.<sup>8</sup>

Various factors put the child at a risk situation. Among the causes requiring emergency assistance one finds the respiratory diseases, convulsive conditions, intoxications, accidents, and traumas, often leading to cardiorespiratory arrest, which constitutes the most important medical emergency in the pediatric area.<sup>6,7</sup>

This study aimed to describe the profile of prehospital pediatric assistance conducted by SAMU at the town of Feira de Santana, Bahia, Brazil, in 2009.

The relevance of this study is due to the existence of a gap in the scientific literature on prehospital pediatric assistance, contributing to the construction of scientific evidence on this child health field. Moreover, it may provide the public policies aimed at this clientele with means and, also, promote the reflection of the health professionals involved in this process with regard

Costa PC, Miranda JOF, Souza KAO.

*Pediatric prehospital assistance...*

to the proper urgency and emergency treatment for children, in accordance with the peculiarities that permeate this population group.

## METHODOLOGY

This is a quantitative, descriptive, and retrospective study, which used secondary data contained in the registration forms of the assistance information conducted by SAMU for children aged between 0 and 10 years in the town of Feira de Santana, in 2009.

The study was approved by the Research Ethics Committee of Universidade Estadual de Feira de Santana, under the Protocol 024/2010.

The population consisted of children aged between 0 and 10 years assisted by SAMU in 2009, whose care procedures were recorded by the professionals in the clinical forms of this service. The exclusion criteria were illegible and/or incomplete forms.

The variables under study were collected in May and June 2010, with completion of the investigative form through the data contained in the clinical records filled in by the professionals during the provision of care for children aged from 0 to 10 years, in 2009.

The data obtained were computed and electronically processed through the construction and supply of a Database in the software *Social Package for the Social Sciences* (SPSS), version 11.0 for Windows. Then, these data underwent crossings of simple, bivariate, and stratified frequencies and subsequently analyzed through the discursive statistical technique, and they're presented here in the form of tables.

## RESULTS AND DISCUSSION

Out of the 402 pediatric treatments conducted and recorded by SAMU in the town of Feira de Santana, in 2009, 30 forms which were illegible and/or incomplete were excluded, J. res.: fundam. care. online 2013. out./dez. 5(4):614-621

totaling, in the end, 372 treatments (92.5%).

**Table 1.** Distribution of treatments conducted by SAMU for children from 0 to 10 years, according to the variables under study. Feira de Santana, Bahia, Brazil, 2009.

VARIABLES	N	%
<b>Age group</b>		
Nursling	113	30.4
At the pre-school	97	26.1
At the school	162	43.5
<b>Total</b>	<b>372</b>	<b>100</b>
<b>Sex<sup>1</sup></b>		
Male	241	66.4
Female	122	33.6
<b>Total</b>	<b>363</b>	<b>100</b>
<b>Health insurance<sup>1</sup></b>		
SUS	349	94.3
Others	21	5.7
<b>Total</b>	<b>370</b>	<b>100</b>
<b>Occurrence site<sup>1</sup></b>		
Home	185	57.1
Street	67	20.7
Hospital	42	12.9
School	7	2.2
Others	23	7.1
<b>Total</b>	<b>324</b>	<b>100</b>

<sup>1</sup>Lost data: 9 to sex; 2 for health insurance; 48 for occurrence site; and 16 for referral institution.

In Table 1 one found out that the age group predominantly consisted of children at school age between 5 and 10 years (43.5%), followed by nurslings from 0 to 2 years (30.4%) and those at pre-school from 2 to 5 years (26.1%). Males were predominant (66.4%). Out of the children assisted, 94.3% were enrolled in the Unified Health System (SUS). The highest number of occurrences took place at home (57.1%), followed by the street (20.7%) and the hospitals (12.9%), and this value is due to the inter-hospital transfers made by SAMU. Out of referrals made, 80.9% went to a hospital institution, 15.7% to polyclinics, and in 3.4% of treatments there was no removal.

**Table 2.** Distribution of occurrence types in children from 0 to 10 years assisted by SAMU, according to treatment shifts. Feira de Santana, Bahia, Brazil, 2009.

UNIT	OCCURRENCE TYPE					
	Clinical cause		External cause		Total	
	n	%	n	%	n	%
Matutinal	57	26.5	31	19.7	88	23.7
Vespertine	59	27.4	78	49.7	137	36.8
Nocturnal	99	46.0	48	30.6	147	39.5
<b>Total</b>	<b>215</b>	<b>100.0</b>	<b>157</b>	<b>100.0</b>	<b>372</b>	<b>100.0</b>

External causes accounted for 42.2% of treatments, whereas clinical causes totaled 57.8%. Table 2 points out that among treatments due to clinical causes, most took place at the nocturnal shift (46.0%), in turn, due to external causes, the vespertine shift stood out.

