

TOMASZ KUCMIN¹, EWA CEMPEREK², MAŁGORZATA PŁOWAŚ-GORAL¹,
WOJCIECH KRAWCZYK³, PAWEŁ SZWARC⁴, ADAM NOGALSKI¹

Analiza przyczyn hospitalizacji dzieci w Dziecięcym Szpitalu Klinicznym w Lublinie w latach 2004-2006

Streszczenie

Cel. Celem pracy była analiza struktury hospitalizacji w Dziecięcym Szpitalu Klinicznym (DSK) w Lublinie w latach 2004-2006.

Materiał i metody. Analizie poddano dane dotyczące przyjęć w Szpitalnym Oddziale Ratunkowym zakończone hospitalizacją. Przyczyny zgłoszeń podzielono na siedem grup. Wyodrębniono: zachorowania chirurgiczne, urazy, oparzenia termiczne, wypadki komunikacyjne, pediatryczne, otolaryngologiczne oraz zatrucia.

Wyniki. Najczęstszą przyczyną przyjęć były schorzenia pediatryczne, które stanowiły 47,9% wszystkich hospitalizacji. Drugą, co do częstości przyczyną przyjęć, były urazy i wynosiły 23,1%, następnie zachorowania chirurgiczne 14,5%, schorzenia otolaryngologiczne 7,9%, zatrucia 2,7%, oparzenia 2,1% i wypadki komunikacyjne 1,8%. Średnia liczba hospitalizacji w ciągu doby była największa w pierwszych dniach tygodnia, najmniejsza w soboty i niedziele. Najwięcej przyjęć dzieci do szpitala rejestrowano w pierwszej połowie roku w grupie przyczyn ogólnochirurgicznych, w miesiącach od kwietnia do września w grupie przyczyn urazowych, w okresie jesienno-zimowym w grupie przyczyn pediatrycznych i laryngologicznych.

Słowa kluczowe: hospitalizacja, dzieci, szpitalny oddział ratunkowy.

Analysis of the causes of admission to the University Children's Hospital of Lublin in 2004-2006

Abstract

Aim. The aim of the study was to evaluate the reasons for admission to the University Children's Hospital of Lublin in 2004-2006.

Material and methods. Data from the Children's Hospital Emergency Department were analyzed and consequently seven main reasons for admission were identified: surgical illnesses, traumas, burns, road traffic accidents, pediatric illnesses, otolaryngological illnesses and poisoning.

Results. The main reasons for admission were pediatric illnesses that accounted for 47.9% of all admissions. The second most frequent cause of admission was trauma (23.1%), and the prevalence of other causes was the following: surgical illnesses (14.5%), otolaryngological illnesses (7.9%), poisonings (2.7%), burns (2.1%) and road traffic accidents (1.8%). The average number of hospitalizations within 24-hour periods was the highest on first weekdays and the lowest on weekends. During the first 6 months of each year the number of admissions due to surgical illnesses was the highest. Each year between April and September the main cause of admission was trauma, and during autumn and winter children with pediatric and otolaryngological illnesses were hospitalized most frequently.

Key words: reasons for admission, children, emergency department

¹ Chair and Department of Traumatological Surgery and Emergency Medicine, Medical University of Lublin

² Independent Emergency Medicine Unit, Medical University of Lublin

³ Independent Catastrophe Medicine Unit, Medical University of Lublin

⁴ Hospital Emergency Department, Prof. Antoni Gębala Children's Hospital of Lublin

INTRODUCTION

General practitioners may encounter difficulties while making a diagnosis and treating a sick child due to differences in anatomy, physiology and psychology of a child, as well as to alterations in the course of diseases in children. For this reason emergency departments staffed with highly trained specialists were created in children's hospitals. In children, emergency situations that lead to hospitalizations are connected with respiratory tract inflammatory diseases, traumas, congenital malformations, poisonings, cancer and metabolic diseases [1].

MATERIAL AND METHODS

Data from the Emergency Department of Children's Hospital of Lublin from 2004 to 2006 were evaluated in order to analyze those causes that lead to admissions. The reasons for admission were divided into seven categories: surgical illnesses, traumas, burns, road traffic accidents, pediatric illnesses, otolaryngological illnesses and poisoning. Reasons for Admission to the Department of Newborn Pathology, Department of Pulmonology, Department of Rheumatology, Department of Oncology and Hematology and Department of Endocrinology are described as pediatric illnesses. One-way ANOVA was used to analyze the collected data ($\alpha=5\%$).

