

## CHARACTERIZATION OF ATTENDANCE IN A PEDIATRIC EMERGENCY CARE SERVICE

Caracterização dos atendimentos em um serviço de pronto-atendimento pediátrico

Caracterización de asistencia en un servicio de primeros auxilios pediátrico

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### ABSTRACT

**Objective:** to describe the characteristics of care in a pediatric emergency care unit. **Method:** a descriptive and observational study, with a quantitative approach, developed in a Pediatric Emergency Care Hospital in Teresina, Piauí, with a probabilistic sample of 637 medical records of children attended during 2017. **Results:** there was a greater demand for sex children male, up to two years old, from the state capital and attended in the second quarter. The complaints that motivated the search for the service were: fever, cough, vomiting, runny nose, diarrhea, and nasal congestion, among several others. Seasonality was observed in the disease process of this population group. **Conclusion:** the studied unit demonstrated a satisfactory organization regarding the services offered; however, in some situations there is a demand in great demand, generating overcrowding for services that are not characterized by pediatric urgencies/emergencies. Such assistance should be carried out in places with less complex services.

**Descriptors:** Child health; Emergency medical services; Health services needs and demand; Childcare; Nursing.

### RESUMO

**Objetivo:** descrever as características dos atendimentos em uma unidade de pronto-atendimento pediátrico. **Método:** estudo descritivo e observacional, de abordagem quantitativa, desenvolvido em Hospital de Pronto-Atendimento Pediátrico em Teresina, Piauí, com amostra probabilística de 637 prontuários de crianças atendidas durante o ano de 2017. **Resultados:** observou-se maior demanda de crianças

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do sexo masculino, com até dois anos de idade, procedentes da capital do estado e atendidas no segundo trimestre. As queixas que motivaram a busca pelo serviço foram: febre, tosse, vômitos, coriza, diarreia e congestão nasal, entre diversas outras. Observou-se sazonalidade no processo de adoecimento desse grupo populacional. **Conclusão:** a unidade estudada demonstrou organização satisfatória quanto aos atendimentos ofertados; porém, em algumas situações existe procura em grande demanda, gerando superlotações por atendimentos que não são caracterizados de situações de urgências/emergências pediátricas. Tais atendimentos deveriam ser realizados em locais com serviços de menor complexidade.

**Descritores:** Saúde da criança; Serviços médicos de emergência; Necessidades e demandas de serviços de saúde; Cuidado da criança; Enfermagem.

## RESUMEN

**Objetivo:** describir las características de la atención en una unidad de atención de emergencia pediátrica. **Método:** estudio descriptivo y observacional, con enfoque cuantitativo, desarrollado en un Hospital Pediátrico de Atención de Emergencia en Teresina, Piauí, con una muestra probabilística de 637 registros médicos de niños atendidos durante 2017.

**Resultados:** hubo una mayor demanda de niños sexuales hombre, hasta dos años de edad, de la capital del estado y asistió en el segundo trimestre. Las quejas que motivaron la búsqueda del servicio fueron: fiebre, tos, vômitos, secreción nasal, diarrea y congestión nasal, entre otros. La estacionalidad se observó en el proceso de la enfermedad de este grupo de población. **Conclusión:** la unidad estudiada mostró una organización satisfactoria con respecto a los servicios ofrecidos; sin embargo, en algunas situaciones existe una gran demanda, lo que genera hacinamiento en los servicios que no se caracterizan por urgencias / emergencias pediátricas. Dicha asistencia debe llevarse a cabo en lugares con servicios menos complejos.

**Descriptores:** Salud del niño; Servicios médicos de urgencia; Necesidades y demandas de servicios de salud; Cuidado del niño. Enfermería.

## INTRODUCTION

The emergency care units (ED), also called emergency room, are intermediate level health units - between the Basic Health Unit (BHU) and hospital urgency and emergency care -, belonging to the Urgency and Emergency Care Network. These units are used to treat fewer complex cases and should refer to hospital services those situations that demand greater complexity. These emergency services were designed to provide discontinuous and concrete health care, leaving to the BHU the scope of continuous care through promotion, guidance, prevention, and, when necessary, referrals to specialized services.<sup>1</sup>

Urgency is an unforeseen occurrence of health problems - with or without potential risk to life - whose individual requires immediate medical assistance, while an emergency is the medical finding of conditions involving imminent risk of death or intense suffering, requiring, therefore, immediate assistance.<sup>2</sup>

