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SIGITA BUROKIENĖ

**PRE-HOSPITAL PAEDIATRIC HEALTHCARE SERVICES
IN EMERGENCY DEPARTMENTS: PERSPECTIVES FOR
OPTIMISATION**

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VILNIAUS UNIVERSITETAS

SIGITA BUROKIENĖ

IKIHOSPITALINĖ VAIKŲ SVEIKATOS PRIEŽIŪRA
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1. INTRODUCTION

According to the recommendations of the World Health Organization (WHO) and the “Health 2020” strategy, children are one of the mostly vulnerable groups; therefore, their health is considered to be one of the priorities of health policy. The WHO recommends to organize healthcare services so that a child would get the required healthcare services within 24 hours since the beginning of the disease [1]. Primary healthcare services are the core of the children healthcare system with its aim to protect children’s health while using the diagnostic, therapeutic and prophylactic measures. The properly organized primary healthcare provides services to patients not only during normal working hours, but also at night and on holidays. In many countries hospital emergency departments are used when there is trouble of accessing the primary healthcare doctor, especially for the children.

Hospital emergency departments (EDs) is a part of the emergency healthcare system, connecting out-of-hospital services and in-patient services provided in the hospital. Primary healthcare services are provided at EDs on nonworking hours of primary healthcare centers.

In recent years, the flow of patients to hospital EDs has increased due to health conditions issues that could be solved with a family doctor, without using the in-patient healthcare resources. The overcrowded EDs is a growing issue of the healthcare system faced in many countries. There are different determining factors among the causes of ED crowding: input factors, throughput factors, and output factors. Input factors reflected sources and aspects of patient inflow. Throughput factors reflected bottlenecks within the ED. Output factors reflected bottlenecks in other parts of the health care system that might affect the ED [2-4]. Return visits to an ED is an important issue, contributing to overcrowded EDs. Foreign authors note that the number of unnecessary visits related to primary healthcare has increased to hospital EDs [5-7]. Parents bring their children to EDs due non-urgent health conditions. Generally children arrive in EDs following fever, pain, trauma, respiratory and digestive system problems.

The unnecessary use of EDs worsens the accessibility availability and quality of emergency services, increases healthcare costs, and reduces healthcare services’

continuation [8] [9]. The overcrowding of EDs is related to the increasing rates of hospitalization and to patients' dissatisfaction of such ED services [10-13]. Problems of accessibility primary healthcare services are of utmost importance to the overcrowding of EDs [14].

The number of children in hospital EDs increases in Lithuania; therefore, it stimulates interest in this phenomenon, identification of problems, their causes and solutions.

Andersen's behavioral model of health-care utilization is widely used in studies analyzing the healthcare consumption and availability. The patient is the central figure of this model, influenced by the three groups of factors: predisposing, enabling, and need factors [3, 4, 15, 16]. Based on the theoretical model of health-care utilization we identified several factors which influenced the parents to contact the children's hospital ED on "minor" health problems that were solved by the ED pediatricians.

In Lithuania, there have neither been thesis published analyzing specifics of children's healthcare in emergency departments factors which influenced the parents to go to the hospital's ED on children's health conditions not requiring hospital treatment, nor surveys of parental expectations and behaviors when child becomes ill. Striving to better understand the parents' bringing children to the EDs needs, the healthcare professionals require knowledge of factors determining healthcare utilization. Knowledge and understanding of healthcare utilization is essential for the planning and allocation of healthcare resources. The good healthcare management system and planning of services and resources should be based on scientifically based solutions.

1.1 The aim and objectives of the research

The aim of the research

Characterize the status of pre-hospital pediatric healthcare services in emergency departments, service utilization determinants and directions for optimizing.

Objectives

1. Assessment scope and trends of healthcare services provided to children in ED of hospitals in Lithuania in 2001–2013.
2. Determination of frequency and characteristics of children's visits to ED of Children's Hospital.
3. Determination of frequency of return visits in 72 hours after the first visit to the Children's Hospital's ED, the characteristics of visits and prognostic factors and assessment of the significance of return visits to the overcrowding of ED.
4. Finding out factors which led the parents decision to go to the Children's Hospital's ED for minor health problems, solvable by outpatient way.
5. Comparing parents' and medical professionals' approach to child's health and need for an urgent care.

1.2 Scientific novelty and practical significance

Long-term ambulatory service utilization in EDs for children, the demographic and regional differences in consumption were evaluated with the NHIF information system's data for the first time in Lithuania.

There aren't scientific thesis published in Lithuania analyzing the specifics of children's healthcare in the EDs factors which influenced the parents to go to the hospital ED on children's health conditions not requiring hospital treatment. Andersen's Behavioral Model of Health Service Utilization was applied in this thesis.

The results and recommendation described in this thesis will provide basis for further scientific research in the pre-hospitalization children's healthcare field, and will provide the health politicians knowledge about the availability of medical services and quality of primary first contact care in organizing children's healthcare and will help to better understand the parent's needs when bringing children in the EDs.

The thesis has been prepared combining medical and public health sciences.

2. MATERIALS AND METHODS

The study was conducted at the Clinic of Children's Diseases, Faculty of Medicine, Vilnius University, during 2011–2015.

The study was approved by the Vilnius Regional Biomedical Research Ethics Committee (approval No. 158200-13-653-211, issued on September 7, 2013).

The study was conducted in collaboration with the National Health Insurance Fund (NHIF); Children's Hospital, Affiliate of Vilnius University Hospital Santariškių Klinikos; and municipal divisions responsible for protection of children rights.

Data for 2001–2013 period from NHIF database (3 332 998 emergency visits were analyzed in total, 45.3% of which – out-patient visits) were retrieved in order to identify the relevance of the problem and to evaluate the coverage and tendencies of pre-hospital pediatric healthcare services in hospital ED.

Children's Hospital data on pediatric services delivery in 2013 (45 365 visits, 74.7% of which – out-patient visits) was analyzed to identify patterns of services usage.

A total of 381 patients' legal representatives were interviewed using an original questionnaire and medical records of patients in order to analyze the factors that had an impact on parental decision to attend a hospital ED for a minor health problem.

Study sample was selected from pediatric patients' from 10/01/2013 to 08/31/2014 provided with out-patient care in the Children's Hospital Pediatric Emergency Care Subdivision. Trauma and surgery patients were excluded from the study. All patients included in the study after informed patient (representative) consent and informing relevant Child Rights Protection Division.

The study sample is representative and was calculated using the sample calculation program STATCALC in EpiInfo 6 statistical package (EpiInfo 2002).

According to the Andersen's services utility model, three groups of operational factors were determined: predisposing, enabling, and need factors.

The study instrument was tested for its validity and reliability. Factorial analysis method was applied to examine eligibility of questionnaire variables. The estimated factorial analysis by Kaiser-Meyer-Olkin index (KMO) for A1-A10 questions is 0.79.

The Cronbach alpha coefficient was used to test internal consistency reliability of the questionnaire scales. The internal consistency of the scale is good where α is equal to 0.72.

The results were summarized applying descriptive statistics, linear regression, correlation analysis methods, logistic regression model, and factorial analysis research.

3. RESULTS

3.1 Analysis of trends of pediatric services delivery in hospital EDs in Lithuania

The number of pediatric visits to hospital EDs due to conditions not requiring in-patient treatment was increasing annually. The number of out-patient visits to EDs within the 13-year period increased 2.4-fold, i.e., from 80 042 visits in 2001 to 193 823 visits in 2013.

Considering the constant decrease in children population during 2001–2013, the rate per 100 children was estimated. The number of out-patient visits per 100 children increased 3.8-fold from 9.4 to 35.6 ($R^2=0.913$, $P\leq 0.05$) (Fig. 1). The absolute number of hospitalizations during this period decreased from 163 044 to 117 043, but the number of hospitalizations per 100 children increased from 19.1 to 21.5 ($R^2=0.778$, $P\leq 0.05$).

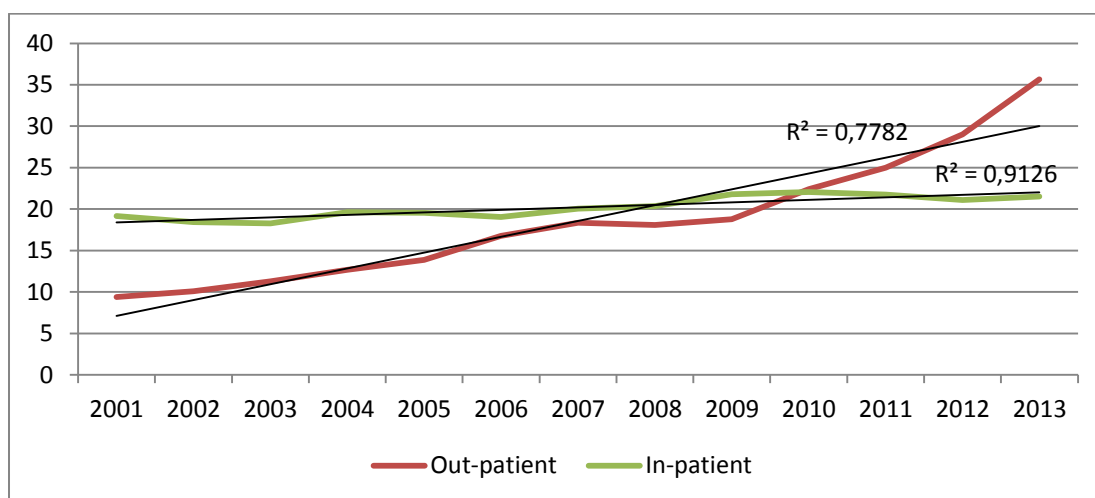


Fig. 1. The number of visits due to out-patient and in-patient pediatric services per 100 children in hospital EDs during 2001–2013

The number of out-patient visits to hospital EDs without doctor's or ambulance referral increased 3.4-fold from 2001 to 2013 ($R^2=0.943$, $P\leq 0.05$) (Fig. 2).

