

Retrospective Typology of Paediatric Emergency Visits in 1 Year in Sakarya, Turkey

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ABSTRACT

Objectives: To determine the characteristics of paediatric emergency department (PED) visits by newborn (age ≤ 28 days).

Methods: Retrospective study consisted of newborns who presented to PED of Sakarya University Maternity and Pediatric Hospital during 2014. We studied the electronic data consisted of admission date, date of birth, emergency department diagnosis at discharge (International Classification of Diseases 10th revision code) and the outcome.

Results: A total of 5708 neonates visited PED with an average age of 7.9 ± 5.9 days of age and prevalence of males (56.1%). The major diagnoses were jaundice, respiratory system problems, excessive crying of infant, and feeding problems of newborn and prematurity. Hospitalization was necessary for 35.9% neonates. There were 2912 neonates were between 0 and 8 days of age. The major diagnoses of this group were jaundice, excessive crying of infant, feeding problems of newborn, upper respiratory infections, and fever of newborn. Most of the neonates were discharged home from the PED (59.3%).

Conclusion: Most PED visits were because of non-serious diseases, mainly insufficient briefing during discharge and limitations of primary care.

Keywords: Early discharge, emergency, hospital, newborn.

INTRODUCTION

In recent years, combination of inpatient bed capacity, increasing fiscal restraints, psychosocial factors and health considerations contributed to short postpartum hospital stays (1). In Turkey, neonatal discharges in uncomplicated vaginal and abdominal deliveries are within 24 and 96 hours, respectively (2–4). Early neonatal discharges are examined in many perspectives (5), and displayed conflicting outputs related to use of emergency departments (EDs) or readmission (5): increased (6, 7), no change (8–11) and decreased (12). Paediatric emergency departments (PED) do not only serve for healthcare of the acutely ill paediatric age group but also are centres that provide vast amount of primary care, parental education and counselling (9). Very little data exist on spectrum and frequency of early neonatal visits to PED in the Turkish medical literature (2).

This retrospective study is designed to make a 1-year documentation of PED admittance of neonates to Sakarya University Maternity and Paediatric Hospital Emergency Department.

MATERIALS AND METHODS

In this retrospective study, we have collected data of neonates (0–28 days of age), who had record between January 1, 2014 and January 1, 2015, from the electronic data bank of Sakarya University Maternity and Pediatric Hospital after ethical approval of the research and receiving permission of the institution. These records consisted of admission date, date of birth, ED diagnosis at discharge (ICD-10 code) and the outcome. Sakarya University Maternity and Paediatric Hospital is one of the three main state/university hospitals of the Sakarya province that has 917 373 population and about 13 267 births in 2013 census.

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Daytime visits are defined as 'admittance between 08:00 and 16:00 hours'. The data were organized in SPSS database and statistical significance was set at 0.05.

RESULTS

In 2014, there were registers of 5767 neonates visiting PED: 5708 were included in the study, and the other cases were excluded due to incomplete data. There were 3201 males (56.1%) and 2507 females (43.9%), representing a male-to-female ratio of 1.3:1. The average age of newborns was 7.9 ± 5.9 days (median 7 days). The most represented months were July (12.1%), December (11.0%) and August (10.2%) (Figure); 48.8% of the visits ($n = 2787$) were between 16:00 and 08:00 hours. Monday ($n = 993$, 17.4%) and Friday ($n = 944$, 16.5%) were the most intense days of the week.

The most frequent diagnosis groups at the PED were neonatal jaundice ($n = 3112$, 54.5%), respiratory system problems ($n = 822$, 14.4%; 308 were upper respiratory infection), excessive crying of infant ($n = 344$, 6.0%), feeding problems of newborn ($n = 192$, 3.4%), and prematurity ($n = 184$, 3.2%) (Table 1).

Hospitalization was necessary for 2050 (35.9%) neonates. The leading diagnoses for hospitalization were jaundice ($n = 1068$), respiratory system problems ($n = 341$), prematurity ($n = 183$), feeding problems of newborn ($n = 170$), and disturbance of temperature regulation of newborn ($n = 116$) (Table 2).

