









Impact of healthcare-associated infections on the hospitalization costs of children*

Impacto das infecções relacionadas à assistência à saúde nos custos da hospitalização de crianças
Impacto de las infecciones relacionadas con la asistencia sanitaria en los costos de la hospitalización de niños

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ABSTRACT

Objective: To evaluate the impact of Healthcare-Associated Infections on the hospitalization cost of children. **Method:** A prospective, quantitative cohort study involving children admitted to the Inpatient and Pediatric Intensive Care Units of a public university hospital. The data were analyzed through SPSS software by frequency distribution, central tendency measures and dispersion. The level of statistical significance was set at $p < 0.05$ for all analyzes. **Results:** The sample consisted of 173 children, of whom 18.5% developed Healthcare-Associated Infections, which increased the hospitalization costs 4.2 times ($p < 0.001$). A greater cost impact was observed among patients with two or more infectious sites (R\$81,037.57; $p = 0.010$) and sepsis (R\$46,315.63; $p < 0.001$). Children colonized by multiresistant microorganisms with a prevalence of *E. coli* and *A. baumannii* ESBL also generated higher costs of R\$35,206.15 and R\$30,692.52, respectively. **Conclusion:** Healthcare-Associated Infections significantly increased the hospitalization costs for children, especially among those with more than two infectious sites, who developed sepsis or were colonized by multiresistant microorganisms.

DESCRIPTORS

Cross Infection; Child, Hospitalized; Health Care Costs; Drug Resistance, Microbial; Pediatric Nursing.

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INTRODUCTION

Healthcare-Associated Infections (HAIs) are considered to be an important health problem as they result in high mortality, prolong hospitalization, increase the cost of care and favor selection and dissemination of multiresistant microorganisms (MRMO)⁽¹⁾.

It is emphasized that HAIs can act as an important limiting factor in childhood life, increasing morbidity and mortality due to their immunological fragility which is typical for age extremes⁽²⁾.

It is estimated that 1.7 million patients are diagnosed with HAIs every year in the United States, and almost 100,000 evolve to death⁽³⁾, generating costs of more than US\$30 billion/year⁽⁴⁾.

Patients who acquire HAIs generate high care costs when compared to those without infection⁽⁵⁾. These additional costs are related to the treatment complexity and the additional hospitalization days, being able to increase the hospitalization costs among children with HAIs hospitalized in the Pediatric Intensive Care Unit (PICU) by more than three times⁽⁶⁾.

Another aggravating factor that increases HAI spending is due to MRMO infections. According to the Centers for Disease Control and Prevention (CDC) in the United States, approximately 2 million infections and 23,000 deaths are caused by MRMO, and the total cost of antimicrobial resistance can reach US\$20 billion per year⁽⁷⁾. This high cost is justified by the use of state-of-the-art antimicrobials, which are consequently more expensive, and by the long hospitalization period of patients with difficult-to-treat infections⁽⁸⁾.

In view of the above, the magnitude of hospital expenses as a result of HAIs is clear. On the other hand, there are no current studies on this subject, especially related to Brazil. In order to fill this gap, the present study aimed to evaluate the impact of HAIs on the hospitalization cost of children in a Brazilian university hospital.

METHOD

STUDY DESIGN

This is a prospective cohort study with a quantitative approach that aims to evaluate the impact of HAIs on the hospitalization costs of children.

SCENARIO

Children admitted to the Pediatric Inpatient Unit (PIU) and PICU of a public university hospital from July to December 2015.

This hospital is considered a reference center for Unified Health System (*SUS – Sistema Único de Saúde*) care in the northern region of the state of Paraná, Brazil. It serves patients from 250 municipalities in Paraná and 100 cities in other states. These units are characterized by the general care of children from 0 to 12 years old, in the various specializations which require tertiary care. Regarding the number of beds, the PICU has five, the PIU has 20, and the Pediatric Emergency Room (PER) has 13.