THE AIM OF THE STUDY

The aim of the study was to evaluate reasons for admission to the University Children's Hospital of Lublin in 2004-2006.

RESULTS

Between 2004 and 2006, 18,148 children were hospitalized in Children's Hospital of Lublin. The numbers of patients hospitalized in 2004, 2005 and 2006 were as follows: 6,407, 6,138 and 5,603, respectively. The analysis

of the collected data indicates that the main reasons for admission were pediatric illnesses accounted for 47.9% of all admissions. The second most frequent cause of admission was trauma (23.1%) and the prevalence of other causes was the following: surgical illnesses (14.5%), otolaryngological illnesses (7.9%), poisoning (2.7%), burns (2.1%) and road traffic accidents (1.8%) (Table 1).

It is interesting that during the analyzed period of time the numbers of surgical and burn admissions were descending and the numbers of pediatric and otolaryngological admissions were ascending. Those differences, however, were not significant.

The average number of pediatric admissions per day was 7.95, the highest in 2005 and the lowest in 2006. This phenomenon was statistically significant ($p=0.004$) (Figure 1).

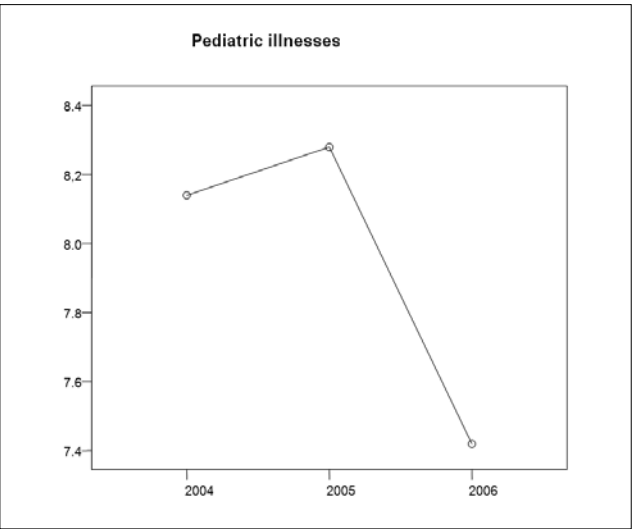


FIGURE 1. The average number of hospitalizations per year due to pediatric illnesses in 2004-2006. ($p=0.004$). Data: 2004-8.14; 2005-8.28; 2006-7.46

The second most frequent admissions cause was trauma and the average number of such admissions per day was 3.83. Between 2004 and 2006, the number of trauma admissions per day descended distinctly (Figure 2).

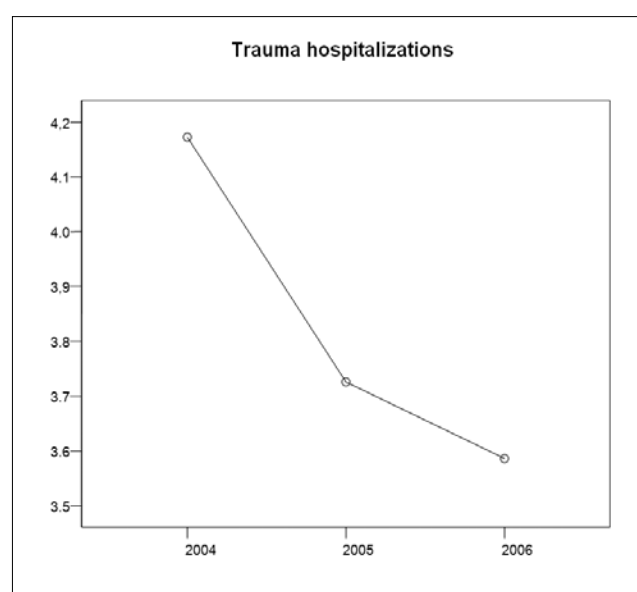
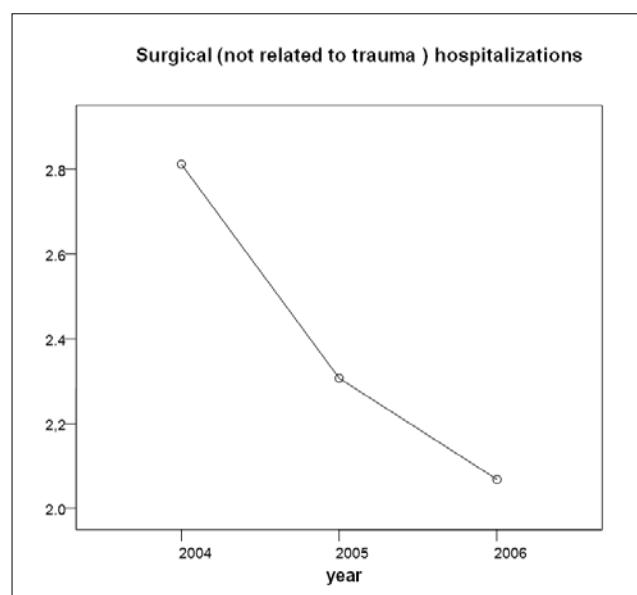
The average number of surgical (not related to trauma)

