



Online Brazilian Journal of Nursing

E-ISSN: 1676-4285

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Brasil

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Online Brazilian Journal of Nursing, vol. 10, núm. 3, septiembre-diciembre, 2011  
Universidade Federal Fluminense  
Rio de Janeiro, Brasil

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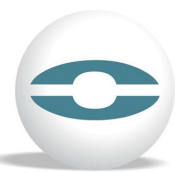
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## PROFILE OF CHILDREN AND TEENS ATTENDED IN EMERGENCY ACCORDING TO THE RISK CLASSIFICATION: A DOCUMENTAL STUDY

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### ABSTRACT

**Objective:** Outline the clinical profile of children and adolescents (0-14 years) treated at a hospital in Fortaleza, Ceará, based on the criteria of a ACCR protocol in Pediatrics. **Methods:** Documental study, with a sample of 627 reports of emergency randomly selected, processed and analyzed in SPSS 17.0. **Results:** Most of the children proceeded from the Regional Executive Office III (65.63%), male (57.33%), aged 1 to 5 years (51.63%) and adequate weight (53.42%). There was an association between risk assessment and the specialty clinical medicine ( $p < 0.001$ ), with the highest percentage rating from yellow to blue in medical clinic. The prevalent complaint was fever with yellow classification. **Conclusion:** By means of risk rating, the nurse can identify the degree of clinical commitment of patients, the appropriate and exceeding demand of the institution, providing the necessary care, according to the level of complexity of each case.

**Keywords:** Emergency Nursing; Child; Adolescent; Sorting

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## INTRODUCTION

The unnecessary search for hospital emergency, both in developed and developing countries such as Brazil, concerns poverty and the low level of maternal education in addition to the level of misinformation about the complexity of the treatment to be sought by parents or guardians face to the child's illness<sup>(1,2)</sup>.

Such factors are permeated by issues involving the lack of access and resolution of the primary care network and the enormous legitimacy that the emergency services have on the population through its technological resources, which affects the inadequacy of demand and the consequent reduction of the quality of health services.

In addition, the number of hospitals of medical care with pediatric emergency care specialty does not meet the actual demand, for, in 2005 there were 4,012 in the country, 113 hospitals in the state of Ceará, and in Fortaleza, the 35 units of the Unified Health System (SUS) performing emergency care, only 19 met the specific establishments in pediatrics<sup>(3)</sup>.

Among the actions of health promotion, established with the intention of qualifying hospital quality in Brazil, stands out the establishment of measures by the Ministry of Health, among which the National Humanization Policy (NHP), which aims to improve attention and management in the Unified Health System<sup>(4)</sup>.

According to criteria established by the HNP, all patients who seek care in health institutions should receive care by a qualified multidisciplinary team. The nurse as a team member has the responsibility to receive the patient in a supportive and welcoming way, making brief assessment and classifying him/her according to priority, responding to health needs of each user<sup>(4)</sup>.

One of the strategies referred to in HNP is the Reception with Risk Rating (ACCR), which is intended to reorganize the process of welcoming people in the health units, providing them with adequate assistance<sup>(4)</sup>.

Therefore, the City Hall of Fortaleza, with support from the Ministry of Health, has developed and implemented the protocol in Pediatrics ACCR in order to standardize the activities developed by nurses and by other team members, provide the necessary attention focused on the level of complexity, no more taking the order of arrival and qualify the care in hospital care units.

The hosting allows exchanges between the user's family network and the health team, in which priority of care is done by nurses through the classification of risk which should include brief, supportive and welcoming assessment<sup>(4)</sup>.

Patients are categorized into levels of care recommended by the following colors: RED I – patients who require immediate care or resuscitation with continuous nursing care, which are forwarded directly to the emergency room; RED II / ORANGE - in which patients are in an emergency situation requiring medical attention within 15 minutes and

re-evaluation of nursing every 15 minutes, also being sent to the emergency room; YELLOW - patients in need of medical attention as soon as possible, but are not immediately at risk of death and should be submitted directly to the nursing consultation room; GREEN - patients on a non-acute condition, who should be directed to medical care within one hour, or reevaluated by the nurse every hour, and finally; BLUE - which corresponds to the other non-acute conditions and will be attended in the order of arrival or referred to another institution of primary care<sup>(4)</sup>.

Therefore, we aimed to delineate the socio-demographic profile and clinical situation of children and adolescents treated in an emergency room in Fortaleza-CE, based on the criteria of the protocol of ACCR in Pediatrics.