All children hospitalized for more than 24 hours were included and children hospitalized for more than 3 months were excluded due to social problems that prevented them from being discharged, totaling 173 children. They were followed up until the clinical outcome by the project team.

The studied variables were: gender, age, hospitalization period, main diagnosis according to ICD 10 (International Classification of Diseases), HAI development⁽⁸⁾, evolution to sepsis⁽⁹⁾, invasive procedures, surgeries, antimicrobial therapy, microbiological cultures, sensitivity profile of microorganisms⁽¹⁰⁾ and clinical outcome (survivors and non-survivors).

DATA COLLECTION

The data were collected from the patient records, laboratory reports and HAI notification sheets of the Hospital Infection Control Commission (*CCIH – Comissão de Controle de Infecção Hospitalar*) of the institution, using the previously formulated survey script completed during the follow-up of the child throughout their hospitalization.

Regarding the method used to estimate the hospitalization cost, the daily values in the pediatric sectors were assigned by the Hospital Cost Section of the study institution. This method uses the absorptive costing methodology, which is a system accepted by Brazilian legislation for preparing financial statements, in accordance with Law 6.404/1976 and accounting principles⁽¹¹⁾. The primary role of absorption costing is to calculate the production cost of a given period, whether direct or indirect, fixed or variable costs⁽¹²⁾.

In order to carry out the calculations, the direct costs, understood as the expenses incurred within each care area (own staff salary, outsourced services, materials, medicines, telephone, equipment depreciation, among others), and indirect costs related to the expenses received by the units through apportionment (transportation, material center, nutrition, dietetics, clinical laboratory, image exams, cleaning, laundry, transportation, security, among others).

The daily values varied between the studied pediatric sectors and in the study months and were counted individually for each child, considering the hospitalization days.

The total pediatric hospitalization cost was obtained by estimating the individual calculation for each child, multiplying the hospitalization days by the daily value corresponding to the month and sector where the patient was hospitalized. The care costs were considered in the PER, where the child received their first care and waited for referral to the hospitalization sectors (PIU and PICU).

The cost of the antimicrobial therapy was calculated individually, considering the value of the unit dosage corresponding to the drug and the usage period. Losses in drug preparation for each patient such as: contamination, bottle breakage and use of partial doses (when fractionated and/or neglected) were not measured.

DATA ANALYSIS AND PROCESSING

After completing the calculations, all values were presented in national currency and in US dollars, quoted at R\$3.960 as of December 31, 2015.

Data were tabulated and analyzed using the Statistical Package for the Social Sciences (SPSS) version 20. Categorical variables were analyzed in simple and relative frequency form, presented in tables and figures. Measures of central tendency and dispersion (median and standard deviation) were used for the continuous variables. The significance level was set at 5% ($p \leq 0.05$). The variables were checked for distribution normality using the Shapiro-Wilk test for evaluating the central tendency measures, and the non-parametric variables were presented by median and compared by the Mann-Whitney tests (for two variables), and Kruskal-Wallis (for more than two variables). The association between HAI presence and the length of hospital stay was verified using binomial logistic regression, with a significance factor of 5% in order to obtain the Odds Ratio (OR) and Confidence Interval at 95% (95% CI).

ETHICAL ASPECTS

This study is part of the research project entitled "Colonization and decolonization by multiresistant microorganisms of the hospitalized mother-child binomial: a prospective study" (In Portuguese: *Colonização e descolonização por microrganismos multirresistentes do binômio mãe-criança hospitalizada: estudo prospectivo*). It was approved by the Research Ethics Committee of the State University of Londrina, under Opinion no. 1.440.289/2016, and following the guidelines of Resolution no. 466/12 of the National Health Council on research with human beings. All participants, parents or guardians of the child, were approached and agreed to participate in the study by signing the Informed Consent Form.