TABLE 1. The distribution of hospitalizations in 2004-2006.

Reason for admission Year	Surgical illnesses	Trauma	Burns	Road traffic accidents	Pediatric illnesses	Otolaryngological illnesses	Poisoning	Total
2004	1026	1523	156	116	2971	430	185	6407
% row	6.0	3.8	2.4	1.8	46.4	6.7	2.9	100
% column	39.1	36.3	40.2	35.5	34.2	30.1	37.8	35.3
2005	842	1360	122	108	3022	521	163	6138
	13.7	2.2	2.0	1.8	49.2	8.5	2.7	100
	32.1	32.4	31.4	33.0	34.7	36.5	33.2	33.8
2006	755	1309	110	103	2708	476	142	5603
	13.5	23.4	1.9%	1.8	48.3	8.5	2.5	100
	28.8	31.2	28.4%	31.5	31.1	33.4	29.0	30.8
Total	2623	4192	388	327	8701	1427	490	18148
	14.5	23.1	2.1	1.8	47.9	7.9	2.7	100
	100	100	100	100	100	100	100	100

TABLE 2. The average number of hospitalizations per day in 2004-2006.

Reasons for admission	2004	2005	2006	Average
Pediatric illnesses	8.14	8.28	7.46	7.95
Otolaryngological illnesses	1.18	1.43	1.30	1.30
Surgical (not related to trauma) illnesses	2.81	2.31	2.07	2.40
Trauma	4.17	3.73	3.59	3.83
Burns	0.43	0.33	0.30	0.35
Road traffic accidents	0.32	0.30	0.28	0.30
Poisoning	0.51	0.45	0.39	0.45

**FIGURE 2. The average number of hospitalizations per year due to trauma in 2004-2006. ($p=0.034$). Data: 2004- 4.17; 2005-3.73; 2006-3.59****FIGURE 3. The average number of hospitalizations per year due surgical (not related to trauma) reasons in 2004-2006. ($p=0.001$) Data:2004-2.81; 2005-2.31; 2006- 2.07**

admissions per day was 2.4. In 2006, in comparison to 2004 and 2005, a reduction in the amount of surgical (not related to trauma) admissions was observed ($p=0.001$) (Figure 3).

The data regarding other causes of admissions to the Children's Hospital of Lublin are presented in Table 2. In all cases, a proportional reduction in the number of admissions in 2006 was detected, which is related to a decline in the total number of hospitalizations in 2006 (Table 2).

Considering the month of admission, some interesting differences were detected. The pediatric admissions per day were most frequent, regardless of the year, in January (8.48), March (8.73) and November (8.42), and least frequent in July (6.87) and August (6.72). Surgical (not related to trauma) admissions per day were most frequent in January (3.04) and least frequent in August (2.01). Traumas requiring hospitalization were registered most often between April and September, with the highest frequency per day in June (5.19) and the lowest in February (2.55). The average number of admissions per day due to road traffic accidents was the highest in August (0.49), and the lowest in February (0.14) and March (0.14). Admissions to the Otolaryngology Department were most frequent per day in October (1.43), December (1.47), January (1.58) and March (1.78), and least frequent in July (0.77) and August (0.74). All the above differences in the monthly distribution of admissions per day were statistically significant. For burns the average number of admissions per day was the highest in August (0.47) and April (0.42), and the lowest in October (0.27), those differences, however, were not significant. Similarly, subtle, non-significant differences in the number of hospitalizations due to poisonings per day in each month were detected (Table 3).