## **METHODS**

The present study is a retrospective and documentary type, with a quantitative approach, conducted with children and adolescents between the age group 0-14 years, treated in the emergency of a district hospital of the secondary level, located in Fortaleza, Ceará.

Data collection occurred in July 2009, through consultation with emergency service bulletins for the period from January to June 2009, which should meet the following inclusion criteria: legible filling in more than 50% of the items present in the bulletins. During this period 12,000 pediatric visits were made, and of these were selected randomly 1000 bulletins, of which 363 did not meet the inclusion criteria adopted, resulting in a sample of 627 reports of emergency service.

To facilitate this stage of the research, we used a structured form covering personal characteristics (sex, age, weight and origin), specialty care, chief complaint, vital signs and risk classification according to the criteria of the ACCR protocol in pediatrics of the Municipality.

For compiling the information gathered was used Excel for Windows and for data analysis we used the software Statistical Package for Social Sciences (SPSS) version 17.0. Data were analyzed in the light of relevant literature, using descriptive and analytical statistics through absolute and relative frequencies and significance tests: likelihood ratio and Fisher-Feeman-Halton. For all statistical analysis, we have fixed the significance level of 5% and confidence interval of 95% (IC 95%).

The present study was conducted in accordance with resolution 196/96 of the National Health Commission and followed the guidelines and regulating norms for research involving human beings and was approved by the Ethics Committee in Research of the Federal University of Ceará under protocol No. 193 / 09.

## **RESULTS**

In Table 1, we can see that there was no statistically significant association between risk classification and origin ( $p = 0.145$ ), as well as within each origin, there was no statistically significant predominance of one level of risk ( $p > 0.10$ ). Although there are

six Regional Executive Secretariats (RES) in Fortaleza, only four were analyzed as two RES's (II and VI) showed only 10 (1.6%) services.

It was found also that the largest number of patient care was coming from RES III, in which referred hospital is located, followed by RES I. There was also significant amount of patients that came from the city of Caucaia, Ceara, attached to RES III. One can see that the proximity of the residence in relation to the health facility influenced the number of visits, since the RES I, RES III and Caucaia were responsible for the vast majority (553 to 90.06%) of services. It is noteworthy that in most places of origin, the predominant risk ratings were in yellow (38.44%) and green (32.41%).

**TABLE 1** – Distribution of patients according to risk classification and origin. Fortaleza, 2009.

2005.													
	Risk Classification												
	Red		Orange		Yellow		Green		Blue				
	N	%	N	%	N	%	N	%	N	%	P <sup>1</sup>	IC	95%
Origin													
RES I	2	2,1	12	12,4	37	38,1	27	27,8	19	19,6	47	37-53	
RES III	1	0,2	57	14,1	153	38	142	35,2	50	12,4	48	43-53	
RES IV	0	0	1	10	4	40	2	20	3	30	50	19-81	
RES V	1	3,4	4	13,8	16	55,2	7	24,1	1	3,4	28	13-47	
Caucaia	1	1,9	9	17	16	30,2	16	30,2	11	20,8	51	37-65	
Others	1	4,6	1	4,6	10	45,4	5	22,7	5	22,7	45	24-68	
Total	6	1	84	13,7	236	38,4	199	32,4	89	14,5			

Source: Emergency Hospital, Fortaleza-CE, Jan-Jun/2009. (n=614)

Likelihood ratio  $p=0,145$ .

P<sup>1</sup> is the proportion of the risk ratings in green and blue.

On Table 2 No correlation was found between risk classification and gender ( $p = 0.299$ ) as well as within each gender there were no statistically significant predominance of a risk level ( $p > 0.20$ ). However, of the 627 reports of the study, those related to the male children have prevailed (352 to 56.14%), of which over two thirds were classified in yellow and green.

It was further observed that more than half of the consultations occurred in children between 1 and 5 years, mostly classified in yellow and green. There was no association between risk classification and age ( $p = 0.295$ ). Also within each age group there was no statistically significant predominance of a risk level ( $p > 0.40$ ).

Slightly more than half of the children had adequate weight for their age (328 to 52.90%), mostly classified in yellow and green (238 to 72.57%). Moreover, the weight showed a strong trend of association with risk rating ( $p = 0.06$ ), but not conclusive, with a statistically significant predominance of a risk level ( $p < 0.0001$ ). There is a higher percentage of yellow to blue risk classification to the proper weight, while for the inadequate weight the yellow to orange risk was higher.