RESULTS

The study sample was represented by 173 children. The age ranged from 0 to 14 years, and the median was 3 years. Regarding clinical data, the hospitalization period ranged from 1 to 71 days, with a median of 8 days. Hospitalization was predominant for a period of less than 15 days (70%). Among the diagnostic categories of admission, digestive system diseases (26%) were the most prevalent, followed by

external causes (20.8%), respiratory diseases (15.6%) and neurological diseases (10.4%). Central venous and urinary catheterization and mechanical ventilation were the most frequent procedures, distributed among 72 (41.6%) children, while 59 (34.1%) children were submitted to one surgery. Gastrointestinal (47.5%) and orthopedic surgeries (25.4%) were the most frequent.

Regarding the clinical outcome, 169 children survived, and one was transferred to another hospital. Three children aged 0 to 4 years died, having main diagnoses of neurological and respiratory diseases with a hospitalization period varying from 1 to 8 days. The total cost of these three hospitalizations was R\$52,471.02, but none of these children developed HAI or sepsis.

One of the factors which contributed to increase the hospitalization costs was the number of days the patient remained in the hospital, as the HAI diagnosis was significant in the increase in hospitalization days, as observed in Table 1.

Table 1 – Distribution of cases of children who developed HAI according to the hospitalization period between July and December – Londrina, PR, Brazil, 2015.

Hospitalization period	OR	CI95%	P-value
< 7 days	1.00	-	-
7 to 14 days	3.09	0.74-13.00	0.124
15 to 30 days	19.43	5.21-72.48	<0.001
> 30 days	14.17	2.84-70.73	0.001

OR: Odds Ratio. CI95%: Confidence interval at 95%. Binominal logistic regression.

Considering the transit of children by sectors, the first care was provided in the PER to 56.6% of the children before they were referred to the hospitalization sectors. The hospitalization period was higher in the PIU and lower in the PER. However, the cost analysis in the sectors showed that the median hospitalization value of the children in the PICU was higher in relation to the other sectors, as shown in Table 2.

Table 2 – Estimation of the hospitalization cost of children according to the hospitalization days distributed by pediatric sectors between July and December – Londrina, PR, Brazil, 2015.

Sectors	Children (N)	Hospitalization time (days)			Daily value (R\$/US\$)			Total cost (R\$/ US\$)		
		Minimum	Maximum	Median	Minimum	Maximum	Minimum	Maximum	Median	
PER*	98	1	13	1.00	1,004.00/253.54	1,557.09/393.20	1,004.00/253.54	15,120.30/3,818.26	1,103.59/278.68	
PICU	67	1	34	4.00	2,925.32/738.72	4,415.00/1,114.90	2,958.82/747.18	136,312.32/34,422.30	17,039.04/4,302.79	
UIP	166	1	99	6.00	1,190.94/300.74	1,744.73/440.59	1,364.25/344.51	136,113.12/34,372.00	8,249.28/2,083.15	
Total								1,055.81/266.62	153,547.13/38,774.53	11,061.27/2,793.25

* PER: For the cost analysis, we considered the days in which the children remained in the PER before admission of the children in the study units.

Regarding HAIs (Table 3), median costs were 4.2 times higher among children who developed this kind of infection, being statistically superior ($p < 0.001$) to those who did not acquire an HAI. Some children manifested more than one

infection, totaling 35 infections. The most frequent were pneumonia and surgical site infection. The highest cost was associated with those who had two or more infectious sites diagnosed ($p = 0.010$). All meningitis, peritonitis, and

bloodstream infections progressed to sepsis, while those of skin, subcutaneous tissue and urinary tract infection were not related to this complication. Hospitalization costs were

significantly higher among those who developed sepsis within the category of patients who developed pneumonia and surgical site infection.

Table 3 – Pediatric hospitalization cost for descriptive healthcare-associated infections between July and December – Londrina, PR, Brazil, 2015.