In recent years, public pediatric hospital emergency rooms have experienced periods of overcrowding, as demand has become greater than the supply of services. This fact occurred due to the treatment of situations that were not characterized as health emergencies and that could have been treated in

places of less complexity, such as the BHU.<sup>3-4</sup> Children and adolescents are a population group undergoing growth and development, with unique biopsychosocial characteristics, which determines the need for diversified methods and techniques of clinical and scientific investigation.<sup>5</sup>

The high proportion of children with health problems that can be cleared up at the primary level of care - and that crowd the hospitals - brings consequences to the nursing team's work process. The high demand of children for pediatric emergency services interferes with the quality of care; patients who really need agility in care wait for hours with those who demand primary care and orientation.<sup>6</sup>

A study<sup>7</sup> showed that the perception of the children's caregivers does not match the real need for emergency care services, when 72% of the caregivers identified the problem that brought them to the unit as extremely urgent; however, 82% of the children were later classified as non-urgent. This discrepancy may, according to the study, be related to the caregivers' low educational level. Such data are corroborated by another research,<sup>8</sup> which identified that social factors inherent to parents influence the demand for pediatric emergency care.

In view of the above, investigating pediatric emergency care can provide a design for guiding structural and informational changes, aiming to redirect the care of children to units appropriate to the demand. From this perspective, this study aimed to describe the characteristics of care in a pediatric emergency care unit.

## METHOD

This is a descriptive and observational study, with a quantitative approach, developed in a private Pediatric Emergency Care Hospital, located in the city of Teresina-Piauí, which offers emergency care and clinical-surgical care to children and adolescents.

To survey the universe to be studied, the year 2017 was defined as a time frame - the year before the research was carried out. Data from the service indicated that 99,978 cases were recorded in that year. To represent the sample size (n), we considered a complaint of fever in the population of 30% and in the sample of 25%, a margin of error of 5%, and test power of 80%, with a significance level of 5% in a two-way test. Thus, the sample defined probabilistically was of 637 medical records.

The inclusion criteria for the sample were: medical records of children aged 0 to 11 years, 11 months, and 29 days in 2017; no records were excluded from this assessment. The selection of participants was through simple consensus sampling without replacement. A total of 637 random numbers were generated via BioEstat 5.0 software between medical record #99,778, dated January 1, 2017, and medical record #1,234,187, dated December 31, 2017.

Data collection was performed in the months of September and October 2018, on days and times previously established by the institution, through access to the electronic medical records. The necessary information was collected for the resolution of the script, with its own formulation, composed

of questions involving the following variables: gender, origin, age, month of service, and reason for seeking the service.

The data were organized in a Microsoft Office Excel spreadsheet, validated by double typing, and later processed in the Statistical Package for Social Science (SPSS) version 20.0. We then proceeded to the descriptive statistical analysis of the variables by means of absolute and relative frequency distribution and presented in tables.

The study respected the ethical precepts of research involving human beings, being approved by the Research Ethics Committee with opinion number 2.858.217.

## RESULTS

Of the 637 medical records investigated, we observed a higher demand of male children, up to 2 years old, coming from Teresina - the state capital - and seen in the second quarter of 2017 (Table 1).

**Table 1** - Characterization of the studied sample. Teresina, PI, Brazil, 2018

Variable	n	%
<b>Gender</b>		
Male	338	54,96
Female	227	45,04
<b>Age</b>		
Up to 2 years	304	49,59
3 to 5 years	143	23,33
6 to 11 years 11 months and 29 days	166	27,08

Variable	n	%
<b>Source</b>		
Teresina, Capital	479	77,38
Other municipalities in the state	46	7,43
Other States	94	15,19
<b>Quarter of attendance</b>		
First	157	25,24
Second	201	32,32
Third	120	19,29
Fourth	144	23,15

The complaints that motivated the search for the service were: fever (43.71%,n=271), cough (37.26%,n=231), vomiting (14.35%,n=89), coryza (13.06%,n=81), diarrhea (10.16%,n=63), nasal congestion (9, 35%,n=58), headache (7.90%,n=49), abdominal pain (6.94%,n=43), otalgia (4.84%,n=30), falling (3.39%,n=21), fatigue (3.23%, n=20), odynophagia (3.23%,n=20), nausea (1.77%,n=11), routine consultation (1.13%,n=7), asthenia (0.65%,n=4), hypoactivity (0, 65%,n=4), myalgia (0.65%,n=4), constipation (0.65%,n=4), dizziness (0.32%,n=2), suture (0.16%,n=1) and other reasons (21.77%,n=135). It is noteworthy that the absolute frequency of complaints exceeded the sample value, since more than one complaint could have led to the search for the service.

Table 2 shows the distribution of complaints according to the variables sex, age group and origin.