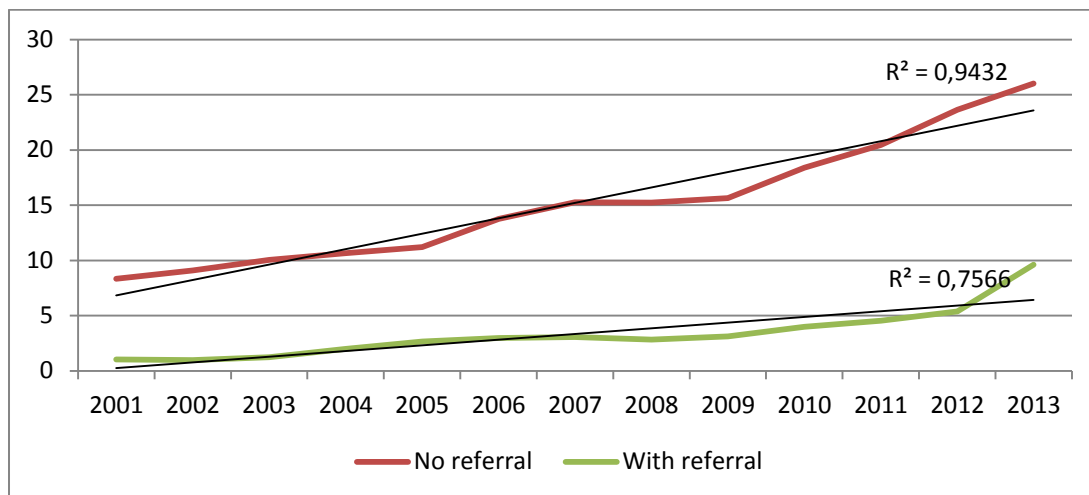


Fig. 2. The number of out-patient visits to hospital EDs without/with referral during 2001–2013

Most patients visited hospitals' ED classified as an urgent patient. The proportion of urgent patients remained almost unchanged during the past 13 years (86.9% in 2001 and 84.8% 2013), whereas the absolute number of visits increased dramatically, i.e., from 69 523 in 2001 to 164 290 in 2013 ($R^2=0.881$, $P\leq 0.05$).

Over the studied period, the number of ED visits per 100 children increased in all age groups. Youngest age groups utilized services mostly. Every fifth child in 2001 and every second child in 2013, aged less than 1 year, visited the ED. The number of visits per 100 children in the 1 to 2 years age group increased even more, from 16.6 in 2001 to 64.5 in 2013 ($P<0.05$).

Summarizing these results we can conclude that the number of pediatric patients in hospital EDs in 2013 increased considerably when compared with visits in 2001, especially the number of out-patient visits which do not require hospital care and visits without doctor's referral. These changes promote the evaluation of organization and delivery of primary healthcare services, particularly those provided to children.

3.2 Assessment of patient visits to the Children's Hospital ED in 2013

A total of 45 362 patient visits to the Children's Hospital ED were recorded in 2013 (planned hospitalizations were excluded). Of these patients, 11 472 were hospitalized and 33 890 received out-patient treatment. One-third of the patients (n=16 721) were referred to the Children's Hospital ED by a doctor or were transferred by ambulance (*with referral*).

Number of boys' visits to ED was greater than girls', as well as children of young age attend ED more frequent than the older (see Table 1).

Table 1. Comparison of ED patients' characteristics with or without referral

Characteristics	Arrived to ED (% / n)		Total (n=45 362)	
	With referral (n=16 721)	Without referral (n=28 641)		
Age group, years				$\chi^2=349.03$; $df=3$; $P=0.000$; * $P<0.05$
0–2	39.5 / 6556	31 / 8807	34.2 / 15363	
3–7	29 / 4803	32.9 / 9327	31.4 / 14130	
8–12	14.8 / 2459	18.1 / 5146	16.9 / 7605	
13–17	16.7 / 2770	18 / 5096	17.5 / 7866	
Gender				$\chi^2=2.42$; $df=1$; $P=0.119$; $P>0.05$
Girl	45.5 / 7589	44.7 / 12798	45 / 20387	
Boy	54.5 / 9107	55.3 / 15833	55 / 24940	
Urgency				$\chi^2=303.83$; $df=1$; $P=0.000$; * $P<0.05$
Urgent	87.6 / 14652	92.5 / 26506	90.7 / 41158	
Non-urgent	12.4 / 2069	7.5 / 2135	9.3 / 4204	
Care delivered				$\chi^2=4277.45$; $df=1$; $P=0.000$; * $P<0.05$
Hospitalized	39.3 / 6969	14.9 / 4263	23.9 / 10832	
In observation	13.6 / 2278	9.7 / 2791	11.2 / 5069	
Multi-consultation	6.1 / 1026	5.5 / 1564	5.7 / 2590	
Consultation (1 specialist)	41 / 6848	69.9 / 20203	59.2 / 26871	

χ^2 , chi square; df , degrees of freedom; P , significance level. * indicates the level of significance.

During the study, the association between the utilization of services and the time of day was determined. More than half (56.6%) of the patients visited the ED in the evening (from 4 PM to midnight) (Fig. 3).

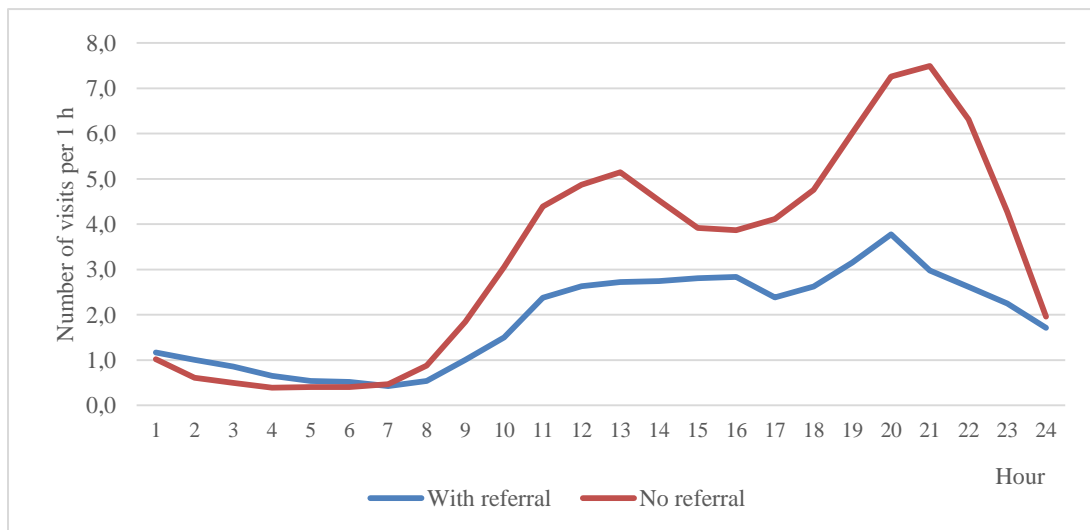


Fig 3. Number of ED visits per hour with or without referral at different times of day

During working hours (8 AM – 4 PM), only every third patient arrived to the ED with referral. The frequency of visits of patients without referral and working hours of primary healthcare services were not associated. During working hours (8 AM – 4 PM), 65.4% of the patients arrived to the ED without referral and in the evening (4 PM – midnight), 63.7%. At night (midnight – 8 AM), the proportions of patients with or without referral were almost equal (Fig. 3). Almost a half of all patients at night-time were brought to the ED by ambulance.

The utilization of ED services was significantly higher on weekends than workdays (6.1 and 4.8 visits per hour, respectively). The majority of primary healthcare institutions are closed on weekends. After the weekend, the utilization of ED services remained increased on Monday. The proportion of patients arriving to the ED without referral was almost two times greater on weekends and bank holidays than workdays (72.4% and 57.8%, respectively).

Only 9% of the patients who visited the ED did not meet the criteria for urgent care approved by the Ministry of Health. Patients without doctor’s referral were 1.8 times more likely of not meeting the urgent care criteria.

Two-thirds of the patients who visited the ED received out-patient consultations. Of them, every tenth received at least two consultations.