**Table 3.** Distribution of the age group from 0 to 10 years assisted by SAMU, according to the occurrence type due to external cause. Feira de Santana, Bahia, Brazil, 2009.

OCCURRENCE TYPE DUE TO EXTERNAL CAUSE	AGE GROUP							
	0-2 years		2-5 years		5-10 years		Total	
	N	%	n	%	N	%	n	%
Falls	6	33.3	7	21.9	32	29.8	45	28.7
Running over	-	-	8	25.0	28	26.2	36	22.9
Bicycle accident	-	-	2	6.2	16	15.0	18	11.5
Automobile accident	2	11.1	2	6.2	11	10.3	15	9.5
Burn	4	22.2	-	-	4	3.7	8	5.1
Intoxication	3	16.7	4	12.5	-	-	7	4.5
Others	3	16.7	9	28.1	16	15.0	28	17.8
<b>Total</b>	<b>18</b>	<b>100</b>	<b>32</b>	<b>100</b>	<b>107</b>	<b>100</b>	<b>157</b>	<b>100</b>

Table 3 shows the distribution of external cause types. Falls occupied the first place (28.7%), followed by running over cases (22.9%), events classified as others (17.8%), bicycle accidents (11.5%), automobile accidents (9.5%), burn (5.1%), and intoxication (4.5%). Regarding the age group and the occurrence types due to external cause, 33.3% of patients who suffered falls were aged between 0 and 2 years and 29.8% between 5 and J. res.: fundam. care. online 2013. out./dez. 5(4):614-621

10 years. Among the running over victims, 26.2% were in the group from 5 to 10 years and 25.0% were aged between 2 and 5 years. Regarding burns, 22.2% of the records belonged to nurslings. There was also the occurrence of 7 treatments due to intoxication, with 16.7% of victims aged between 0 and 2 years and 12.5% between 2 and 5 years.

**Table 4.** Distribution of occurrence types due to clinical cause in children from 0 to 10 years assisted by SAMU, according to age group. Feira de Santana, Bahia, Brazil, 2009.

OCCURRENCE TYPES DUE TO CLINICAL CAUSE	AGE GROUP							
	0-2 years		2-5 years		5-10 years		Total	
	n	%	n	%	N	%	N	%
Respiratory problem	47	39.8	24	33.3	15	22.4	86	40.0
Neurologic problem	16	13.6	27	37.5	17	25.4	60	27.9
Gastrointestinal problem	8	6.8	8	11.1	12	17.9	28	13.0
Others	47	39.8	13	18.1	23	34.3	83	38.6

In the clinical causes presented in Table 4, the respiratory problems accounted for 40.0% of treatments and the neurological problems (convulsive crisis) accounted for 27.9%. The respiratory problem was responsible for most occurrences due to clinical causes in children aged from 0 to 2 years (39.8%). Another predominant cause was the neurological problem, responsible for 51.1% of patients up to 5 years of age.

One regards as pre-hospital assistance (PHA) any and every assistance conducted, directly or indirectly, out of the hospital sector, in order to better responding to the help request for to the user from any age group, whether child of adult, aiming at the maintenance of life and minimization of sequelae. Adequate care and the time elapsed between the accident and hospital admission is an extremely relevant factor to

Costa PC, Miranda JOF, Souza KAO.

*Pediatric prehospital assistance...*

decrease mortality of victims of injuries produced by accidents and violence. Therefore, the first assistance in urgency and emergency situations is essential and it should be conducted at the site where the situation were identified, and hospital admission must be preceded by a series of procedures, which will be useful to save lives and prevent sequelae.<sup>7,9</sup>

SAMU operationalizes the assistance within SUS and it aims at the integral care for urgencies and emergencies, ensuring the patient access to the service network, whether public or private, and, thus, there's no distinction for treatment. It's intended for urgency and emergency care outside the hospital environment, this way, it assists in settings where the events occur, favoring the early and appropriate treatment crucial to the patient's favorable evolution.

From the analysis of results of this study some aspects deserve being highlighted, such as the predominance of treatment for boys and home as the site with the higher occurrence of treatments, corroborating data from other studies.<sup>10,11</sup> The predominance of males among victims may be justified by the different behaviors of each sex and by cultural factors, which determine a greater freedom to boys and, conversely, greater scrutiny of girls. This cultural behavior ends up leading boys to perform activities with less direct supervision of adults, having, then, a longer exposure to situations which precede accidents.<sup>10,11</sup>

The fact that the house is the most frequent site is a consequence of the great time spent at the home environment, and it refers to the child's exposure to possible factors causing accidents, such as unprotected windows, rugs, scattered toys, piercing and cutting objects, stove, inadequately stored medicines and cleaning products, pets, wet floors. Parents should be aware of these dangers, adopting safety systems  
J. res.: fundam. care. online 2013. out./dez. 5(4):614-621

and mechanisms at home, emphasizing, however, that the most important thing is parental or guardian supervision.<sup>10,11</sup>