**Table 2** - Distribution of complaints according to gender, age group and origin. Teresina, PI, Brazil, 2018

Complaint	Gender				Age Group						Source					
	Male		Female		0 to 2 years		3 to 5 years		6 to 12 years old		Teresina, Capital		Other Municipalities in the State		Other States	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Fever	152	44,97	119	43,12	151	49,67	62	43,36	56	33,73	208	43,42	20	43,48	42	44,68
Headache	21	6,21	28	10,14	7	2,30	11	7,69	31	18,67	41	8,56	2	4,35	6	6,38
Abdominal pain	23	6,80	20	7,25	9	2,96	14	9,79	19	11,45	39	8,14	-	-	4	4,26
Vomit	47	13,91	42	15,22	37	12,17	31	21,68	20	12,05	67	13,99	6	13,04	16	17,02
Nausea	6	1,78	5	1,81	1	0,33	2	1,40	8	4,82	9	1,88	-	-	2	2,13
Nasal Congestion	31	9,17	26	9,42	32	10,53	15	10,49	11	6,63	40	8,35	5	10,87	13	13,83
Diarrhea	42	12,43	21	7,61	28	9,21	21	14,69	14	8,43	54	11,27	2	4,35	7	7,45
Cough	130	38,46	100	36,23	124	40,79	52	36,36	53	31,93	172	35,91	25	54,35	34	36,17
Fatigue	8	2,37	12	4,35	10	3,29	4	2,80	5	3,01	15	3,13	1	2,17	4	4,26
Otalgia	15	4,44	15	5,43	8	2,63	10	6,99	12	7,23	23	4,80	2	4,35	5	5,32
Odynophagia	10	2,96	10	3,62	5	1,64	4	2,80	11	6,63	15	3,13	-	-	5	5,32
Asthenia	1	0,30	3	1,09	1	0,33	2	1,40	1	0,60	3	0,63	-	-	1	1,06
Dizziness	-	-	2	0,72	-	-	1	0,70	1	0,60	2	0,42	-	-	-	-
Routine appointment	2	0,59	4	1,45	2	0,66	1	0,70	4	2,41	4	0,84	1	2,17	2	2,13
Drop	12	3,55	9	3,26	9	2,96	5	3,50	7	4,22	18	3,76	1	2,17	2	2,13
Suture	-	-	1	0,36	-	-	1	0,70	-	-	1	0,21	-	-	-	-

Complaint	Gender				Age Group						Source					
	Male		Female		0 to 2 years		3 to 5 years		6 to 12 years old		Teresina, Capital		Other Municipalities in the State		Other States	
	N	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Coryza	42	12,43	39	14,13	49	16,12	19	13,29	13	7,83	59	12,32	6	13,04	16	17,02
Hypoactive	4	1,18	-	-	-	-	3	2,10	1	0,60	4	0,84	-	-	-	-
Myalgia	2	0,59	2	0,72	-	-	-	-	4	2,41	3	0,63	-	-	1	1,06
Constipation	3	0,89	1	0,36	4	1,32	-	-	-	-	4	0,84	-	-	-	-
Other	69	20,41	62	22,46	64	21,05	31	21,68	37	22,29	106	22,13	12	26,09	17	18,09
Total	338	100	276	100	304	100	143	100	166	100	479	100	46	100	94	100

Table 3 presents the distribution of complaints according to the period of service.

**Table 3** - Distribution of complaints according to period of care. Teresina, PI, Brazil, 2018

Complaint	Service Period							
	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
	n	%	n	%	n	%	n	%
Fever	63	40,13	98	48,76	46	38,33	64	45,07
Headache	10	6,37	21	10,45	11	9,17	7	4,93
Abdominal pain	14	8,92	11	5,47	9	7,50	9	6,34
Vomit	37	23,57	21	10,45	14	11,67	17	11,97
Nausea	3	1,91	2	1,00	4	3,33	2	1,41
Nasal Congestion	13	8,28	17	8,46	20	16,67	8	5,63
Diarrhea	22	14,01	11	5,47	17	14,17	13	9,15
Cough	63	40,13	78	38,81	39	32,50	51	35,92
Fatigue	5	3,18	6	2,99	4	3,33	5	3,52
Otalgy	9	5,73	9	4,48	4	3,33	8	5,63
Odinophagia	4	2,55	5	2,49	4	3,33	7	4,93
Asthenia	-	-	3	1,49	1	0,83	-	-
Dizziness	2	1,27	-	-	-	-	-	-
Routine appointment	1	0,64	1	0,50	3	2,50	2	1,41
Drop	6	3,82	6	2,99	4	3,33	5	3,52
Suture	-	-	-	-	-	-	1	0,70
Coryza	20	12,74	30	14,93	17	14,17	14	9,86
Hypoactive	4	2,55	-	-	-	-	-	-
Myalgia	2	1,27	1	0,50	-	-	1	0,70
Constipation	1	0,64	2	1,00	-	-	1	0,70
Other	36	22,93	44	21,89	19	15,83	36	25,35
Total	157	100	201	100	120	100	142	100

## DISCUSSION

According to the study, 54.69% of the sample is composed of male children. A similar result was found in another study,<sup>9</sup> which showed that more than half of the sample (52%) of the patients seen at the Hospital Escola Municipal de São Carlos, São Paulo, was male.