Median duration of hospitalization was 2 days (range 1–75 days). The longest hospitalization periods were due to cleft palate; 10 cases stayed at the hospital for 75 days each. There were 3658 admissions that did not end with hospitalization; seven of them were

referred to another institution. Most of the hospitalized patients were discharged with a decision of 'recovery/cure' ($n = 1935$, 94.4%), 54 (26%) newborns were discharged with improvement, 29 (1.4%) were referred to another institution, 9 (0.4%) were discharged as is, and 6 newborns' (0.3%) legal guardians abstained treatment (Table 3).

Seventeen hospitalized newborns (0.8%) passed on (seven cases were coded D37.7 = neoplasm of uncertain or unknown behaviour: other digestive organs; nine cases were coded R09.0 = cardiomyopathy, unspecified; one case of I42.9 = asphyxia).

Zero-day-old cases

There were 401 zero-day-old newborn admissions. Legislation in force about the social insurance covers the newborn and the mother together. In order to prepare a medical record card for the newborn and/or any medical intervention, the newborn is registered at the PED.

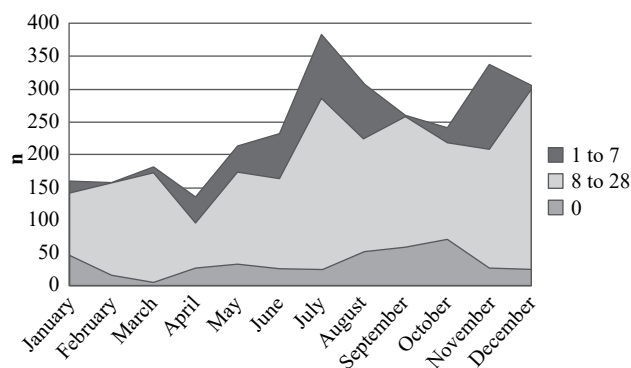


Figure: Distribution of visits to paediatric emergency department by months ($n = 5708$).

Table 1: Decisions at the emergency department and outcomes

	Jaundice	Respiratory system problems	Irritable infant	Feeding problems of newborn	Preterm infant	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	
Hospitalization	1052 (33.8)	331 (40.3)	10 (2.9)	172 (89.1)	172 (93.5)	1728 (37.2)
Care at the emergency department	2042 (65.6)	482 (58.6)	334 (97.1)	21 (10.9)	3 (1.6)	2881 (62.0)
Referral from the emergency department	5 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	5 (0.1)
Referral during hospitalization	8 (0.3)	8 (1.0)	0 (0)	0 (0)	9 (4.9)	25 (0.5)
Exitus after hospitalization	0 (0)	1 (0.1)	0 (0)	0 (0)	0 (0)	1 (0.0)
Abstained treatment	5 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	5 (0.1)
Total	3112 (100.0)	822 (100.0)	344 (100)	193 (100.0)	184 (100.0)	4645 (100.0)

Table 2: Duration of hospitalization according to diagnosis at discharge of paediatric emergency department

	Duration of hospitalization, day				
	n	Mean	SD	Minimum	Maximum
Jaundice	1068	1.5	0.9	1	10
Respiratory system	341	3.7	3.0	1	13
Feeding problems of newborn	170	2.4	2.2	1	9
Preterm infant	183	7.5	5.2	1	22
Other disturbances of temperature regulation of newborn	116	2.7	1.9	1	9
Fever	24	2.5	1.9	1	7
Born outside hospital	21	2.2	0.7	1	3
Cardiovascular System	20	9.7	6.9	1	20
Healthy	18	2.9	1.8	1	7
ENT*	13	58.9	32.5	2	76
Haemorrhage	11	2.0	0.8	1	3
Irritable infant	10	1.3	0.5	1	2
Omphalitis of newborn with or without mild haemorrhage	9	3.8	3.1	1	7
Soft tissue /skin	9	3.5	1.6	1	5
Hypoglycaemia/syndrome of infant of a diabetic mother	8	3.3	1.0	2	4
Reproductive/urinary system	8	1.0	0.0	1	1
Neoplasm of uncertain or unknown behaviour of digestive organs	7	38.0	0.0	38	38
Digestive system	7	1.3	0.5	1	2
Nausea and vomiting	4	1.0	0.0	1	1
Convulsions of newborn	3	2.0	0.0	2	2
Total	2050	3.2	6.3	1	76