HAI description	Patients	Values (R\$/US\$)		Standard deviation	P-value*
		Median			
HAI					
Yes	32 (15.5%)	39,668.21/ 10,017.79		32,827.16/ 7,559.02	<0.001
No	141 (81.5%)	9,549.75/ 2,411.55		26,089.89/ 6,549.05	
Number of HAIs					
1 site	25 (78.1%)	39,074.52/ 9,867.33		18,444.90/ 4,654.49	0.010
2 sites or more	7 (21.9%)	81,037.57/ 20,464.68		47,256.23/ 10,191.23	
HAI and Sepsis					
Meningitis/Sepsis	1 (2.9%)	39,705.52/ 10,026.65		-	-
Pneumonia	5 (14.3%)	24,595.16/ 6,208.66		13,321.07/ 3,348.53	0.001
Pneumonia/Sepsis	13 (37.2%)	49,225.59/ 12,428.16		33,905.99/ 6,476.84	
Skin and Subcutaneous	2 (5.7%)	60,495.93/ 15,296.59		30,294.44/ 7,536.79	-
Bloodstream/Sepsis	1 (2.9%)	38,105.66/ 9,622.64		-	-
Urinary tract infection	3 (8.6%)	11,134.41/ 2,811.72		29,234.50/ 7,620.27	-
Surgical Site Infection	1 (2.9%)	11,040.30/ 2,787.23		28,787.36/ 7,051.16	0.009
Surgical Site Infection/Sepsis	8 (22.9%)	31,780.72/ 8,021.11		36,899.86/ 9,313.07	-
Peritonitis/Sepsis	1 (2.9%)	80,929.27/ 20,436.68		-	-
Sepsis					
Yes	23 (13.3%)	46,315.63/ 11,690.73		33,676.27/ 7,537.19	<0.001
No	150 (86.7%)	9,732.54/ 2,457.84		26,025.83/ 6,533.02	

*Mann-Whitney test.

The median cost was significantly higher (R\$31,919.09/ US\$126,399.5) ($p < 0.001$) among patients who underwent an invasive procedure during hospitalization than those who did not undergo procedures or surgeries (R\$7,048.60).

Regarding the MRMO colonizers, 115 (66.5%) children were tested. More than one swab collection was performed in some patients, totaling 169 tests. Positive results were observed

in 41 (35.7%) children, and 66 of these microorganisms were isolated. The most prevalent MRMOs were Gram-negative producers of Extended Spectrum Beta-lactamase (ESBL) (38/66) and carbapenem-resistant (7/66). The hospitalization costs were significantly higher among children colonized by MRMO, with an emphasis on colonization by *Escherichia coli* and *Acinetobacter baumannii* (Table 4).

Table 4 – Cost of pediatric hospitalization according to the isolated microorganisms in the colonization cultures between July and December – Londrina, PR, Brazil, 2015.

Microbiological Exams	Patients N (%)	MRMO N=66 (%)	Values (R\$/US\$)		P-value
			Median	Standard deviation	
Colonization MRMO					
Yes	41 (35.7)		31,780.72 / 7,964.43		<0.001
No	74 (64.3)		10,607.68 / 2,626.18		
Microorganisms					
<i>Acinetobacter baumannii</i>	5 (7.6)	ESBL (100)	47,886.21 / 12,088.25		13,452.34 / 3,355.36
<i>Escherichia coli</i>	17 (25.8)	ESBL (76.4)	35,206.15 / 8,890.44		33,505.69 / 7,971.19
		CR (23.6)	30,692.52 / 7,691.03		16,753.91 / 4,228.65
<i>Enterobacter</i> spp.	8 (12.1)	ESBL (100)	20,245.92 / 5,112.69		18,649.60 / 4,709.47
<i>Klebsiella</i> spp.	15 (22.7)	ESBL (80)	33,535.02 / 8,468.44		30,532.10 / 8,025.44
		CR (20)	31,780.72 / 8,025.43		20,007.07 / 5,045.19
<i>Staphylococcus aureus</i>	4 (6.1)	MRSA (100)	26,780.03 / 6,762.63		3,958.37 / 996.91
<i>Enterococcus</i> spp.	4 (6.1)	VRE (100)	20,629.74 / 5,209.74		25,326.98/ 6,161.57
Other MRMO	13 (19.7)	-	43,352.22 / 10,947.79		30,388.25 / 7,448.94

*Mann-Whitney test.