A retrospective study<sup>10</sup> found, in 2009, in the Children's Emergency Department of the Hospital de Clínicas de Uberlândia, that the highest demand was male, with 55.4%. In a research<sup>11</sup> conducted in the state of Pará, whose data were collected from medical records of 580 patients treated, 292 (50.4%) were male and 288 (49.6%) were female. Regarding age, children between 0 and 12 years of age were evaluated, with an average of 7 years and 6 months. The children who most sought the emergency service were in the age range of 7 to 12 years, followed by 4 to 6 years and 0 to 3 years, in both genders.

In Fortaleza, Ceará, according to a survey<sup>12</sup> conducted with 221 participants, it was possible to evidence that most children were in the age range of 0 to 24 months (37.0%), while adolescents ( $\geq 10$  years) represented 13.7% of the sample, highlighting the predominance of males (53.1%).

Analyzing the age profile, the highest demand of children seen was in the age groups of up to 2 years and 6 years to 11 years, 11 months and 29 days of age. The child is generally more susceptible and vulnerable to diseases in the first years of life; that is, as they grow up, their biological vulnerability decreases. However, it is of utmost importance to constantly assess the child's socioeconomic, environmental, and cultural context.<sup>13</sup>

A retrospective study<sup>14</sup> in a University Hospital in Fortaleza, Ceará, identified, among 119 records analyzed, 20.1% infants, 22.7% preschoolers, 18.5% schoolchildren, and 38.7% adolescents. The mean age of the hospitalized children was 8.6 years and the ages ranged from 1 month and 17 days to 17 years and 8 months.

Analyzing the reason for seeking the pediatric emergency room, in this study, it was highlighted that fever was responsible for the highest percentage in 43.71% of children seen, followed by cough (37.26%). Although fever is often considered by nursing professionals as a warning sign, the problem does not justify the search for emergency services; however, for many mothers, it is enough reason for anxiety and much concern.<sup>15-16</sup> This data reiterates that the notion of urgency of parents and guardians is different from the real complexity of the symptomatology.<sup>7</sup>

The search for emergency services by most parents because of fever - one of the most common symptoms in childhood - serves as a parameter to determine the severity of the child's illness. Thus, fever becomes the main symptom for which parents seek emergency services, even in unnecessary cases.<sup>17</sup>

According to a study<sup>15</sup> in a reference public pediatric hospital in Belo Horizonte, the presence of fever is a relevant mobilizing factor for seeking the urgency/emergency outpatient clinic, representing 51.8%. This concept is evident in the data found in a study<sup>18</sup>, in which fever is one of the most frequent complaints in pediatric consultations, not only at the outpatient level, but also in emergencies.

There are numerous situations that can contribute to parents or guardians taking children to the emergency room, among which fever, respiratory system diseases, malnutrition, and prevalent childhood diseases are the most common. Moreover, depending on their age, they are totally dependent on their caretakers, who are in most cases their mothers, grandmothers, aunts, or those who have a strong emotional bond with the child.<sup>19</sup>

Fever is one of the most common complaints during pediatric care in emergency units, because it is the first clinical manifestation of acute viral infections, considered a feared presence, because it can also be the initial sign of serious diseases.<sup>20</sup>

Vomiting was one of the most frequent and important reasons for consultation in pediatric clinics at different levels of care, configured as violent and forced expulsion of gastric content, accompanied by contraction of the diaphragm and

abdominal muscle, as well as relaxation of the cardia muscle and contraction of the pylorus<sup>21</sup>, reinforcing the findings of this study.

In addition, we can also consider diseases of the digestive system, such as diarrhea - one of the main causes of morbidity and mortality in children -, resulting in damage to their growth and development, because they are responsible for triggering malnutrition and dehydration, and can even lead the child to death.<sup>22</sup>

According to a study<sup>23</sup>, the main signs and symptoms presented by children seeking care in the pediatric emergency room were related to upper respiratory tract infections and bronchiolitis. This emphasizes the fragility of Primary Health Care (PHC) and the access of these children to such services since problems of low to medium complexity would not need to be treated in a pediatric emergency service.

