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Number of Siblings, Parental Age, and Return Visit to Pediatrics Emergency Department Security Forces Hospital-Riyadh-Saudi Arabia

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Abstract

Overcrowding in the emergency department (ED) affects the quality of care and impaired decision-making, which results in poor outcomes and increased patient morbidity and mortality. EDs in Saudi Arabia face the problems above, and the literature suggests that nonemergent patients can contribute to significant delays in Eds. This is a one-center, retrospective, cross-sectional study aimed at understanding the factors influencing revisits of children, aged one year and below to the emergency department. The study was conducted in Pediatrics Emergency at the Security Forces Hospital in Riyadh from February 2024 to August 2024. A total of 380 patients were seen in pediatrics Emergency as a revisiting visit. The mean age of the study population was 6.0211 (Std.Deviation 3.43951). In the study group, males comprised 201 (52.9%) patients, and females comprised 179 (47.1%) patients. Age distribution showed patients less than three months old were 88 (23.2%), and 3 to 12 months old were 292 (76.8%). Mothers of age less than 25 years old were 38 (10%) mothers, 25 to 35 years old were 207 (54.5%) mothers and more than 35 years old were 88 (23.2%) mothers. There is missing data regarding the mother's age in 47 (12.4%). Fathers of age less than 25 years old were 9 (2.4%) fathers, 25 to 35 years old were 178 (46.8%) fathers and more than 35 years old were 156 (41.1%) fathers. The father's age was missing in 37 (9.7%). Regarding sibling distribution, results showed zero to one sibling in 220 (57.9%) families, 2 to 5 siblings in 135 (35.5%), and more than five siblings in 25 (6.6%) families. In conclusion, our study showed that small families and younger parents had more frequent return visits to the emergency department despite the statistically insignificant p-value.

Keywords

Revisit, Return Visit, Pediatrics, Emergency, Siblings, Parenteral Age

1. Introduction

Overcrowding in the emergency department (ED) affects the quality of care and impaired decision-making, [1] which results in poor outcomes and increased patient morbidity and mortality. [2]

EDs in Saudi Arabia face the problems above, and the literature suggests that nonemergent patients can contribute to significant delays in EDs. [3] [4]

Returning visits to the emergency department (ED) within 72 hours from discharge after the first visit is a significant problem for many EDs. These unscheduled revisits indicate failure to provide proper assessment, diagnosis, treatment, and patient or parental instructions. [5]-[9]

Revisits contribute to ED overcrowding and thus lead to a delay in treatment, patient dissatisfaction, increased utilization of ED resources, and increased healthcare expenses. [7]

The rapid increase in Emergency Department (ED) visits is a common problem in most countries. [10] In children, the frequency of revisits within the first 24 hours has been reported to be 1.79%, and the reasons for revisits generally relied on shortcomings due to hospital or healthcare providers. [11]

However, the cause and results of the 24-hour revisit are unclear. Return visits within 24 hours of discharge are not a suitable outcome of an ED visit as they may contribute to overcrowding of the ED and are indicators of the quality of care in the ED. [12]

Many studies used different variables and showed various results regarding the causes behind the unscheduled return visits to the ED. Most of these studies only included patients with chronic diseases. [12] Another study included the ED return visit for more than 1 year. [13] Thus, the results are expected to vary between studies. One study in a 193-bed acute trauma centre in Washington found that gastrointestinal problems were the most frequent of all complaints on unscheduled 72-hour return visits. [14] In addition, several studies have shown that abdominal problems or GI-related illnesses were the most common complaints associated with ED revisits. [15] [16] In two separate studies, abdominal pain, fever, and vertigo/dizziness were the most common specific complaints. [15] [17]

Reasons for patient returns to the ED and predictors of future returns for both hospital readmissions and repeated ED visits have been investigated primarily through administrative data, and several factors associated with increased rate of ED return have been identified. These factors include patient descriptors such as older age, lack of family support, nonambulatory status, and arrival to the ED by ambulance. However, it is unclear whether any of these factors are actually in the causal pathway of patient returns and to what extent they represent modifiable risk factors

for intervention. To better understand this causal pathway and build a model of patient-centred care, we must include the patient's perspective. [18]

This study aims to determine our PED's revisit rates among patients of 1 year old or less and evaluate the demographic, number of siblings, age of parents and the validity of revisiting the PED within 72 hours from the first visit.

The reason is to know the urgent revisits that may show if it was related to deficiency of emergency health care or if there are other factors related to parents' age and family members.

2. Methodology

This is a one-center, retrospective, cross-sectional study aimed at understanding the factors influencing revisits of children, aged one year and below, to the emergency department.