Antimicrobial therapy was instituted for 127 (73.4%) children. Some used more than one class of antimicrobials. Penicillins were used in 56.7% of the patients, followed by aminoglycosides (38.4%) and third generation cephalosporins (26.5%). The lowest cost antimicrobials per dose were penicillins, and the costliest were antifungal drugs. Treatment costs were lower for metronidazole, and the highest average

cost remained in the antifungal class. The maximum expenditure for antimicrobial patients reached R\$28,002.05/US\$110,888.11, and the total value of antimicrobial treatment in the pediatric sectors totaled R\$46,921.75/US\$185,810.13 (Table 5). A comparison of the antimicrobial treatment cost between community and hospital infections showed that the latter cost 4.64 times higher.

Table 5 – Cost of antimicrobials used by children hospitalized at the university hospital according to class, unit value per dose and total treatment cost between July and December – Londrina, PR, Brazil, 2015.

Antimicrobial	No. of children	Dose cost (R\$/US\$)		Total cost (R\$/US\$)		
		Minimum	Maximum	Minimum	Maximum	Mean
Cephalosporins - 1st Generation						
Cephalexin/Cephalothin	25	1.17 / 0.30	3.49 / 0.88	7.02 / 1.77	243.04 / 61.37	49.39 / 12.47
Cephalosporins - 3rd Generation						
Ceftriaxone/Cefotaxime	26	2.79 / 0.70	6.70 / 1.69	6.69 / 1.69	562.8 / 142.12	78.92 / 19.93
Cephalosporin - 4th Generation						
Cefepime	7	5.2 / 1.31	5.46 / 1.38	4.1 / 1.04	183.5 / 46.34	66.4 / 16.77
Macrolides						
Azithromycin/Clarithromycin	10	0.30 / 0.08	116.17 / 29.34	0.44 / 0.11	748.13 / 188.92	156.38 / 39.49
Antifungals						
Liposomal Amphotericin*/ Micafungin/Fluconazole	9	0.19 / 0.05	1,396 / 352.52	0.21 / 0.05	27,361.6 / 6,909.49	5,057.82* / 1,277.23
Aminoglycosides						
Gentamicin/Amikacin	66	0.50 / 0.12	0.77 / 0.19	1.16 / 0.29	277.20 / 70.00	30.60 / 7.73
Quinolones						
Levofloxacin/Ciprofloxacin	10	0.11 / 0.03	4.7 / 1.19	2.97 / 0.75	187.20 / 47.27	35.55 / 8.98
Carbapenems						
Meropenem	3	8.26 / 2.09	8.8 / 2.22	73.92 / 18.67	890.06 / 224.76	436.97 / 110.35
Penicillins						
Oxacillin/Penicillin/crystalline G/ Amoxicillin/Ampicillin/ Amoxicillin+ Clavulanate	72	0.02 / 0.01	10.46 / 2.64	0.10 / 0.03	760.03 / 191.93	69.73 / 17.61
Other classes						
Metronidazole	25	1.46 / 0.37	1.47 / 0.37	1.06 / 0.27	92.61 / 23.39	15.71 / 3.97
Polymyxin E	1	32.79 / 8.28	32.79 / 8.28	118.04 / 29.81	118.04 / 29.81	118.04 / 29.81
Sulfamethoxazole + Trimethoprim	4	1.32 / 0.33	1.33 / 0.34	4.26 / 1.08	83.16 / 21.00	33.41 / 8.44
Clindamycin	14	0.07 / 0.02	0.07 / 0.02	2.8 / 0.71	193.2 / 48.79	61.18 / 15.45
Aztreonam	1	11.5 / 2.90	11.5 / 2.90	36.43 / 9.19	36.43 / 9.19	36.43 / 9.19

*Two children used Amphotericin Liposomal, one had an expense of R\$27,361.60 (US\$6,909.49) on treatment, and the other R\$13.78 (US\$3.48).