Regarding the occurrence of calls per day shift, a study on the profile of emergency treatments due to accidents involving children under 10 years in Brazil in 2006 and 2007<sup>11</sup> showed that most accidents occurred during the day, showing an increasing tendency from 6:00 and resuming their minimum values from 18:00 to 23:00. The period of greatest incidence of falls was around 10:00 and 17:00. Transportation accidents were more frequent around 11:00 and 17:00. Burns had a constant occurrence distribution, without major variations throughout the day, with a slight increase around 11:00 and 18:00. The remaining types of accidents occurred most frequently at 11:00 and 16:00.

External causes constitute a major public health problem, being important causes of morbidity and mortality, even among children. In this study, falls obtained their highest index in the age group between 0 and 2 years, something which is justified by the development phase at which these children are, learning to know the space, its limits, firming ambulation, and adapting to the environment. Falls over 4 years may be related to leisure and sport activities in this age group. In turn, running over cases may be associated to the fact that the child still doesn't have complete mastery of notions such as distance, speed, space, and time.<sup>10</sup>

The occurrence of burns and intoxications in smaller children is justified by the psychomotor development phase at which they are, crawling and starting to take the first steps, with curiosity to explore space, something which ends up leading them to get closer to sites such as the stove and clothes iron, besides the natural curiosity plus the practice of taking objects and substances to the mouth, something which constitutes a usual form

Costa PC, Miranda JOF, Souza KAO.

*Pediatric prehospital assistance...*

of the child's relation to the environment. The high incidence of childhood accidents, as well as the importance of its control and prevention, keeps arousing interest in studies able to better drive and ground the implementation, execution, and evaluation of specific prevention strategies.<sup>10,13</sup>

A higher rate of respiratory problems in the age group between 0 and 2 years is due to the fact that this growth phase is more vulnerable because of the anatomical and physiological and social and environmental conditions to which they're exposed. Respiratory diseases have a major epidemiological importance in childhood; pneumonias are the leading cause of death among children under 5 years, asthma is the second leading cause of hospitalization from 1 to 9 years, and infections of the upper airways are the leading cause of outpatient treatment.<sup>14</sup>

The most frequent childhood seizures are triggered by fever processes, predominantly from 5 months to 5 years of age. Thus, the convulsive crisis isn't a specific disease or a single syndrome, but a set of neurological conditions leading to excessive and abnormal electrical discharges in the brain, and one of the main causes in children are the febrile processes. Immediate assistance in convulsive crisis cases can decrease the patient's chances of presenting some neurological problem, this way, the function of the pre-care provided by SAMU is contributing to reduce the neurological impairment in these cases.<sup>15,16</sup>

In addition to the usual clinical problems among pediatric patients, the literature points out the extent and magnitude of child accidents, and there's a need for preventive actions along with the health professionals, child, family, community, and society as a whole, in order to warn about the risks and the need of adopting safe behaviors with regard to the home environment and the child's developmental phase.<sup>17</sup>

J. res.: fundam. care. online 2013. out./dez. 5(4):614-621

## CONCLUSION

SAMU is intended to assist urgent and emergency patients from any age group and outside the traditional health care space, whose object are the first minutes of a health problem, especially among the child population, since they're decisive for a favorable patient's evolution.

The results obtained indicate that the SAMU in the town of Feira de Santana, in 2009, conducted a total of 402 treatments for children between 0 and 10 years. External causes accounted for 42.2% of calls, and falls and running over cases are the occurrence types requiring most treatments. External causes or accidents are responsible for high rates of morbidity and mortality among the child population and, as they're mostly preventable, it becomes needed to develop preventive actions in childhood.

Regarding the clinical causes, the highest percentage involved the respiratory and neurological problems, characterized by convulsive crises, reaching more nurslings and pre-school children. Factors such as age, anatomy, physiology, environment, social relationship, among others, can make the child more vulnerable to certain health problems.

This study identified a deficiency of records in the treatment forms; it's worth stressing for the professionals conducting prehospital treatment the importance of a full record of the evaluation and assistance provided, since these forms represent this assistance documentation, and they constitute the information sources for evaluating the service, planning public policies, and constructing scientific evidence.

This study brought important data on the prehospital pediatric treatment conducted in Feira de Santana and it can contribute to the public

Costa PC, Miranda JOF, Souza KAO.

*Pediatric prehospital assistance...*

policies aimed at this clientele, especially with regard to the strategies for preventing childhood accidents and the very care for the child in all her/his developmental phases. Moreover, it contributed to the production of scientific evidence in the area concerned, with the construction of means for providing prehospital pediatric assistance with better practices.

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Costa PC, Miranda JOF, Souza KAO.

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