Table 3: Emergency department decision and age distribution

Decision at the emergency department	Age at admission, day					Total
	0	1–7	8–14	15–21	22–28	
Hospitalization	376 18.9%	1145 57.8%	294 14.8%	130 6.6%	36 1.8%	1981 100%
Care at the emergency department	10 0.3%	1726 47.1%	1261 34.4%	513 13.9%	158 4.3%	3668 100%
Referral from the emergency department	0 0%	5 83.3%	1 16.7%	0 0%	0 0%	6 100%
Referral after hospitalization	14 46.7%	14 46.7%	2 6.7%	0 0%	0 0%	30 100%
Exitus after hospitalization	1 5.9%	16 94.1%	0 0%	0 0%	0 0%	17 100%
Abstained treatment	0 0%	6 100%	0 0%	0 0%	0 0%	6 100%
Total	401 7.0%	2912 51.0%	1558 27.3%	643 11.3%	194 3.4%	5708 100%

We prefer to present these data separately. There were 258 (64.3%) females. Most frequent admissions were in October (n = 70; 17.5%), on Fridays (n = 87; 21.7%) and between 16:00 and 8:00 hours (n = 232; 57.9%). Most frequent diagnosis was prematurity (n = 146; 36.4%). Only 10 (2.5%) newborns were handled at the PED, and 1 newborn was diagnosed with asphyxia who passed away 3 days after hospitalization (Table 4).

One- to seven-day-old cases

There were 2912 neonates in this age group (female: 1249, 42.9%; male: 1663, 57.1%). The most represented month was July (n = 384; 13.2%). Most of the admissions were made on Mondays (n = 538; 18.5%) and Fridays (n = 445; 15.3%), and during the daytime (n = 1505; 51.7%). Top five diagnoses were jaundice (n = 2056; 70.6%), excessive crying of infant (n = 144; 4.9%), feeding problems of newborn (n = 107; 3.7%),

Table 4: Day zero admission characteristics

	n		%	
	Female	258	64.3	
Gender	Male	143	35.7	
Diagnoses; ICD code	Frequency	Per cent		
Preterm infants > 28 weeks and < 37 weeks; P07.3.1	146	36.41		
Respiratory distress of newborn, respiratory failure, transient tachypnoea of newborn; P22.8, P22.0, P28.5, J96.9; P22.9, P22.1	137	34.16		
Feeding problem of newborn, vomiting in newborn; P92.9, P92.0	17	4.24		
Singleton, born outside hospital, singleton, unspecified as to place of birth, outcome of delivery; Z38.1, Z38.2, Z37.9.2	22	5.49		
Neonatal aspiration of meconium; P24.0	14	3.49		
Physiological jaundice-newborn, neonatal jaundice; P59.9, P59.8	17	4.24		
Cleft palate; Q35.9	10	2.49		
High-risk infant; Z76.2	6	1.50		
Disease of upper respiratory tract; J39.9	5	1.25		
Syndrome of infant of a diabetic mother; P70.1	5	1.25		
Choanal atresia; Q30.0	4	1.00		
Hypoglycaemia; E16.2	3	0.75		
Infected respiratory tract; J98.8	3	0.75		
Neonatal aspiration syndrome; P24.8	3	0.75		
Neonatal hypertension; P29.2	3	0.75		
Pneumothorax; J93.9	2	0.50		
Meconium plug syndrome; P76.0	2	0.50		
Asphyxia; R09.0	1	0.25		
Fever, unknown origin; R50.9	1	0.25		
Total	401	100		

upper respiratory infections (n = 93; 3.2%), and fever of newborn (n = 59; 2.0%).