DISCUSSION

The hospitalization cost in the present study was 4.2 times higher among children who developed HAIs ($p < 0.001$). This value is higher than the studies of the same subject, both with the adult population which showed a 2.8-fold increase in costs⁽¹³⁾, and in the infant population in the PICU where the increase was 3.6 times higher among children with HAIs⁽⁶⁾.

The median cost of patients with HAIs in the current study was R\$39,668.21 (US\$10,017.22). This is similar to what was found in North American research, where the

mean cost per patient with HAIs in New York hospitals was approximately \$10,000.00 higher when compared to those who did not⁽¹⁴⁾.

In addition to increasing mortality in children, HAIs are also associated with three times longer hospitalization compared to those who do not develop HAIs⁽¹⁵⁾. In the current study, HAI diagnosis increased the hospitalization period, with this being significant from 14 days.

Among patients with infection, the cost was significantly higher among those diagnosed with two or more infectious foci, pneumonia and sepsis. According to the

cost estimate of the CDC, pneumonia can reach a maximum cost of US\$28,508.00; however, the direct cost of surgical site infections exceeds this value, which can cost US\$34,670.00⁽⁷⁾.

Regarding sepsis, this is considered the main infection related to infections, and the cost of its treatment is high according to an analysis performed in Brazilian ICUs, whose median total cost of sepsis treatment was US\$9,632.00 per adult patient⁽¹⁶⁾. The high cost is justified because of the need for expensive drugs and substitution therapy related to organic dysfunction. The Surviving Sepsis in Brazil report showed that approximately R\$17.3 billion was spent on treating septic patients in 2003, and R\$10 billion of this total was spent on patients who died⁽¹⁷⁾.

In a study conducted at a SUS hospital, the average hospitalization cost for septic patients was R\$38,867.60 (US\$17,359.30) for adults⁽¹⁸⁾. The median cost of pediatric patients with sepsis in the present study was R\$46,315.63 (US\$11,695.86).

Significantly higher costs were observed among children who had undergone some invasive and/or surgical therapy or procedure, corroborating the results of a literature review conducted between 1986 and 2013, which showed a high cost for pneumonia associated with mechanical ventilation (US\$40,144.00) and surgical site infections (US\$20,785.00)⁽¹⁹⁾. A French study estimated that 3% of the surgical procedures performed in 2010 resulted in infections, with an annual cost of approximately 58 million Euros⁽²⁰⁾.

HAI treatment, especially antimicrobial therapy, is one of the factors that impact its high cost, especially when it comes to treating infections caused by antimicrobial resistant agents. In the United States, the total cost of antimicrobial resistance reaches US\$20 billion, reaching US\$35 billion when there are consequences of antimicrobial resistance, which demands the last generation antimicrobial therapy which is more expensive⁽³⁾.

In the present study, hospitalization costs were significantly higher among children colonized by MRMO. The cost attributable to bacterial resistance is complex, multi-dimensional and difficult to estimate, since costs may vary

due to the causal agent, resistance profile, treatment time, dose used, among other particularities.

In hospital institutions, especially in ICUs, antimicrobial costs represent "from 30% to 50% of total drug costs, and at least 50% of patients use antibiotics at some time of hospitalization"⁽²¹⁾. In the present study, the majority of the children received antimicrobial treatment for infections, and total antimicrobial expenditure reached R\$46,921.75/US\$185,810.13. Antimicrobial costs for HAI treatment were 4.64-fold higher compared to antimicrobial treatment of children with community-acquired infections.

Research carried out in inpatient units of a hospital center in Europe concluded that patients who acquired HAI had an overall 2.5 times higher antimicrobial costs compared to those who did not acquire them, with additional costs accounting for 1,389.40 Euros⁽²²⁾.

In view of the problem, the recommended measures for prevention and control of HAI are cost-effective considering that in addition to promoting safe care and reducing mortality, they also have an economic impact on the reduction of expenditures by health institutions⁽¹⁾.