During weekdays, regardless of the month and year, surgical (not related to trauma) admissions were most frequent, and in comparison to admissions on weekends this phenomenon was statistically significant ($p=0.000$).

On Mondays (4.48 per day) and Tuesdays (4.38 per day) trauma hospitalizations were predominant, while the average number of such admissions on Sundays was the lowest (2.86 per day) and those differences were statistically significant ($p<0.05$).

Pediatric causes of hospitalizations were less frequent on Sundays (6.71 per day) and Saturdays (7.08 per day) in comparison to Tuesdays (8.68 per day), Wednesdays (8.28 per day) and Thursdays (8.32 per day), and those differences were statistically significant ($p<0.005$).

Road traffic accidents were most common on Sundays (0.37 per day) and Saturdays (0.34 per day), and least frequent on Thursdays and Fridays (0.23 per day), and those differences were statistically significant ($p<0.05$).

Burns were most frequently observed on Sundays in comparison to other days of the week. There were no significant differences in the average numbers of otolaryngological hospitalizations related to the day of the week. Poisonings were most commonly recorded on Mondays, Fridays and Saturdays. All of those phenomena were not significant (Table 4).

TABLE 3. The average number of hospitalizations per day in 2004-2006 considering the month of admission.

Month	Surgical (not related to trauma) illnesses P<0.05	Trauma P<0.05	Road traffic accidents P<0.05	Burns	Pediatric illnesses P<0.05	Otolaryngological illnesses P<0.05	Poisoning	Total
I	3.04	2.65	0.20	0.45	8.48	1.58	0.48	2.41
II	2.92	2.55	0.14	0.34	8.40	1.12	0.46	2.58
III	2.39	2.67	0.14	0.33	8.73	1.78	0.60	2.38
IV	2.65	4.70	0.36	0.42	8.09	1.52	0.36	2.59
V	2.68	4.96	0.33	0.38	8.37	1.33	0.41	2.64
VI	2.14	5.19	0.41	0.37	7.47	1.19	0.58	2.48
VII	2.04	5.01	0.28	0.31	6.87	0.77	0.42	2.24
VIII	2.01	4.46	0.49	0.47	6.72	0.74	0.39	2.18
IX	2.12	4.70	0.41	0.31	8.01	1.18	0.42	2.45
X	2.17	3.79	0.27	0.27	7.79	1.52	0.46	2.32
XI	2.26	2.63	0.29	0.32	8.42	1.43	0.44	2.26
XII	2.37	2.56	0.26	0.29	7.80	1.47	0.35	2.16
Total	2.40	3.83	0.30	0.35	7.95	1.30	0.45	2.37

TABLE 4. The average number of hospitalization per day in 2004-2006 considering day of the week.

Cause for admission	Surgical (not related to trauma) illnesses P<0.05	Trauma P<0.05	Road traffic accidents P<0.05	Burns	Pediatric illnesses P<0.005	Otolaryngological illnesses	Poisoning	Total
Monday	2.78	4.48	0.28	0.37	8.19	1.23	0.50	2.55
Tuesday	2.57	4.38	0.26	0.36	8.68	1.59	0.45	2.61
Wednesday	2.66	3.71	0.32	0.33	8.29	1.34	0.44	2.44
Thursday	2.60	3.70	0.23	0.33	8.35	1.22	0.40	2.40
Friday	2.38	3.99	0.23	0.32	8.32	1.33	0.52	2.44
Saturday	1.9	3.68	0.34	0.34	7.09	1.21	0.48	2.15
Sunday	1.89	2.86	0.37	0.43	6.71	1.19	0.35	1.97
Total	2.40	3.83	0.30	0.35	7.95	1.30	0.45	2.37