It should be noted that to facilitate the analysis of the results were denominated as for the inadequate weight the children who presented high, low and very low weight for the age.

**TABLE 2**– Distribution of patients according to risk classification and personal characteristics. Fortaleza, 2009.

Risk Classification												
	Red		Orange		Yellow		Green		Blue		P <sup>1</sup>	IC <sub>95%</sub>
	N	%	N	%	N	%	N	%	N	%		
Gender (n=627)												
Male	7	2	53	15,1	130	36,9	115	32,7	47	13,6	46	41-51
Female	1	0,4	34	12,4	110	40	87	31,6	43	15,6	47	41-53
Age (Year)(n=623)												
< 1	1	1,6	4	5,4	30	40,5	24	32,4	15	20,3	53	41-64
1 to 5	4	1,3	43	13,6	121	38,2	107	33,8	42	13,2	47	41-53
6 to 14	3	1,3	40	17,2	88	37,9	69	29,7	32	13,8	44	37-50
Weight (n=620)												
Adequate	1	0,3	41	12,5	122	37,2	116	35,4	48	14,6	50	44-56
Inadequate	7	2,4	46	15,8	115	39,4	84	28,8	40	13,7	42	37-48

Source: Emergency Hospital, Fortaleza-CE, Jan-Jun/2009.

Fisher-Feeman-Halton  $p_{(gender)}=0,299$ ;  $p_{(age)}=0,295$ ;  $p_{(weight)}=0,068$

P<sup>1</sup> is the proportion of the risk ratings in green and blue.

Table 3 shows a statistically significant association between the risk rating and the reason for the consultation ( $p < 0.001$ ), because to the medical clinic the highest percentage was of yellow to blue, while for the surgical clinic this percentage was higher for red to yellow. Also, within each clinic there was the predominance of yellow risk ( $p < 0.0001$ ).

**TABLE 3**– Distribution of patients according to risk classification and reason for the consultation. Fortaleza, 2009.

Consentation: 1. February, 2009.													
Clinic specialty	Risk Classification											P <sup>1</sup>	IC <sub>95%</sub>
	Red		Orange		Yellow		Green		Blue				
	N	%	N	%	N	%	N	%	N	%			
medical Clinic	4	0,7	74	13,6	198	36,5	189	34,9	77	14,2	50	44-56	
surgical Clinic	3	3,9	12	15,6	41	53,2	8	10,4	13	16,9	42	37-48	
<b>Total</b>	7	1,4	86	13,9	239	38,6	197	31,8	90	14,5			

Source: Emergency Hospital, Fortaleza-CE, Jan-Jun/2009. (n=619)

Fisher-Feeman-Halton  $p < 0,001$

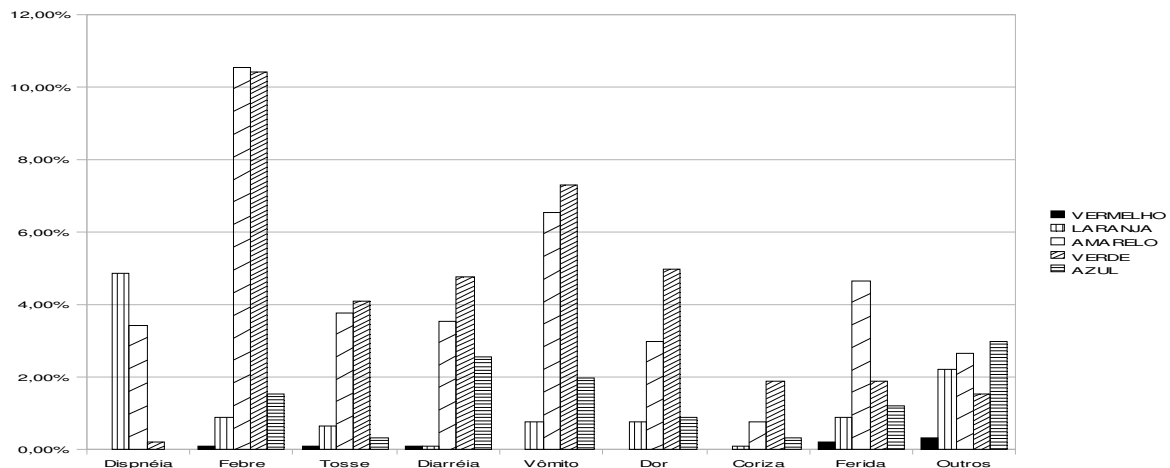
P<sup>1</sup> is the proportion of the risk ratings in green and blue.