The study was conducted in Pediatrics Emergency at the Security Forces Hospital in Riyadh, a leading Hospital for the Ministry of Interior employees and their families, from February to August 2024.

Variables of the study:

-Demographic data of patients and both parents: Age and Gender of the patients and their parents.

-Siblings: Number of siblings for each patient.

-Shift time: Classified into three shifts:

Morning shift from 7:00 AM to 15:00 PM;

Evening shift from 15:00 to 23:00 PM;

Night shift from 23:00 PM to 7:00 AM.

-Revisiting Time: Patients were categorized based on their time of revisiting the emergency department from the first visit:

Within 24 hours from the first visit

Between 24 and 72 hours from the first visit.

-Revisiting Validity: This refers to whether the revisits are related to the complaint of the first visit or not. A revisit is considered valid if it is related to the first visit complaint or related to it. An invalid revisit is a revisit that is not related to the first visit, such as a different complaint, a case of Called No Response (CNR) in one visit, Discharged Against Medical Advice (DAMA) in one visit, a call from home to come back to the emergency department, or a visit for medication or to repeat a laboratory test.

Inclusion criteria:

-All pediatric patients revisit pediatric emergencies within 72 hours from the first visit during the study period.

-patients aged one year or younger.

Exclusion criteria:

-Age older than one year.

-First visit to the Emergency Department.

Data collection and analysis:

Data was meticulously collected from the hospital data-based system during the study period. A P value less than 05 was considered significant. Data analyzed by Statistical Package for the Social Sciences (SPSS) version 23.

3. Result

The study was conducted from February 2024 to August 2024. A total number of 380 patients seen in Paediatric Emergency were revisiting visits.

The total number of patients less than one-year-old who revisited the PED during the study period was 380 patients. The mean age of the study population was 6.0211 (Std.Deviation 3.43951).

Table 1. Demographic data of the study populations.

Variable		Frequency	%
Gender	Male	201	52.9
	Female	179	47.1
Patients age	<3 months old	88	23.2
	3 to 12 years old	292	76.8
Mother age	<25 years old	38	10
	25 to 35 years old	207	54.5
	>35 years old	88	23.2
	Missing Data	47	12.4
Father age	<25 years old	9	2.4
	25 to 35 years old	178	46.8
	>35 years old	156	41.1
	Missing data	37	9.7
Siblings' distribution	0 - 1 sibling	220	57.9
	2 - 5 siblings	135	35.5
	>5 siblings	25	6.6

Table 1: In the study group, males comprised 201 (52.9%) patients, and females comprised 179 (47.1%) patients. Age distribution showed patients less than three months old were 88 (23.2%), and 3 to 12 months old were 292 (76.8%). Regarding the parent's age distribution, the mean mother's age was 31.4428 (St. Deviation 6.46765), and the mean father's age was 36.2965 (St. Deviation 8.76246). Mothers of age less than 25 years old were 38 (10%) mothers, 25 to 35 years old were 207 (54.5%) mothers and more than 35 years old were 88 (23.2%) mothers. There is missing data regarding the mother's age in 47 (12.4%). Fathers of age less than 25 years old were 9 (2.4%) fathers, 25 to 35 years old were 178 (46.8%) fathers and more than 35 years old were 156 (41.1%) fathers. The father's age was missing in

37 (9.7%). Regarding sibling distribution, results showed zero to one sibling in 220 (57.9%) families, 2 to 5 siblings in 135 (35.5%), and more than five siblings in 25 (6.6%) families.

Figure 1 and Table 2: Regarding shift time of revisiting the PED, morning shift (7:00 AM-15:00 PM) was 77 (20.3%) patients, evening shift (15:00 to 23:00 PM) were 140 (36.4%) patients, and night shift (23:00 to 7:00 AM) were 163 (42.9%) patients.

Figure 2: Patients who revisited the PED within the first 24 hours were 212 (55.9%) patients, and Figure 3: Patients within 24 to 72 hours were 168 (44.2%) patients.

Regarding revisiting validity, valid visits to PED were 293 (77.1%) patients, and 87 (22.9%) patients were invalid visits.