DISCUSSION

Children, especially up to the age of 4, seem to be hospitalized quite often. Data from the General Statistical Office regarding the state of health of the Polish citizens suggest that in 2004, for the entire Polish population, the percentage of hospitalization was 11%, and 13% of the hospitalized individuals were children up to the age of 4, while 12% were children aged 4-14. In the general population, the highest amount of admissions was due to chronic diseases (25.8%), followed by accidents and traumas (18.4%). Children were hospitalized mostly in order to perform in-hospital observation and deliver specialist treatment, and the percentage of chronic diseases was lower (20.5%). The average number of children's hospitalization per 100 inhabitants in the Lublin province was 11.6 and lower, in comparison to the country average (16) and the fifth highest after the Podlasie province, Świętokrzyskie province,

Lower Silesia province and Mazovia voivodship [2].

In the studied period of time, a decrease in the number of hospitalizations in 2006 was observed in all seven categories established at the beginning of the study. The leading causes for admission were pediatric illnesses. A developing child reacts to common health hazards differently than an adult. Furthermore, there are common childhood diseases which may lead to hospital admission [3]. The risk of serious disorders in children is posed by respiratory tract diseases caused by the influenza and parainfluenza viruses, as well as the respiratory syncytial virus (RSV), and the highest morbidity rate is observed from October to May [4-7]. In our study, pediatric illnesses were the most common cause of hospitalization, occurring most frequently on weekdays in January, March and November. It may be related to the parents' decision to postpone a visit to the Emergency Department to a weekday and the application of self-treatment methods.

Accidents and traumas are identified as the major cause of serious morbidity and mortality in children in the developed countries. Physical traumas and burns are the most common causes, followed by less frequent road traffic accidents, which is consistent with our results. The highest hospitalization rate due to accidents and traumas was observed between May and September, when children play more often outdoors and take part in diverse forms of physical activity without parental supervision. The study of Uberall et al. shows that the highest percentage of accidents occurred on Tuesdays [8]. In our study, trauma was the second leading cause for hospitalization, occurring most frequently in the first half of the week in April-September. Road traffic accidents were more frequent on weekends, and burns on Sundays.

The study of Palcin et al. shows that acute diarrhea leading to dehydration, fever and malnutrition is one of the most frequently recorded reasons for hospitalization in children [9,10]. In our study, poisoning was responsible for 2.7% of all hospitalizations occurring most frequently in the period from January to March and in July, and on Mondays regardless of the month and year.

CONCLUSIONS

1. The most frequent causes for admissions were pediatric illnesses followed by traumas, surgical illnesses, otolaryngological illnesses and poisonings.
2. The average number of admissions was the highest during weekdays and the lowest on weekends.
3. During the first 6 months of each year admissions due to surgical (not related to trauma) reasons were most frequent, between April and September traumas were the leading cause for admission, hospitalizations due to pediatric and otolaryngological illnesses were most frequent in autumn and winter.

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Informacje o Autorach

Lek. med. TOMASZ KUCMIN – asystent, Klinika Chirurgii Urazowej i Medycyny Ratunkowej, Uniwersytet Medyczny w Lublinie; dr n. med. EWA CEMPEREK – adiunkt, Samodzielna Pracownia Ratownictwa Medycznego, Uniwersytet Medyczny w Lublinie; dr n. med. MAŁGORZATA PŁOWAŚ-GORAL – adiunkt, Klinika Chirurgii Urazowej i Medycyny Ratunkowej, Uniwersytet Medyczny w Lublinie, dr n. med. WOJCIECH KRAWCZYK – adiunkt, Samodzielna Pracownia Medycyny Katastrof, Uniwersytet Medyczny w Lublinie; lek. med. PAWEŁ SZWARC – ordynator, Szpitalny Oddział Ratunkowy, Dziecięcy Szpital Kliniczny im. Prof. A.Gębali w Lublinie; dr hab. n. med. ADAM NOGAŁSKI – kierownik, Klinika Chirurgii Urazowej i Medycyny Ratunkowej, Uniwersytet Medyczny w Lublinie

Adres do korespondencji

Ewa Chemperek
Samodzielna Pracownia Ratownictwa Medycznego
20-093 Lublin, ul. Chodźki 6