From the total number of ED patients, one fourth was hospitalized and every tenth patient was offered observation services. Patients with referral were 4.5 times more likely to be hospitalized and 2.4 times more likely to be observed than patients without referral (Table 2).

Every third ED patient underwent a radiological examination. Patients without referral than those with referral were 3.5 times more likely to receive this examination.

The greater number of radiological examinations for patients without referral group is attributed to the specificity of disorders in this group.

Table 2. Characteristics associated with ED visits without referral (data of the Children’s Hospital in 2013)

Characteristics	OR	95% CI	P
Age group, years			
0–2	1.369	1.259–1.449	0.000
3–7	0.947	0.894–1.004	0.067
8–12	0.879	0.822–0.940	0.000
13–17 (R)	1.0		
Gender			
Girl	1.031	0.992–1.071	0.119
Boy (R)	1.0		
Urgency			
Urgent	1.753	1.645–1.868	0.000
Non-urgent (R)	1.0		
Services delivered			
Hospitalized	4.506	4.297–4.724	0.000
Observation	2.386	2.244–2.539	0.000
Multi-consultation	1.918	1.765–2.085	0.000
Consultation (1 specialist) (R)	1.0		

R, reference group; OR, odds ratio; CI, confidence interval; P, level of significance.

Trauma, respiratory infections, and gastrointestinal disorders were the main causes to visit the ED in 2013. These three causes made up more than two-thirds of all ED visits. In the group of patients without referral, almost every second patient visited the ED due to trauma, accident, or orthopedic pathology. Meanwhile, it was only the third most frequent cause among patients with referral (Table 3).

Table 3. Distribution of patients by the cause of disorder and pattern of arrival to the ED

Disorder	Arrived to ED (% / n)		Total
	With referral	Without referral	
	(n=16 721)	(n=28 641)	(n=45 362)
Trauma, accidents, orthopedic pathology	18.6 / 3097	44.0 / 12608	34.6 / 15 705
Respiratory tract infections	21.5 / 3599	18.2 / 5213	19.4 / 8812
Gastrointestinal disorders	24.4 / 4082	13.3 / 3799	17.4 / 7881
Symptoms	14.8 / 2480	6.7 / 1927	9.8 / 4407
Skin and mucous membrane pathology	4.0 / 671	4.0 / 1157	4.0 / 1828
Neurological and psychiatric disorders	2.5 / 414	0.9 / 241	1.4 / 655
Other	14.2 / 2378	12.9 / 3696	13.4 / 6074
$\chi^2=3720.59$; $df=6$; $P=0.000$; * $P<0.05$			

χ^2 , chi square; df , degrees of freedom; P , significance level. * indicates the level of significance.

Table 4. Comparison of patients' characteristics attributed to ED visits due to trauma and other diseases (data of the Children's Hospital in 2013)

Characteristics	Trauma % / n	Disease % / n	OR	95% CI	P
Age group, years					
0–2	20.5 / 3192	41.4 / 12171	0.192	0.181–0.204	0.000
3–7	25.5 / 3968	34.6 / 10 162	0.286	0.27–0.303	0.067
8–12	24.8 / 3864	12.7 / 3741	0.756	0.71–0.806	0.000
13–17 (R)	29.2 / 4541	11.3 / 3325	1.0		
Gender					
Girl	40 / 6272	47.6 / 14 115	0.731	0.703–0.76	0.000
Boy (R)	60 / 9427	52.4 / 15 513	1.0		
Clinical data					
Doctor's referral	19.7 / 3097	45.9 / 13 624	0.289	0.276–0.303	0.000
Urgent patient	97.3 / 15 286	87.2 / 25 872	5.337	4.815–5.916	0.000
Laboratory testing*	1.2 / 165	51.6 / 10 602	0.006	0.005–0.007	0.000
Radiologic examination*	63.6 / 8879	10.3 / 9045	25.325	23.227–27.613	0.000
Ultrasound scan*	1.3 / 180	6.1 / 1259	0.182	0.15–0.222	0.000
Services delivered					
Hospitalized	11.1 / 1741	30.7 / 9091	0.212	0.201–0.225	0.000
Observation	4.3 / 2278	14.8 / 2791	0.171	0.157–0.186	0.000
Multi-consultation	3.5 / 546	6.9 / 2044	0.296	0.169–0.327	0.000
Consultation (1 specialist) (R)	81.1 / 15 705	47.6 / 14 131	1.0		

*Only patients who received out-patient treatment.

R, reference group; OR, odds ratio; CI, confidence interval; P , level of significance.

The number of patients who arrived to the ED due to trauma and accidents did not differ significantly across different age groups, whereas younger children referred to the ED due to other diseases more frequently than the older ones. Boys arrived to the ED due to trauma and accident statistically more frequently than girls. The overwhelming majority of trauma patients received emergency aid; however, only every fifth patient was with doctor's referral. The patients who sustained trauma were 5 times more likely to be hospitalized than those who arrived due to other diseases. Almost two-thirds of the patients who arrived to the ED due to trauma or accident underwent a radiological examination (Table 4).

3.3 Assessment of unscheduled return visits to the pediatric ED

A total of 1015 unscheduled return visits (RVs) to the Children's Hospital ED were recorded in 2013, and this accounted for 2.9% of the total out-patient visits. During the first RV, 248 patients were hospitalized, and the rest were sent home after consultation. Second RVs within 72 hours accounted for 3.1% (n=24), and more than half (54.2%) of them were hospitalized. The data of RV patients were compared with the data of the patients who referred to the ED within 72 hours only one time (non-RVs) (n=32 875).

In 0–2-year-old group, the odds of returning were 2 times and in the 3–7-year-old group 1.5 higher than in the 13–17-year-old group. There was no significant difference in RVs by gender.

Patients in the RV group were more likely to visit the ED during nighttime (midnight – 8 AM) and during weekdays. However, no significant seasonal differences in RVs were observed.

Patients with doctor's referral were 1.5 times more likely to return to the ED than patients without referral; however, both the groups did not differ significantly by the need for emergency aid.

During the initial visit, laboratory tests and ultrasound scans were performed 1.8 and 2.3 times, respectively, more often in the RV group than the non-RV group. Contrary, patients in the non-RV group underwent radiological tests more often. Also,

this group often was under observation or received multi-consultation 1.7 times more often (see Table 5).

Table 5. Characteristics attributed to unscheduled return visits to the ED within 72 hours

Characteristics	OR	95% CI	P
Age group, years			
0–2	2.043	1.668–2.502	0.000
3–7	1.436	1.164–1.772	0.001
8–12	1.017	0.791–1.306	0.897
13–17 (R)	1.0		
Time of day			
Daytime (8 AM – 4 PM)	0.708	0.554–0.905	0.006
Evening (4 PM – midnight)	1.008	0.797–1.275	0.945
Night (midnight – 8 AM) (R)	1.0		
Week day			
Workday	1.235	1.083–1.409	0.002
Weekend (R)	1.0		
Doctor’s referral			
With referral	1.485	1.305–1.69	0.000
Without referral (R)	1.0		
Services delivered			
Observation	1.838	1.248–2.706	0.002
Multi-consultation	1.738	1.429–2.115	0.000
Consultation (1 specialist) (R)	1.0		

R, reference group; OR, odds ratio; CI, confidence interval; P, level of significance.

Patients in RVs group were diagnosed with respiratory tract diseases almost 2 times more often (in total, 32.7% of visits) or with symptoms (9.1% of visits in total). The initial diagnosis coincided with the diagnosis made on the second visit for only 44.1% of patients, and the highest rate of congruity were in injuries/poisoning, surgical pathologies (77.2%) and respiratory tract diseases (76.9%).

This part of the results showed that RVs accounted for only a small number of visits to the ED, but comprised more healthcare resources. RVs were more prevalent among young age patients and patients with doctor’s referral. They occurred more frequent on workdays. Gastrointestinal tract and respiratory tracts diseases were the most prevalent among RV patients.

3.4 Analysis of factors determining parents' decisions to bring their children with conditions not requiring inpatient treatment to EDs

Patients were enrolled into the test group in the 1st Unit of the Children's Hospital ED (pediatric patients) from October 1, 2013, to August 31, 2014. The subjects arrived to the Children's Hospital ED having simple diseases and conditions not requiring inpatient treatment. A total of 381 parents were surveyed with a questionnaire, and patients' medical records were evaluated (Form No. f025a-LK).

Of all the surveyed, 50.4% were boys and 49.6% were girls, with no significant difference in the percentage. The mean age of the patients was 3.6 years (range, 1 month to 17 years). Children aged less than 7 years accounted for 90.6% of all the subjects. The demographic, social, and economic characteristics of the selected subjects (patients and parents) are shown in Table 6.

Table 6. The demographic, social, and economic characteristics of the selected subjects (patients and parents, n=381).