In Table 3: A valid revisit to PED within 24 hours was seen in 164 (43.2%) patients and a valid revisit in 24 to 72 hours in 129 (34%) patients; invalid revisiting

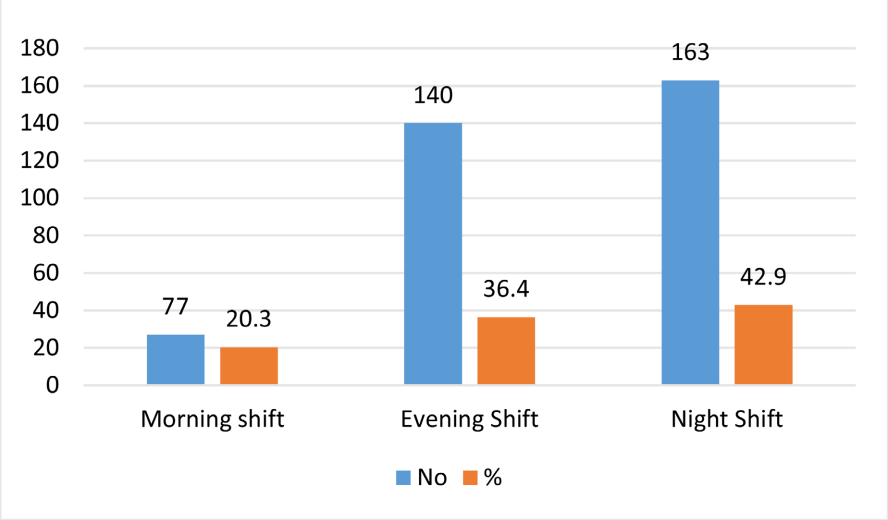

Figure 1. Shift time of revisiting PED.

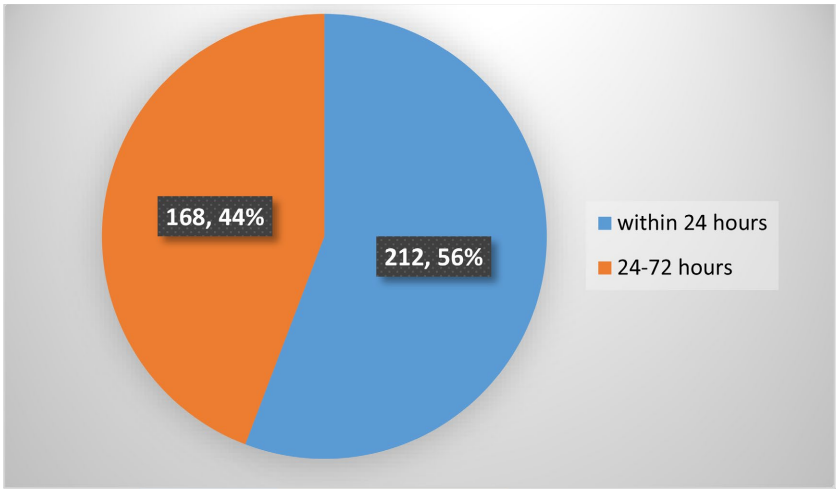

Figure 2. Time of revisiting the PED after discharge form the first visit.

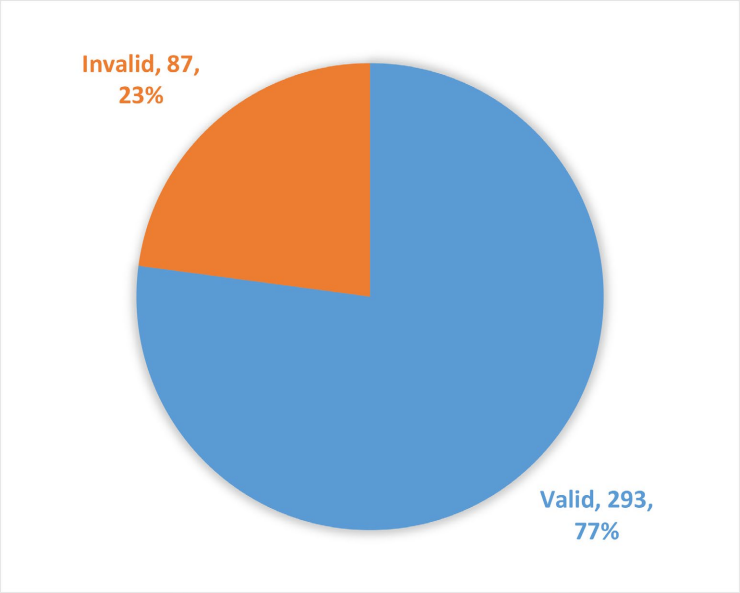

Figure 3. Revisiting PEM validity.

Table 2. Shift time distribution.

Shift time	Frequency	%
Morning shift	77	20.3
Evening shift	140	36.4
Night shift	163	42.9

Table 3. Correlation between time revisiting PEM and revisiting validity, p-value: 0.000.