In Graphic 1 we observed that among the complaints, the most frequently reported was fever (212 to 23.48%), present in 53 (8.46%) children individually, in 38 (6.06%)

associated with cough and 32 (5.1%) children associated with pain, the prevailing level of classification in yellow. It is noteworthy that according to the protocol adopted in the study, it is considered a fever the elevation of temperature above 37.8°C<sup>(4)</sup>. It's worth noting that were categorized as fever all complaints, which were confirmed or not after the measurement by mercury thermometer. Hence the large number of cases is justified. Gastrointestinal infections had higher frequency to the others and were classified mostly green, and vomiting (66 to 7.31%) and diarrhea (43 to 6.76%) were the main clinical signs observed.

Complaints of dyspnea accounted for a total of 53 calls (8.45%), while cough were present in 12 (1.91%) children, and the dyspnoea was classified mostly in orange (35 - 66%) and yellow (15 to 28.3%).

**GRAPHIC 1**– Distribution of patients according to risk assessment and the main complaint. Fortaleza, 2009.



Source: Emergency Hospital, Fortaleza, Jan-Jun/2009.

## DISCUSSION

In the present study it was found that the majority of the children attended were from the RES III, in which the referred hospital is located, which is composed of neighborhoods on the outskirts of Fortaleza. The risk rating was predominantly yellow, characterizing these patients as appropriate demand for emergency care, which required medical evaluation within 30 minutes or nursing reassessment every 30 minutes, followed by the classification of green color (less urgent) in which patients in need of medical evaluation or reevaluation within 1 hour or nursing every hour.

This unit meets all the calls for service, without restriction of neighborhoods, assisting urgent and emergency cases in the areas of general medicine, surgery, pediatrics and is reference to secondary level to trauma patients' care<sup>(5)</sup>.

It is worth mentioning the origin of patients arising from RES's I and III and the municipality of Caucaia, which is bordered by RES III, which accounted for the vast majority (90.06%) of cases, confirming that geographical proximity influences on demand of emergency services<sup>(6,10)</sup>.

The present study identified a predominance of males, and although there was no statistically significant association with the risk rating ( $p=0.299$ ), the priority highlighted in this population was yellow. This finding agrees with studies showing the prevalence of hospital care to the male children, particularly related to accidents and traumas<sup>(7,8)</sup>.

This dominance may be related to differences in behaviors and activities in each gender, meaning that the boy tends to develop dynamic activities and attitudes with games that involve greater risk, while girls develop softer activities<sup>(7)</sup>.

In this study the level of complexity of health impairment of male children was higher in all levels of classification of risk, especially the color red I, with the proportion of 7:1. This proportion agrees with other studies on the exposure of male children to activities of higher risk<sup>7,8</sup>.

The category age did not present statistically significant association with risk rating ( $p=0.295$ ), predominating children aged 1 to 5 years and consultations classified as urgent (yellow) and less urgent (green), characterizing these children as appropriate demand.

Studies on the length of stay of children in the emergence of an institution also found a predominance of children aged 1 to 4 years<sup>(8,9)</sup>. Children under 5 are in the toddler stage, and are not always aware of dangerous situations and are therefore targeted strategies and public health policies since infant mortality rates are important socio-demographic indicators, reflecting not only aspects of children's health, but the quality of life of a given population<sup>(10)</sup>.

As to weight, we have found a strong trend of association with risk rating ( $p = 0.06$ ), predominantly in children with adequate weight for age classifications yellow and green, meaning that such children sought hospital care for emergency clinical situations and less urgency respectively. It is noteworthy that, by classifying risk, we could identify that children with low weight for their age showed more severe clinical profile than children with adequate weight. Also, in checking the origin of these children we could perceive that about 25% lived in RES III. This reflects the possibility of implementing measures for the promotion of health in the practice of public health (Intersectoriality), directed to the nutritional needs of this region.

Study on food safety also found that children with adequate nutritional status showed less harmful diseases compared to the malnourished, and in these there is an increase in the incidence, severity of infectious diseases and mortality rates in childhood (11).



However, it is emphasized that malnutrition has been losing its place for the overweight, making it currently one of the main problems of nutrition in children under five years<sup>(12)</sup>.