	Indicator	n	%
Child's age	Less than 1 year	74	19.4
	1–2 years	133	34.9
	3–7 years	138	36.2
	more than 8 years	36	9.4
Child's gender	Male	192	50.4
	Female	189	49.6
Questionnaire completed by	mother	250	65.6
	father	88	23.1
	other	4	1.0
	both parents	39	10.2
Parental education	secondary	38	10.0
	college degree	94	24.7
	university degree	248	65.3
Total monthly income of a family	less than 580 Eur	51	13.4
	from 581 to 1450 Eur	155	40.8
	more than 1451 Eur	81	21.3
	Not specified	93	24.5
Accompanied by person aged	Less than 30 years	143	28.7
	31–40 years	269	53.9
	more than 40 years	87	17.4
Child's family	living with both parents	361	95.0
	living with a single parent	19	5.0

Since a special attention was paid to factors having an impact on the decision of patient's parents to come to the hospital ED while preparing the thesis, the selected variables were compared by the type of arrival (arrived independently or with healthcare professionals' referral).

Taking into consideration the hospital electronic records on the type and time of arrival, it was determined that two-thirds of the subjects arrived independently, i.e., without doctor's referral, one-fifth was sent by a doctor, and 15% were brought by ambulance.

During the working time of the primary healthcare center (workdays from 7 AM to 7 PM), patients arrived with doctor's or ambulance staff's referral more often, and during non-working hours patients without referral arrived often frequently. Three-fourths of patients who arrived independently visited the ED on evening hours and weekends (OR=5.416; 95% CI, 3.259–8.99; $P<0.001$).

Fifty-six patients (14.7%) were brought to the ED by ambulance. An ambulance brought patients more frequently on evening hours and working days ($P<0.05$). Children aged less than 3 years were brought by ambulance more often as compared with their older counterparts ($P<0.05$).

Our study showed that more educated parents brought their children by themselves significantly more often. The decision to arrive independently, without visiting other healthcare professionals, was taken more often by parents with higher incomes ($P<0.001$) (OR=2.153; 95% CI, 1.167–3.97; $P=0.014$). There were no significant differences by the type of arrival comparing different age groups of either children or parents.

Tactics before entering the ED and between different children's sexes did not differ, but it determined that parents brought their 3–7-year-old children significantly more often (OR=2.571; 95% CI, 1.545–12.139; $P<0.001$, whereas infants were sent more often by doctors and ambulance professionals ($P<0.05$).

Living place was a significant social factor determining the use of services. We studied whether they lived closer to their primary healthcare facility or to the Children's Hospital. It was determined that 52.2% of the children who arrived to the hospital ED lived 15 minutes away from their primary healthcare facility, whereas only 26.3% of patients needed as much time to come to the ED. More than half (51.1%) lived 15–30

minutes away from the ED. The time to get to the primary healthcare facility and the time to get to the Children's Hospital ED correlated significantly ($r=0.212$, $P<0.001$); however, more patients who arrived independently lived closer to the hospital ($P<0.01$) and vice versa, children who lived away from the ED were referred to the ED by a doctor more frequently.

Based on the data of parents' survey, only 109 patients (28.6%) were examined by a family doctor in the primary healthcare institution before arrival to the ED.

We studied whether parents were aware where they should refer when a child is sick and their child's primary healthcare institution is closed. Of the 193 patients' parents (50.7%), only half (50.8%) indicated correctly that their child should be provided with services in the Children's Hospital when their family doctor does not work. Forty-one respondents (10.8%) indicated that they arrived to the Children's Hospital ED not knowing where to refer in such a case.

A total of 160 children (42.1%) did not visit the hospital ED during the last 12 months; 173 (45.5%) visited it 1 or 2 times and 47 (12.4%) visited it ≥ 3 times. Parents who brought their children independently were significantly more likely to visit the ED: 14.5% visited the hospital ED 3 or more times and only 8.3% of the patients with doctor's referral ($P<0.05$).

Child's overall health was rated as very good by 106 parents (27.9%); by 201 (52.9%), as good; and by 73 (19.2%), as moderate or bad. Parents with children aged less than 3 years rated their health as very good significantly more often ($P<0.001$) as compared to those who had children older than 3 years (38.5% and 15.4%, respectively). Twenty-two parents (10.7%) having children younger than 3 years and 51 (29.1%) with children older than 3 years indicated their child's health as being moderate or bad ($P<0.001$).

Comparison of parents' opinion about their child's health depending on their age revealed that 84.5% of the parents younger than 35 years rated their child's health as good or very good, while among those aged more than 35 years, such assessment of their child's health was indicated by fewer respondents (72.4%) ($P<0.05$). Based on multivariate logistic regression analysis, parents' belonging to the older age group increased the odds to evaluate their child's health unfavorably by 2.07 times (95% CI, 1.1224–3.506).

Taking into account parental education, the evaluation of children's health did not differ significantly ($\chi^2=5.554$, $df=4$, $P=0.235$). However, child's health was rated as very good by significantly more parents when the child lived with both parents ($\chi^2=8.083$, $df=2$, $P=0.018$).

Parents with monthly family incomes of more than 1450 euros rated their child's health as very good significantly more often than those with income of less than 580 euros ($\chi^2=7.145$, $df=4$, $P<0.05$).

The evaluation of child's health and the frequency of visits to the hospital ED correlated significantly ($r=0.2$, $P=0.002$). Child's health was rated as very good significantly more often by parents of a child who did not visit the ED or visited the ED 1–2 times compared with parents having children who visited the ED more than 3 times (56 [35.0%] and 47 [27.2%] vs. 3 [6.4%], respectively; $P<0.01$).

In the part A of the questionnaire, there were 10 statements about factors that influenced the parental decision to arrive to the Children's Hospital ED. Parents had to indicate their answers on the Likert's scale by circling the number best revealing their opinion: 1, strongly disagree; 2, disagree; 3, I cannot say or I have no opinion; 4, agree; and 5, strongly agree (Table 7).

Table 7. Distribution of the mean scores of parental responses (n=381)

Factors that could have led to the parents' decision to come to the ED	Mean (SD)
1) My child's health has never been as bad as now	3.02 (1.26)
2) We arrived because of the necessity of tests to determine the causes of my child's disease	4.35 (1.0)
3) I am aware about similar symptoms to another child who was very ill	3.14 (1.34)
4) I know that I acted correctly, but I still want to check whether or not	4.01 (1.07)
5) I have to take special care of my child when he or she gets sick or gets trauma, because he/she has poorer health than his/her peers	2.61 (1.5)
6) The hospital ED only can provide my child with required aid	3.87 (1.16)
7) The person whom I trust advised me to bring my child to the hospital ED	3.49 (1.53)
8) I learned important information through the media, which led me to apply to the ED for my child's health check-up	2.5 (1.37)
9) Medicines and medical aid, which my child got at home, did not help	3.5 (1.28)
10) The hospital ED is the best place where I can take my child to	4.33 (0.92)
Total	3.38 (0.67)

3.5 Comparison of parents' and medical professionals' attitudes toward child's health condition and the need for medical interventions

The urgency of medical aid provided to the patients was evaluated by using two assessment scales: one approved by the order of the Minister of Health of the Republic of Lithuania (Order No. V-208, April 8, 2004) [17] and the description of establishment of triage in provision of aid to patients approved by the director of the Children's Hospital (Order No. V-55, 2013) [18].

In the group of the surveyed, emergency aid (following the indications by the Ministry of Health) was indicated in health records of 308 patients (80.8%). Based on the primary health condition assessment of the patients in the Children's Hospital, only 83 patients (21.8%) needed emergency care. Based on the assessment of the nurses working in the Children's Hospital ED, the need for emergency care to patients distributed as follows: non-urgent (green color), 298 (78.2%) and urgent (yellow color), 83 (21.8%). Logistic regression analysis showed that the condition of the patients who were assigned emergency care (following the indications by the Ministry of Health) was 2.2 times more likely to be assessed by yellow color (urgent aid) (95% CI, 1.067–4.737; $P=0.029$).

More than two-thirds (38.8%) of the parents reported that they arrived due to especially worsened child's health; however, based on the opinion of professionals, only every fifth required emergency care.

The results presented show that the scales of urgent (emergency) aid of patients' condition by the Ministry of Health and the Children's Hospital and practical application differed significantly.

In the questionnaire, the parents had to name a child's health disorder (worrying symptoms), which encouraged to come to the ED, and child's health condition at the moment of arrival to the ED (need factors). Parents' answers and evaluation by ED doctors were compared. In the evaluation of severity of the child's disease, 73 respondents (19.3%) stated that they could not assess it; the answers of the remaining respondents distributed as follows: easy, 18 (4.7%); average, 168 (44.1%); and severe/extremely severe, 122 (32.0%). A total of 58 (15.2%) and 323 (88.3%) ED

doctors assessed child’s health status as satisfactory and average. There were no patients of severe condition, by doctors opinion.

Based on the non-parametric Kendall correlation analysis, it was determined that Triage color and the assessment of severity of the child’s disease correlated significantly ($r=0.2$, $P<0.001$): in case of Triage “green”, significantly more parents assessed the severity of their child’s disease as average (140 [58.8%] and 28 [40.0%]) and, on the contrary, significantly fewer parents assessed the severity of their child’s disease as severe/extremely severe (81 [34.0%] and 41 [58.6%]) (Fig. 4).