The cost estimates associated with HAIs in this study are consistent with findings from other studies, although such surveys have used different currencies and methods for their calculations. Although the absorption cost method is a limitation in the current study considering both direct and indirect costs related to HAIs, it provides a useful estimate of overall costs using available data in the absence of more sophisticated models for values during hospitalization in Brazilian public services.

CONCLUSION

This study showed that HAIs negatively impact the increase in hospital costs with children because they are associated with an increase in hospitalization time. The situations related to higher hospitalization costs were the presence of two or more infection sites, the manifestation of healthcare-associated pneumonia, the development of sepsis from a hospital infection, and multiresistance related to the etiological agent.

RESUMO

Objetivo: Avaliar o impacto das Infecções Relacionadas à Assistência à Saúde no custo da hospitalização de crianças. **Método:** Estudo de coorte, prospectivo, quantitativo, envolvendo crianças admitidas nas Unidades de Internação e de Terapia Intensiva Pediátrica de um hospital universitário público. Os dados foram analisados por meio do *software* SPSS por distribuição de frequências, medidas de tendência central e dispersão. Para todas as análises foi considerado o nível de significância estatística de $p < 0,05$. **Resultados:** A amostra foi composta de 173 crianças, destas, 18,5% desenvolveram infecção relacionada à assistência à saúde, que aumentou em 4,2 vezes ($p < 0,001$) o custo da hospitalização. Maior impacto de custo foi observado entre pacientes com dois ou mais sítios infecciosos (R\$ 81.037,57, $p = 0,010$) e sepse (R\$ 46.315,63 $p < 0,001$). Crianças colonizadas por microrganismos multirresistentes, com prevalência de *E. coli* e *A. baumannii* ESBL, geraram custos maiores, R\$ 35.206,15 e R\$ 30.692,52, respectivamente. **Conclusão:** As infecções relacionadas à assistência à saúde aumentaram significativamente os custos da hospitalização de crianças, em especial entre aquelas com mais de dois sítios infecciosos, que desenvolveram sepse e colonizadas por microrganismos multirresistentes.

DESCRITORES

Infecção Hospitalar; Criança Hospitalizada; Custos de Cuidados de Saúde; Resistência Microbiana a Medicamentos; Enfermagem Pediátrica.

RESUMEN

Objetivo: Evaluar el impacto de las Infecciones Relacionadas con la Asistencia Sanitaria en el costo de la hospitalización de niños. **Método:** Estudio de cohorte, prospectivo, cuantitativo, involucrando a niños ingresados en las Unidades de Hospitalización y de

Cuidados Intensivos Pediátricos de un hospital universitario público. Los datos fueron analizados mediante el *software* SPSS por distribución de frecuencias, medidas de tendencia central y dispersión. Para todos los análisis, se consideró el nivel de significación estadística de $p < 0,05$. **Resultados:** La muestra estuvo compuesta de 173 niños, de estos el 18,5% desarrollaron infección relacionada con la asistencia sanitaria, que aumentó 4,2 veces ($p < 0,001$) el costo de la estancia hospitalaria. Mayor impacto de costo fue observado entre pacientes con dos o más sitios infecciosos (R\$ 81.037,57, $p = 0,010$) y sepsis (R\$ 46.315,63 $p < 0,001$). Niños colonizados por microorganismos multirresistentes, con prevalencia de *E. coli* y *A. baumannii* ESBL, generaron costos mayores, R\$ 35.206,15 y R\$ 30.692,52, respectivamente. **Conclusión:** Las infecciones relacionadas con la asistencia sanitaria aumentaron significativamente los costos de la hospitalización de niños, en especial entre los con más de dos sitios infecciosos, que desarrollaron sepsis y colonizados por microorganismos multirresistentes.

DESCRIPTORES

Infección Hospitalaria; Niño Hospitalizado; Costos de la Atención en Salud; Farmacorresistencia Microbiana; Enfermería Pediátrica.

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