It is noteworthy that, in the region where the study was conducted, the weather seasons are not well defined; however, when observed the most frequent complaints by period of care, it is revealed that they are manifested during the first and second trimesters, when the region presents sudden changes in temperatures. Therefore, one can relate the low temperatures as a triggering factor for diseases. Corroborating this analysis, a study<sup>9</sup> states that the main diseases recorded are those related to respiratory problems, from March to June, which coincides with the cold season and lower air humidity.

According to a study<sup>18</sup> carried out in a pediatric emergency room in the city of Santa Maria, Rio Grande do Sul, the most frequent complaints reported by the children's caregivers were cough (32%), followed by fever (30%), isolated or associated with other symptoms. As for the diagnoses, respiratory disorders accounted for 59.1% of the consultations, with upper airway infection (42.9%) being the most prevalent.

Respiratory disorders are revealed as a feeling of respiratory discomfort, generated by several physiological, psychological, social and environmental mechanisms; however, despite being one of the important early warning signs, it does not present a reason for seeking urgency and emergency services, and the care may occur in primary care.<sup>24-25</sup>

In the city of Recife, a survey<sup>26</sup> with 939 users of Family Health Units revealed dissatisfaction with the waiting time for care (54.7%), scheduling specialized consultation (47.5%) and in the unit itself (45.3%), in addition to receiving the results of tests performed (63%), showing the difficulties related to the organization of those services.

Mothers justify the search for the pediatric urgency/emergency service, even when the children do not present urgency in the complaints cited, by the quality of care, accessibility and, on some occasions, by the absence of the doctor in the BHU. Regarding the data presented, regarding the origin of the patients, it was found that 91.0% came from their homes to the emergency service, while only 7.1% were referred by the BHU of their community. After risk classification, 121 (57.3%) were referred to the emergency department.<sup>27</sup>

Corroborating the data presented, research carried out in Londrina, Paraná, when related to the variable origin of demand, 56% directly sought the emergency room, 11.6%

were referred by BHU, 8% by secondary hospitals, 6.5% by mobile emergency care services - Mobile Emergency Care Service / Integrated Emergency Trauma Care Service (SAMU / SIATE), 4.7% by outpatient services and 3.1% by bed regulatory centers.<sup>28</sup>

Regarding the state of origin, it was observed that 479 children lived in the capital. Moreover, there was correspondence between the characteristics of the children analyzed and those of another study, in which the profile of children and their caregivers was traced, assisted by the outpatient service of a private hospital, showing, in relation to place of residence, that 15 lived in Teresina, 9 came from the interior, being only from the state of Piauí, and only 1 did not declare it.<sup>29</sup> It is noteworthy that studies related to origin are important, because it is possible to observe migratory trends from municipalities to capital cities and the behavior pattern of certain diseases.

By analyzing the results, it is observed that most children seen in the pediatric emergency department could be referred to PHC services; that is, they were children whose demand for care, identified in this study, could be avoided through efficient primary care actions.<sup>30</sup> Thus, it is clear that the operation of BHU, based on the scheduling of appointments to meet clinical cases of acute diseases and spontaneous demand, has not solved most health problems, due to high demand, not being able to meet all who seek the service or for lack of resoluteness. Thus, the medium and high complexity units become overcrowded due to the sensitive demands of PHC.

## CONCLUSION

Through the results obtained in this study with the characterization of children seen in a pediatric emergency department, it was found that the highest demands of care were from male children, aged up to 2 years, from the state capital, seen in the 1st and 2nd trimester of the year, with fever and cough as the most frequent complaints.

The emergency room service in the study demonstrated that it is a satisfactory organization in terms of the care offered; however, in some situations, there is a high demand, generating overcrowding for care that is not characterized as pediatric urgencies/emergencies. Such care should be provided in places with less complex services, such as outpatient clinics and BHU.

Although the objective was achieved, the development of this research was limited by the scarcity of scientific references on the theme, to better support the analysis, considering the seasonality inherent to the conditions of illness. This limitation does not invalidate the results of this study but indicates the need for new studies to be developed on the theme, with more robust statistical analysis techniques.

From this perspective, this research contributes to the knowledge of the health care profile of children seen in a pediatric emergency department in the city of Teresina, Piauí. By raising this profile and the main complaints presented, it will be possible to trace an assistance aimed at the real needs of this population group, revealing that the loco-regional

particularities, in terms of trends of health problems, should be considered in the planning of strategies and care programs.

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