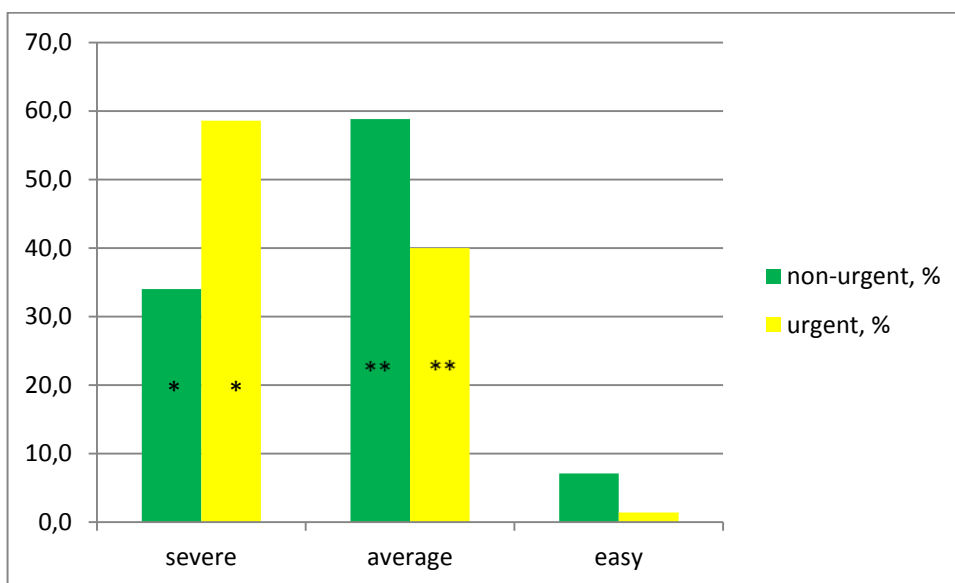


Fig. 4. Percentage distribution of the child’s health assessment (in parents’ opinion) taking into consideration the color of *Triage* ($\chi^2=14.758$, $df=2$, $P=0.001$, $^{*}P<0.05$)

* , ** indicates the level of significance.

Based on the opinion of 148 parents, they arrived to the ED due to especially worsened child’s health; however, only 27 (18.2%) required emergency aid. Despite that emergency aid was required only by a small share of patients, the condition of 119 children (80.4%) was assessed by ED doctors as being of average severity.

Acute upper respiratory tract infections ($n=117$), fever ($n=84$), gastrointestinal infections and functional disorders ($n=78$), skin and mucous membrane pathology ($n=50$), and lower respiratory tract disease ($n=30$) were the most frequent diagnoses made by doctors. Other diseases were less common. Younger children arrived to the ED due to fever and breathing disorders more often as compared with older ones ($P<0.05$).

Parents who had children suffering from skin and mucous membranes diseases (diseases occurring in rashes) (OR=4.303; 95% CI, 1.089–16.995) and having fever (OR=3.463; 95% CI, 1.01–11.876) were more likely to bring their children to the ED without referral than parents having children with other diseases.

A total of 310 children (81.4%) underwent at least one test. Complete blood count (CBC) and C-reactive protein (CRP) test in the hospital ED were made most frequently (289 [75.6%] and 130 [34.1%], respectively). None of the children underwent ultrasound examination, 23 children (6.0%) had the general urine test, and x-ray examination was performed to 34 children (8.9%).

In the assessment of the scope of the aid provided, treatment actions were analyzed, i.e., what medical treatment was prescribed. Of the group of the surveyed, at least one medication was prescribed to 316 patients (83.0%), and 65 patients (17.0%) were not given any treatment at the ED.

One-fourth of the children had fever of more than 38°C. These children arrived without referral and for emergency aid and they had blood tests done more often as compared with children whose body temperature was lower than 38°C.

4. DISCUSSION

The growing number of ambulatory visits for children in hospital EDs encourages searching for the causes of this phenomenon. Number of outpatient children's visits in hospital EDs increased by 2.4 times from 80,042 visits in 2001 up to 193,823 visits in 2013 in 13 years in Lithuania, and a children's outpatient visits per 100 children increased by 3.8 times from 9.4 to 35.6. This is one of the largest growth of ED for children - even by 29% annually. In Italy, the annual growth of ED services is 5%–6%; in Germany, 4%–8%; and in the USA, 1%–2% [19, 20].

It was found out that during this investigation that even a third of the Lithuanian children visited hospital EDs for outpatient services. Every second baby visited EDs, and even 2/3 of the children aged 1-2 years. Sands describes similar UK indicators suggests that the UK Emergency departments annually visited by about half of the children under

the age of 12 months and a quarter of older children [21]. In Italy, as well as in Lithuania, mostly children of 1-2 years age arrive to hospital EDs [22].

Parents bring their children to EDs due to non-urgent medical conditions. The number of such visits increased since the beginning of this century in many countries and it makes from 30 to 96% [23-25] of all children's requests made to the ED. Patients arrived on non-urgent aid account for only 15% in Lithuania, and even though this number tends to rise, this does not match rates of foreign countries. Zimmer's and co-authors (2005) study showed that 46% children arrived for non-urgent care. Children aged 1–4 years (35.4%) were provided with in most cases [24]. Results of our study revealed that risk in Children's hospital to serve all children who arrive in the evening increases. Most children's illnesses are observed on 4 p.m. - 12 p.m. (54.4%), during the day (8 a.m. - 4 p.m.) - 30.3%, and at night (0 a.m. - 8 a.m.) - 15.3%. [26]. In our study we analyzed the flow of visits at different times similar results were obtained; almost half of the children (48%) were brought to ED between 4 p.m. and midnight, 41% – on daytime (8 a. m. – 3 p.m.), and only 11% – at night (0 a. m. – 7 a. m.).

According to the causes, majority of the patients were brought to the Children's Hospital ED mainly due to traumas (34.6%), respiratory diseases (19.4%) and gastrointestinal disorders (17.4%). Most of the children not requiring emergency aid, suffered from respiratory and gastrointestinal diseases. The foreign authors publish similar data in their publications: the parents usually bring children into the EDs for fever, pain, trauma, respiratory and digestive systems problems [21, 27, 28].

Characteristics of patients' return visits to the tertiary University hospital's ED are examined for the first time in the Eastern Europe. 2.9% of Children's Hospital ED patients revisit it within 3 days (72 h). It is a little bit more than in the US 7-year long study, where is a fixed rate of 2.7% of RVs [7]; RV rate in other countries ranges from 1.1% to 13.4% [6, 26, 29, 30]. More patients arrive to EDs on weekends, and there are more repetitive visits at the Children's Hospital ED on Mondays and Tuesdays. Such parental choice possibly results in the more convenient for them ED compared to primary healthcare facility [31], and difficulty to register with a doctor after the weekend. Patients that arrived in the evening or at night, are more likely to revisit the ED. This trend has been observed in surveys conducted in the United States and Canada [32].

Infants and young children arrive to the ED more often, especially among the repetitive patients. This corresponds to the foreign research results [31, 32], Cho et al. (2012) identified not only infants but also adolescents aged 13 to 18 years old, who often tend to revisit the ED [7]. Patients were often left to the ED for observation during the first visit so it could be stated that patients' disorders have been serious enough on their arrival for the first time. Disease progression and the emergence of new symptoms may be one of the reasons RVs, especially when assessing the fact that almost a quarter (24.4%) of repetitive patients were hospitalized. Alessandrini et al. (2004) stated that the RV patients were ill more severely than other patients that came to ED [33]. The fact that the diagnosis of the first and repetitive visits coincided by only 44.1%, can be explained by the appearance of the new symptoms, progression of the disease or medical error.

By applying Andersen's behavioral model of health-care utilization we found predisposing, enabling, and factors that were evoked by need, which influenced the parents' decision to bring the child to the Children's Hospital ED for the simple health problems solvable by outpatient way. We found only a few foreign studies evaluating the parents deciding for their children, demographic and social characteristics [8, 34, 35].

Predisposing factors are factors that existed before the onset of the disease, such as demographic and social characteristics attributed to patient's parents and parental attitudes and beliefs about their child's health and the health system. We found the following significant factors that influenced parental decision to arrive without referral: age of a child (parents bring themselves without referral 3–7-year olds significantly more often); parents' education (parents with higher education bring their children themselves without a referral significantly more often); family's income (parents with better income more often bring their children themselves without referral); arrival's to hospital's ED duration (patients arriving on their own lived closer to the hospital); child health's evaluation (children's living in complete families health is better estimated (parental assessment), younger parents, and parents with higher income significantly more often considered child's health as very good, compared to those with low income); frequent use of the ED services (parents arriving without referral tend to greater use the ED services, also, as well as parents that visit the ED more frequently considering the child's health as average or bad).

Low parents' literacy of health is a predisposing factor for the increased usage of ED services, especially on the child's condition requiring emergency aid. Parents having lower health literacy arrive with children to the ED 3 times more likely on non-essential aid than those with sufficient level of health literacy [23, 36]. Parents having lower health literacy have difficulties interpreting information about medications, the dosage, the use of aids, which adds unnecessary consumption of specialized healthcare facilities for chronically ill children [37, 38].