DISCUSSION

The national law ensures access to ED care in Turkey. Emergency department physicians must examine all people who seek care, regardless of their income status, ethnicity, insurance status or special needs. The policy is that emergency care is patient-demanded, and a patient visiting ED is seriously ill until proven otherwise. Attendance to research and training hospitals' PEDs and state universities' PEDs are free of charge in Turkey, the service is 24 hours/7 days. In Turkish medical literature, the visits to PED by neonates are not documented; therefore, we cannot make any comparisons.

The appraisals of neonatal emergency admissions need to take into account particular conditions like fragility and variability of physiologic characteristics of the neonatal period. Besides, there are issues related to the caretakers like anxiety, overprotection and lack of knowledge about nurture. These are the probable facilitators of PEDs. In our study the dominant number of PED visits in the first 7 days of life (58%) highlights that the motives of presentation are mostly related to intercurrent perinatal problems. Sixty-four percent of

neonates were discharged home from the PED. Top three diagnoses (jaundice, respiratory system problems and irritable infant) accounted for 75% (n = 4645) of our study population and 66.8% (n = 66.8%) of them were not hospitalized. In 2013, Turkey Demographic and Health Survey reported neonatal jaundice frequency as 87%. Although 97% of women is literate in this region of Turkey (13), the inadequate knowledge about neonatal care can be due to poor support and education during pregnancy and post-partum period (14–16), short postpartum hospital stay (3) and shortness of primary health centres. Short postpartum hospital stays require education of parents about the care of the infant, but Diekema *et al* found that 'improved parental education alone may not decrease ED use for conditions that could be managed in a less costly setting' (17). Besides, being 'fearful' changes health related behaviour (18).

In 2005, Turkish Ministry of Health started a new healthcare service delivery named as 'Family Medicine'. In this system, physicians without any specialization (94.5%) and/or specialist of any discipline work as 'contract family physicians' after compliance training that last for 10 days. The number of family medicine specialists in this system is very low, approximately 5%. Every 'family physician' has about 4000 registered

population (19) that serves free of charge for the family. The patient has a freedom to choose care provider, and there is no gatekeeping system or financial penalty system for ED visits. There are 254 family health units in Sakarya responsible of all first-line care of their registered population. The first-line care for newborns and the mothers during puerperal period is under the responsibility of their family doctors and is charged with negative performance on omission. There are studies that report low follow-up rates of confined women and their babies (15, 16, 19). In '2013 Turkish Republic Ministry of Health, Health Statistics Report', maternal and neonatal mean follow-ups during puerperal period were 2.9 and 8.8, respectively (20). On the other hand, EDs and emergency health services are also mainly dependent on general practitioners.

We have shown that many visits were non-urgent and caretakers prefer to seek care from PED rather than primary care physician even during the 'open' hours. Non-urgent visits/overcrowded EDs have negative consequences: longer waiting periods, low patient and personnel satisfaction and higher costs. Yoffe *et al* in their educational intervention study found substantial reduction in non-urgent PED visits (21). Introducing a financial penalty/out-of-pocket expenditure to non-urgent visits and/or gatekeeping system may reduce burden at PEDs, but for this we have to assure parents to have enough knowledge to make this distinction and arrange walk-in visits for these cases. Focusing on parents' health literacy (22–27) and providing enhanced, coordinated, primary care access have significant effectiveness in utilization of the ED (28–31).

Strengths and limitations of the study

To our knowledge, this is the first study to measure non-urgent utilization of PED in Turkey and have 1-year design. The results of this study could be used to improve the quality of newborn care. Retrospective design of the study caused some hardship: data lack caretakers' age, education level and cause of admission. All patients who were discharged home from the PED were accepted non-urgent. The diagnoses coded in ICD 10 and vague diagnoses (acute upper respiratory infection, unspecified; feeding problem of newborn, unspecified; *etc*) were substantial.

CONCLUSION

There is vast amount of non-urgent PED visits that necessitate some measures to be taken by the

authorities. This issue needs more research for supporting decision-making.

Conflict of interest

The authors declare that they have no competing interests.

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