There was also a statistically significant association between clinical specialty care, and risk classification ( $p < 0.001$ ), with predominance of clinic attendances in yellow followed by green. Although the institution is a secondary hospital of reference in orthopedic clinic, of the 627 attendance studied cases only 7 were related to this specialty.

Authors found similar results in which, of the 222 children treated, only 5 (1.46%) came to the hospital due to accidents or trauma (13). Another study described a series of children treated in the emergency room and found that 65% of patients were previously healthy and that the reason for the consultation was for treatment in medical clinic<sup>(1)</sup>.

It is noteworthy that the nurse, through the work process and placed in the context of the ACCR is the professional responsible for appropriate stratification of this demand through the proper implementation of the protocol.

In this study, we found that in the majority of complaints made there was the predominance of fever classified in yellow followed by vomiting and diarrhea classified in green.

A similar study found the fever, followed by vomiting as the most prevalent complaints<sup>(12)</sup>. In addition, other authors found that children complained of fever of various origins, such as infections of the upper and lower airways, among others<sup>(14)</sup>. Just as a study of a systematic review on the inappropriate use of emergency services corroborates to the result, saying the majority of complaints accounted for fever (21.6%), followed by vomiting (18.1%)<sup>(15)</sup>.

According to the period in which data was collected (January-June 2009), rainy season in the state of Ceará, diseases of the digestive tract are still a significant source of demand for health facilities. According to the findings, it was observed that a significant amount of children was attended with complaints of diarrhea and vomiting associated with them or not, where the majority was characterized as non-acute condition (green). A study conducted in Fortaleza found an association between the intensity of rainfall and the number of diarrhea cases in children between 1 and 4 years and this increase was associated with ingestion of water from sources other than the usual, to the groundwater contamination by septic tanks or on the circulation of other etiologic agents<sup>(9)</sup>.

As for the dyspnea, despite not being the most prevalent complaint we should highlight the highest severity rating in orange, encompassing acute situations, of emergency, without a sound signal requiring medical attention within 15 minutes and nursing reassessment every 15 minutes. For the dyspnea to be classified as orange, the child should have intense respiratory distress with muscular effort or past severe asthma and oxygen saturation between 92 and 94%<sup>(4)</sup>.

It is believed that, by identifying the clinical characteristics of these children, provided by the risk rating process in the emergency department by nurses, we can contribute to practical assistance, redirecting the process of accessibility for users and improve the quality of healthcare at SUS.

## **CONCLUSION**

The socio-demographic and clinical prevalent profile was of male children, aged 1-5 years, appropriate weight, living close to the institution. The main complaint was fever classified in yellow characterized as urgency.

The plurality of the observed factors did not influence the risk rating, though, through this, we can quantify and characterize the prevalence of appropriate demand and surplus, which may explain the overcrowding and low resolvability of health problems of the users in emergency services.

It was also observed that the profile of the studied children, in general, is similar to other national and international studies, and that the observed features, in most cases, may be identified through a review of the nurse with the use of protocols.

## **Relevance to clinical practice**

The present study contributes to nursing practice, because knowing the profile of socio-demographic and clinical characteristics of children and adolescents being treated in emergency rooms, allow nurses to develop initiatives that promote the appropriate risk assessment, ensuring decision making and minimizing the chances of aggravation.

Thus, we can observe that the nurse through the process of working in the ACCR, adhered to the principles of reconstruction and qualification of SUS, incorporating the National Policy of Humanization guidelines. In the sector of care the nurse evaluates the patient and also makes it clear to the community about the way and the expectation of attendance at the various levels of complexity of the SUS, with a view to organizing the physical space and reduce overcrowding in emergency rooms. These clarifications should be made systematically through health education.

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**Authors' Contribution**

- Concept and design: Veras, JEGLF, Ximenes, LB\*
- Data Collection: Veras, JEGLF, Nascimento, LA
- Analysis and interpretation: Veras, JEGLF, Carvalho, AT, Uchoa, JL, Nascimento, LA, Ximenes, LB, Almeida, PC
- Drafting of the article: Veras, JEGLF, Carvalho, AT, Uchoa, JL, Nascimento, LA, Almeida, PC, Ximenes, LB.
- Final Approval of the article: Veras, JEGLF, Carvalho, AT, Uchoa, JL, Almeida, PC, Ximenes, LB.

\* Scholar Productivity /CNPq