In the study we clarified that health of the major share of the children who arrived to the ED was assessed by their parents as very good or good, and only every fifth respondent described his/her child's condition as average or bad. The differences in the assessment of the child's health depending on demographic and social factors were observed. We established that the children living in full families are in better health, younger parents and parents receiving higher income significantly more often assessed their child's health as very good in comparison to older and having lower income parents. Chambers et al. (2011) also established that parents who think that their child's health is worse than that of other children more often use health care services provided at the ED [39].

The dissertation highlighted the factors enabling the consumption of services (based on Andersen's model), having influence on the parents' decision to go to the ED of the hospital, namely: insufficient accessibility of primary personal healthcare services in case of acute disease of a child (just less than one third of the children before arriving at the ED of the hospital were consulted by a family doctor); uninformed parents (parents are insufficiently informed on where primary personal healthcare services should be provided to their children when their family doctor does not work); parents' opinion about the ED of the hospital (parents think that the ED of the hospital is the best place to address in case of acute disease of a child and they did not hesitate about their decision to arrive).

Berry and colleagues (2008) established that parents expect that at the ED the problem of children's health will be solved more quickly, they trust more the qualification of professionals of the hospital and better assess the possibilities of examination [8]. The US research showed that 62% of parents arrived to the ED as here it is the most convenient place for their child to receive the health care service [31].

The major share of the children who came to the ED of Children's Hospital were not consulted by the family doctor. Long waiting time and impossible access to the family doctor on the same day increases the number of visits to the EDs due to health problems attributed to the family doctor's competence [8, 25, 40]. As the reason for why to choose the ED of the hospital parents indicate bad accessibility of primary health care services, inconvenient working hours [8, 14, 25, 41].

Uneven arrangement of primary personal health care institutions, primary personal health care institution located far from living place are strongly related with the unnecessary use of the ED services [42]. Unnecessary and frequent use of the ED services is related to good geographic accessibility – patients living closer to the hospital tend more often to use the services of the ED of the hospital [22, 43, 44]. Similar results were received also in our research.

Andersen's theory distinguishes factors that encourage service consumption based on patients' needs. Factors predetermined by the need are subjective needs for consumption of health services implied by parents, for measuring of which the following indicators are used: self-assessment of health condition, identification of worrying symptoms. Objective health care needs based on the doctors' opinion are urgency of aid and severity of the condition, diagnostic and treatment measures are required [4, 16]. The results of our study showed that the group of the surveyed was mostly influenced by the following factors predetermined by the need: child's health condition (parents assess children's condition more critically than health care professionals); urgency of medical aid (parents more often think that their child requires urgent medical aid as compared to professionals of the ED); patient's diagnosis (parents tend more often to bring their children to the ED themselves if they suffer from diseases of skin and mucous membranes (diseases occurring in rashes) and if they ran a fever, if compared to other diseases); possibilities of operative examination (at least one examination was done to 81.4% of children); giving the necessary treatment (at least one medication was prescribed to 83.0% of children).

The studies showed that parents most often assess their children's condition more critically than health care professionals [27, 45], this was proved also by our research – even one third of the parents assessed their children's condition as severe and extremely severe, although children of such condition were not even included into the research. In

the analysis of research results we can state that health care service consumers, in our research – parents of patients, possess insufficient knowledge about the necessity of emergency aid for their children, first aid after noticing the symptoms that are frequent for children, such as fever, sickness, diarrhea, or cold symptoms [46]. The measures enabling parents to distinguish when a child requires emergency aid at the ED and when it is possible to provide aid at home or family doctor's clinic are necessary [27, 38, 47]. Parents' age, education and socioeconomic status of the family are prognostic factors of health care service consumption due to the child's diseases [48].

Our results showed that a decision to go to the ED of the hospital depends on the parents' opinion about their child's health, severity of their child's condition and urgency of medical aid and symptoms of the child's disease raising concern to parents. The parents' opinion was different from that of the ED staff members, except for identification of the main disease symptoms. Literature describes the differences between the opinions of parents, primary personal health care doctors and the ED staff members in the assessment of the child's health, severity of the child's condition and urgency of medical aid in case of "minor" diseases not requiring emergency aid [49-51].

The patients of different condition arrive at the EDs, thus, in order to establish priority for patients to be checked first in case of a great flow of patients, in the EDs *Triage* systems are introduced [52-55]. The results obtained in our study reflect that the scales of assessment of the patient's condition for emergency aid by the Ministry of Health and Children's Hospital and practical application were significantly different.

Interventions increasing parents' health literacy may reduce the use of the ED services for non-emergency medical aid. In literature there are measures described to reduce the load of the EDs, such as introduction of additional fees paid by patients, responsibility of primary personal healthcare service institutions, application of methodological recommendations; however, the greatest effect in reduction of the consumption of the ED services may be achieved through parent training [36, 56].

The consumption of the ED services for the conditions not attributed to emergency aid is predetermined by many reasons, thus, more researches investigating these problems and their solving methods are required. The services at the ED will not replace more effective and cheaper primary personal healthcare services, in particular, in treatment of chronic diseases and coordination of primary pediatric health care [46].

5. CONCLUSIONS

1. The absolute number of pediatric out-patient visits to the ED has increased 2.4 times, and the number of visits per 100 children – 3.8 in the period from 2001 to 2013. The number of visits to the ED is increasing in all age groups and regions of Lithuania.
2. Most of the patients visit the Children's Hospital ED without doctor's referral and are eligible for emergency assistance. Boys and children under 8 year of age use ED more often than other groups. The ED is more crowded in the evening, on weekends and bank holidays. The main causes for referral are trauma, respiratory tract and gastrointestinal tract diseases.
3. Unscheduled return visits to the Children's Hospital ED within 72 hours after the initial visit accounts for 2.9% of total visits to the ED. Patients who are under 8 year of age, visiting the ED on workdays, complaining gastrointestinal and respiratory tracts disorders are more likely to be RVs. RVs has no impact on the ED overcrowding.
4. Most of the parents use the hospital ED for the services that should be provided in the primary health care institution. The patient's age, parents' education, family income, distance to hospital, self-assessed health, frequent use of services, accessibility to primary health care services, parents' knowledge about the disease, its severity, urgency and health system in general are the main factors which influenced parents decision to visit the ED.
5. Parents and the staff of the ED judged the severity of the diseases differently. Parents tend to judge the health state as more severe than health care professionals.

6. PRACTICAL RECOMMENDATIONS

1. Although a particular focus on children's health is declared in the Lithuanian law, number of pediatric visits to the hospital ED is increasing more intensively than in Western countries. Indicators on visits to the hospital ED has not been analyzed on the

state level, therefore these changes remain unnoticed. It is necessary to monitor indicators for health care services utilization in hospital ED, and to continue research trying fully understanding the problem.

2. The increased utilization of ED services promotes the evaluation of problems in primary health care organization, particularly that are delivered for children, and it is necessary:

2.1. To increase accessibility to primary healthcare services for children and ensure that a pediatric patient would be consulted by his primary health care doctor on the day of referral;

2.2. To emphasize primary health care services' delivery after working hours and on weekends;

2.3. To establish on-call family physician and/or pediatrician services in major cities, which may deal with health problems under the family physician's competence and may reduce patients flow to hospital's ED in cases where disorders are not urgent and do not require specific diagnostic procedure or hospitalization.

3. Low health literacy in parents is a predisposing factor for frequent utilization of the ED services, particularly for the non-urgent conditions. The following measures are proposed to improve parental knowledge of child health and health care:

3.1. To inform parents regularly through family physicians, mass media and other media about the most common symptoms of illnesses and first aid principles which should be applied at home;

3.2. To establish phone based or online based children's health support center, which may provide information for parents how to manage minor ailments, which medicines can be used and when it is necessary to seek professional help.

4. It necessary to prepare procedure for the pediatric emergency services delivery in the hospitals ED, based on scientific evidence and methodology on triage setting, and implement it in practice.

7. SANTRAUKA

Įvadas

Remiantis Pasaulinės Sveikatos organizacijos rekomendacijomis, „Sveikata 2020” strategija, vaikai priskiriami vienai iš labiausiai pažeidžiamų gyventojų grupių, todėl jų sveikatos priežiūra yra laikoma vienu iš sveikatos politikos prioritetu. Lietuvos nacionaliniuose teisės aktuose deklaruojamas ypatingas dėmesys vaikų sveikatos priežiūrai, tačiau vaikų, atvykstančių į ligoninių priėmimo – skubios pagalbos (toliau - SP) skyrius skaičius daugėja daug intensyviau lyginant su Vakarų šalimis.

Daugelyje šalių didėja pacientų srautas į ligoninių SP skyrius dėl sveikatos problemų, kurios galėtų būti sprendžiamos šeimos gydytojo. Per didelis SP skyrių paslaugų vartojimas blogina skubios pagalbos paslaugų prieinamumą, kokybę, didina sveikatos priežiūros kaštus, mažina sveikatos priežiūros paslaugų tęstinumą. SP skyrių perpildymas kelia nerimą dėl pacientų saugumo.

Pirmą kartą Lietuvoje, naudojant VLK informacinės sistemos duomenis buvo vertinta vaikams SP skyriuose suteiktų ambulatorinių paslaugų ilgalaikės vartojimo tendencijos, tyrinėjami demografiniai ir regioniniai paslaugų vartojimo netolygumai. Lietuvoje nėra atlikta darbų, analizuojančių vaikų sveikatos priežiūros paslaugų SP skyriuose teikimo ypatumus, veiksnius, lėmusius tėvų sprendimą tėvų kreiptis į ligoninės SP skyrių dėl vaikų sveikatos būklių, nereikalaujančių stacionarinio gydymo. Šiame darbe pritaikytas Anderseno sveikatos priežiūros paslaugų vartojimo modelis (angl. Andersen's Behavioral Model of Health Service Utilization) plačiai naudojamas kitose šalyse atliktuose moksliniuose tyrimuose, analizuojant sveikatos priežiūros paslaugų vartojimą.

Šiame darbe aprašyti rezultatai ir pateikiamos rekomendacijos suteiks pagrindą tolimesniems moksliniams tyrinėjimams ikihospitalinės vaikų sveikatos priežiūros srityje, o sveikatos politikams suteiks žinių apie medicininių paslaugų prieinamumą ir kokybę, pirminės ir skubios vaikų sveikatos priežiūros organizavimą bei padės geriau suprasti tėvų, atvykstančių su vaikais į SP skyrių, poreikius.

Tyrimo tikslas

Nustatyti didėjančio vaikų srauto į priėmimo ir skubiosios pagalbos skyrius priežastis.

Uždaviniai:

1. Įvertinti Lietuvos ligoninių SP skyriuose vaikams suteiktų sveikatos priežiūros paslaugų apimtį ir jų kitimo tendencijas 2001–2013 metais.
2. Nustatyti vaikų vizitų į VULSK Vaikų ligoninės SP skyrių dažnį ir jų charakteristikas.
3. Nustatyti pakartotinių vizitų per 72 val. po pirmojo vizito į Vaikų ligoninės SP skyrių dažnį, vizitų charakteristikas ir prognostinius veiksnius, įvertinti pakartotinių vizitų reikšmę SP skyrių perpildymui.
4. Išsiaiškinti veiksnius, nulėmusius tėvų sprendimą kreiptis į Vaikų ligoninės SP skyrių dėl nesunkių, ambulatoriškai sprendžiamų sveikatos problemų.
5. Palyginti tėvų ir medicinos specialistų požiūrį į vaiko sveikatos būklę ir skubios pagalbos reikalingumą.

Tyrimo medžiaga ir metodai

Ikihospitalinės vaikų sveikatos priežiūros ligoninių SP skyriuose apimčių ir jų tendencijų vertinimui bei problemos aktualumui identifikuoti naudota VLK informacinė sistema apie ASPĮ suteiktas paslaugas vaikams 2001 – 2013 m. laikotarpiu (3 332 998 vaikų apsilankymai SP skyriuose, iš jų 45,3 proc. ambulatoriniai vizitai).

Paslaugų SP skyriuje vartojimo ypatumams nustatyti naudoti VUL SK filialo Vaikų ligoninės informacinės sistemos duomenys apie 45 362 vaikams suteiktas paslaugas 2013 m., iš jų 74,7 proc. sudarė ambulatoriniai vizitai.

Veiknių, lėmusių tėvų sprendimą atvykti į SP skyrių dėl „mažųjų“ sveikatos problemų analizei atlikta 381 paciento įstatyminių atstovų apklausa, naudojant su bioetikos komitetu suderintą anketą bei medicininės dokumentacijos vertinimas. Pacientų įtraukimas į tyrimą vyko 2013-10-01 – 2014-08-31 laikotarpiu. Pritaikę Anderseno paslaugų vartojimo modelį išskyrėme tris pacientų veikiančių veiknių grupes: predisponuojančius, įgalinančius ir poreikio nulemtus veiknius.

Tyrimų rezultatams susisteminti naudota aprašomosios statistikos, tiesinės regresijos, koreliacinės analizės metodai, pritaikytas logistinės regresijos modelis bei faktorinė analizė.

Rezultatai

Remiantis VLK informacinės sistemos duomenimis vaikų ambulatorinių apsilankymų ligoninių SP skyriuose skaičius per 13 metų padidėjo 2,4 karto: nuo 80 042 apsilankymų 2001 m. iki 193 823 apsilankymų 2013 m. Atsižvelgus į tai, kad vaikų skaičius nuo 2001 m. iki 2013 m. sumažėjo, apskaičiuotas vaikų ambulatorinių vizitų dažnis, tenkantis 100-tui vaikų. Nustatyta, kad šių paslaugų vartojimas vaikų tarpe padidėjo 3,8 karto t.y. nuo 9,4 iki 35,6 ($R^2=0,913$, $p\leq 0,05$). Vizitų skaičius 100-tui vaikų be gydytojo ar greitosios medicinos pagalbos (GMP) siuntimo padidėjo 3,1 karto: 2001 m. buvo 8,4, 2013 m. padidėjo iki 26,0. Dauguma vaikų atvyksta dėl skubios (būtiniosios) pagalbos. Ligoninių SP skyrių paslaugų vartojimas 100-tui atitinkamo amžiaus vaikų padidėjo visose amžiaus grupėse, tačiau labiausiai didėja nuo 1 iki 2 m. amžiaus vaikų apsilankymų skaičius.

Tik kas dešimtas vaikas į VULSK Vaikų ligoninės SP skyrių kreipėsi nebūtiniosios pagalbos, vertinant pagal SAM patvirtintas indikacijas. Du trečdalius vizitų sudarė vaikų iki 8 metų vizitai. Dažniau į SP skyrių atvykstama vakarais, savaitgaliais ir švenčių dienomis. Dažniausios vizitų priežastys: traumos, kvėpavimo takų infekcijos ir virškinamojo trakto ligos. Apsilankymų skaičius pagal lytį statistiškai reikšmingai nesiskyrė, išskyrus pacientų, atvykusiųjų dėl traumų grupėje – čia daugiau berniukų nei mergaičių. 5 kartus dažniau hospitalizuojama dėl ligos, nei dėl traumos.

Pakartotiniai (PV) vizitai sudaro nedidelę dalį visų pacientų apsilankymų SP skyriuje struktūroje (2,9 proc.), tačiau jiems skiriama daugiau sveikatos priežiūros resursų. Dažniau PV atvyksta jaunesnio amžiaus vaikai, lyginant su vyresniais, darbo dienomis, nukreipti gydytojų. Virškinamojo trakto ir kvėpavimo takų susirgimai dažniau vyravo PV pacientų grupėje.

Pritaikę Anderseno paslaugų vartojimo modelį nustatėme predisponuojančius, įgalinančius ir poreikio nulemtus veiksnius, kurie turėjo įtakos tėvams priimant sprendimą atvežti vaiką į Vaikų ligoninės SP skyrių dėl ambulatoriniu būdu sprendžiamų „mažųjų“ sveikatos problemų.

Predisponuojantys veiksniai - tai veiksniai, egzistavę iki ligos pasireiškimo, tokie kaip demografinės ir socialinės charakteristikos bei paciento tėvų požiūris ir įsitikinimai apie jų vaiko sveikatą ir sveikatos sistemą. Nustatėme šiuos reikšmingai tėvų apsisprendimą atvykti be siuntimo įtakojusius veiksnius: vaiko amžiaus (reikšmingai dažniau tėvai patys, be siuntimo, atveža 3-7 m. amžiaus vaikus); tėvų išsilavinimas (tėvai, turintys aukštesnę išsilavinimą reikšmingai dažniau vaikus atveža patys, be siuntimo); šeimos pajamos (tėvai, turintys geresnes pajamas dažniau vaikus atveža patys, be siuntimo); atvykimo iki ligoninės SP skyriaus trukmė (daugiau pacientų, atvykusių savarankiškai, gyveno arčiau ligoninės); vaiko sveikatos vertinimas (pilnose šeimose gyvenančių vaikų sveikata vertinama geriau (tėvų vertinimu), jaunesni tėvai, bei tėvai, gaunantys didesnes pajamas reikšmingai dažniau vaiko sveikatą vertino labai gerai, lyginant su tais, kurių pajamos yra mažos); dažnas naudojimasis SP skyriaus paslaugomis (tėvai, atvykę be siuntimo, linkę dažniau naudotis SP skyriaus paslaugomis, taip pat SP skyriuje dažniau lankosi tėvai, kurie vaiko sveikatą vertino vidutiniškai ar blogai).

Disertaciniame darbe išryškėjo paslaugų vartojimą įgalinantys veiksniai, turintys reikšmės tėvų apsisprendimui kreiptis į ligoninės SP skyrių, tai: nepakankamas PASP prieinamumas vaikui ūmiai susirgus (tik mažiau nei trečdalis vaikų prieš atvykstant į ligoninės SP skyrių buvo apžiūrėti apylinkės gydytojo); neinformuoti tėvai (tėvai nepakankamai informuoti kur jų vaikams turi būti teikiamos PASP, kai jų šeimos gydytojas nedirba); tėvų nuomonė apie ligoninės SP skyrių (tėvai mano, kad ligoninės SP skyrius yra geriausia vieta kreiptis vaikui ūmiai susirgus ir neabejojo savo sprendimu atvykti).

Tyrimo rezultatai parodė, kad tiriamųjų grupę labiausiai įtakojo šie poreikio nulemti veiksniai: vaiko sveikatos būklė (tėvai vaikų būklę vertina kaip sunkesnę, lyginant su sveikatos priežiūros specialistais); medicininės pagalbos skubumas (tėvai dažniau mano, kad jų vaikui reikia skubios medicininės pagalbos lyginant su ligoninės SP skyriaus specialistais); paciento diagnozė (tėvai dažniau linkę atvežti vaikus į SP skyrių patys, jeigu jie serga odos ir gleivinių ligomis (bėrimais pasireiškiančios ligos) ir jeigu jie karščiavo, lyginant su kitomis ligomis); operatyvaus ištyrimo galimybės (81,4 proc. vaikų buvo atliktas bent vienas tyrimas), reikalingo gydymo paskyrimas (83,0 proc. vaikų buvo paskirtas bent vienas gydomasis preparatas).

Išvados

1. Lietuvoje vaikų ambulatorinių vizitų ligoninių priėmimo ir skubios pagalbos skyriuose skaičius 2013 m., palyginti su 2001 m., išaugo 2,4 karto, o vizitų skaičius, tenkantis 100 vaikų, padidėjo 3,8 karto – nuo 9,4 iki 35,6. Visų amžiaus grupių vaikų vizitų ligoninių priėmimo ir skubios pagalbos skyriuose daugėja visose Lietuvos apskrityse.
2. Į Vaikų ligoninės Priėmimo ir skubios pagalbos skyrių dauguma pacientų atvyksta dėl būtiniosios pagalbos, be gydytojo siuntimo. Dažniau kreipiasi berniukai ir jaunesni nei 7 metų vaikai. Dažniau atvykstama vakarais, savaitgaliais ir švenčių dienomis dėl traumų, kvėpavimo takų infekcijų ir virškinamojo trakto ligų.
3. Pakartotiniai pacientų vizitai į Vaikų ligoninės Priėmimo ir skubios pagalbos skyrių per 72 val. po išvykimo sudaro 2,9 proc. visų pacientų apsilankymų SP skyriuje. Dažniau pakartotinai atvyksta vaikai iki 7 metų, darbo dienomis, dėl virškinamojo trakto ir kvėpavimo takų ligų. Pakartotiniai vizitai nėra reikšmingi priėmimo ir skubios pagalbos skyrių perpildymui.
4. Dauguma tėvų renkasi ligoninės priėmimo ir skubios pagalbos skyrius dėl sveikatos priežiūros paslaugų, kurios galėtų būti teikiamos pirminės asmens sveikatos priežiūros įstaigoje. Tėvų sprendimą atvykti į priėmimo ir skubios pagalbos skyrius nulėmė socialiniai ir demografiniai veiksniai, tėvų sveikatos raštingumas, paslaugų prieinamumas ir sveikatos priežiūros paslaugų poreikis.
5. Tėvų nuomonė apie vaiko ligą skyrėsi nuo ligoninės priėmimo ir skubios pagalbos skyrių darbuotojų. Tėvai linkę vaikų sveikatos būklę vertinti kaip sunkesnę, palyginti su sveikatos priežiūros specialistais. Remiantis LR SAM patvirtintomis būtiniosios (skubios) pagalbos indikacijomis ir skubumo vertinimo tvarka, negalima tiksliai įvertinti medicininės pagalbos skubumo vaikams.

Praktinės rekomendacijos

1. Lietuvos nacionaliniuose teisės aktuose deklaruojamas ypatingas dėmesys vaikų sveikatos priežiūrai, tačiau vaikų, atvykstančių į ligoninių priėmimo ir skubios pagalbos skyrius skaičius didėja daug intensyviau, palyginti su Vakarų šalimis. Apsilankymų ligoninių priėmimo ir skubios pagalbos skyriuose rodikliai valstybiniu mastu neanalizuojami, todėl šie paslaugų teikimo pokyčiai lieka

- nepastebėti. Kad ši problema būtų geriau suprantama, būtina vykdyti priėmimo ir skubios pagalbos skyriuose vaikams teikiamų ambulatorinių paslaugų vartojimo rodiklių stebėseną bei tęsti mokslinius tyrinėjimus.
2. Priėmimo ir skubios pagalbos skyriuose teikiamų paslaugų vartojimo didėjimas skatina vertinti pirminės sveikatos priežiūros paslaugų organizavimo problemas, ypač teikiant paslaugas vaikams, todėl būtina:
 - 2.1 gerinti PASP prieinamumą vaikams, užtikrinti, kad ūmiai susirgęs vaikas pas savo PASP gydytoją patektų kreipimosi dieną;
 - 2.2 daugiau dėmesio skirti PASP teikimui po darbo valandų ir nedarbo dienomis;
 - 2.3 didžiuosiuose miestuose prie priėmimo ir skubios pagalbos skyrių įsteigti budinčias šeimos ir/ar vaikų ligų gydytojų tarnybas, kurios galėtų spręsti šeimos gydytojo kompetencijai priskirtas vaikų sveikatos problemas ir sumažintų vaikų srautą į priėmimo ir skubios pagalbos skyrius dėl neskubių, specialaus ištyrimo ir gydymo ligininėje nereikalaujančių ligų.
 3. Žemas tėvų sveikatos raštingumas yra predisponuojantis veiksnys dažnesniam SP skyriaus paslaugų vartojimui, ypač dėl vaiko būklės, kai nereikia skubios pagalbos. Siūlome imtis šių priemonių, gerinančių tėvų žinias apie vaiko sveikatą ir sveikatos priežiūrą:
 - 3.1 nuolat informuoti tėvus per PASPI, žiniasklaidą ar kitas informavimo priemones apie dažniausiai pasitaikančius simptomus, ligas ir pirmąją pagalbą namuose vaikui susirgus;
 - 3.2 įsteigti telefoninį ar internetinį patarimų vaiko sveikatos klausimais centrą, kur tėvai galėtų paskambinti ir gauti patarimą, kaip elgtis vaikui nesunkiai susirgus, kokius vaistus galima naudoti ir kada kreiptis profesionalios pagalbos.
 4. LR SAM nustatytos skubios (būtinios) pagalbos indikacijos ir pagalbos teikimo laikas neatitiko klinikiniais požymiais paremtų pirminio paciento būklės vertinimo bei diagnostikos ir gydymo veiksmų pradžios laiko ir nėra tinkamas instrumentas medicininės pagalbos vaikams skubumui įvertinti. Būtina parengti skubios pagalbos ligininių SP skyriuose teikimo tvarką vaikams, paremtą mokslo įrodymais pagrįstais vaikų pagalbos pirmumo ir skubumo nustatymo (*Triage*) metodais ir įdiegti klinikinėje praktikoje.

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Date and place of birth

29 June 1971 in Kaunas.

Education

2011-2015 doctoral studies (PhD) at Vilnius University Faculty of Medicine, Clinic of Children's Diseases.

2002-2005 studies at Kaunas University of Medicine Faculty of Public Health (Health management program), awarded a Master of Public Health.

1996-1998 - residency at Vilnius University Medical Faculty, given the qualifications of a pediatrician.

1989-1996 - Studies at Vilnius University Faculty of Medicine, given a doctor pediatrician qualification.

Work experience

Since 2007 July – present

Vilnius University Children's Hospital (from 2011 May - Children's Hospital affiliate of Vilnius University Hospital Santariskiu klinikos), Deputy director of management.

Since 2011 April – present

Children's Hospital, University Hospital, Paediatric center, paediatrician.

Since 2012 September – present

Vilnius University Faculty of Medicine, teaching assistance.

1998 - 2007

Vilnius Territorial Patient Fund (Health care insurance) as senior specialist, head of Department of health services research.

1998-2000

Sanatorium "Pusyno kelias", paediatrician.

Medical licensure

Doctor paediatrician (Lithuanian licensure)

Fields of interest

Children's health, children's health care management and services research, paediatric emergency medicine, management and treatment of common paediatric infectious diseases, the child's rights protection.

Experience in projects

The leader in project "Improving the quality of the Early diagnosis of cancer incidence and treatment at Vilnius University Children's Hospital", funded by EU funds, 2009-2011

The leader in project "Children's trauma center infrastructure development in Vilnius University Children's Hospital", funded by EU funds 2010-2013.

2010-2012 EU structural funds project „Ambulatory rehabilitation, nursing and supportive care and day surgery services at the Vilnius University Children's Hospital“, the project leader.

2015 Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (GLOBAL-PPS) project, researcher.

Training observerships

St. Georges University Medical Center, Paediatric Department, October, 2012, London, UK.

Vilnius University, Faculty of Medicine, Children's Disease Clinic, January - February, 2011.

Professional memberships

Lithuanian Paediatric Society

European Paediatric Academy

Baltic Immunoprophylaxis Association

Lithuanian Health Care Management Association

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