Time	Valid visit	Invalid visit
Within 24 hours	164 (43.2%)	47 (12.4%)
24 - 72 hours	129 (33.9%)	40 (10.5%)

to PED within 24 hours seen in 47 (12.4%) patients, and invalid revisiting to PED in 24 to 72 hours seen in 49 (10.5%) patients. Significant correlation between re-visit validity and time of revisit, p-value = 0.000, Significant.

In Table 4: Correlation between revisiting PED validity and parents' age showed that 26 (6.8%) mothers were less than 25 years old and had a valid visit to PED,165 (43.4%) mothers were between 25 and 35 years old and had a valid visit to PED, and 68 (17.9%) mother were more than 35 years old with a valid visit to PED, p-value = 0.228, insignificant.

8 (2.1%) fathers were less than 25 years old and had a valid visit to PED, 139 (36.5%) fathers were between 25 to 35 years old and had a valid visit to PED, and 116 (30.5%) fathers were more than 35 years old with a valid visit to PED, p-value = 0.088, Insignificant.

12 (3.2%) mothers were less than 25 years old and had an invalid visit to PED, 42 (11.1%) mothers were between 25 and 35 years old. They had an invalid visit

Table 4. Parents age and revisiting validity distribution.

Father age distributions, p-value: 0.088			
Age	Valid visit	Invalid Visit	Total
<25 years old	8 (2.1%)	1 (0.3%)	9 (2.4%)
25 - 35 years old	139 (36.6%)	39 (10.3%)	178 (46.8%)
>35 years old	116 (30.5%)	40 (10.5%)	156 (41.1%)
Mother age distribution, p-value: 0.228			
<25 years old	26 (6.8%)	12 (3.2%)	38 (10%)
25 - 35 years old	165 (43.4))	42 (11.1%)	217 (54.8%)
>35 years old	67 (17.6%)	20 (5.3%)	87 (22.9)

to PED, and 20 (5.3%) mothers were more than 35 years old with an invalid visit to PED. p-value: 0.228, Insignificant.

One (0.3%) father was less than 25 years old and had an invalid visit to PED, and 39 (10.3%) fathers were between 25 to 35 years old. They had an invalid visit to PED, and 40 (10.5%) fathers were more than 35 years old with an invalid visit to PED. p-value:0.088, Insignificant.

4. Discussion

A total of 380 revisiting patients under one-year-old were included in our study.

The mean age of patients revisiting the PED during the study period was approximately 6.0211 months, consistent with previous studies that report most emergency care is for infants due to their high susceptibility to various health problems. [19]

The gender distribution showed a slight male predominance (52.9%), which was similar to studies in pediatric populations suggesting that boys are more frequently seen in emergency departments for health problems. [20]

The age distribution reveals that 76.8% of patients were between three to twelve months old. This is the age group that usually presents to PEM with complaints such as respiratory infections and gastrointestinal diseases. [21]

In Eksi *et al.*, study 40.5% of the patients revisited were in the 0-2 age range. [22]

In our study, the mean age of mothers (31.44 years) and fathers (36.30 years) was considered productive. Studies showed that maternal age can affect the child's health; younger age groups of mothers are often associated with higher rates of preterm birth and low birth weight, both of which may lead to increased revisits to the emergency department. [23]

The distribution of mothers' ages showed that most (54.5%) were aged between 25 and 35. This age group has been found to balance maturity and stability, resulting in better health-seeking behaviors. [24]

However, we have 12.4% missing data regarding mothers' ages, indicating the

need for improved data collection methods to analyse these data better.

Siblings play an important role in pediatric care, affecting the pediatrician's exposure to diseases, parenteral care to their children, and parental workload. [25]

Our study showed that most families had zero to one sibling. Families with fewer siblings may have more focused parental attention and resources for each child, potentially leading to better supervision of their child and follow-up care [26]. In contrast, families with more siblings might experience increased health risks and stressors, which can contribute to more frequent emergency visits.

Studying the status of the family and the sibling's number is essential as it can help reduce frequent emergency department visits.

Regarding the time of revisiting the emergency department, most of our study population patients revisited the PED within the first 24 hours. El-Ghoroury *et al.*, in their study, suggest a potential lack of effective primary care or follow-up after initial presentations is the leading cause of rapid returns to the emergency department. [27]

Most of our patients visited during the night shift (42.9%). Studies have indicated that pediatric emergencies are frequently worse during night hours due to various factors, including the unavailability of routine care [28] [29]. In our study, it could be related to our patient's parents' work system as emergency visitors are government employees, so they came at night after finishing their duties.

Our data regarding visit validity showed that 77.1% were classified as a valid revisit.

In one study in Saudi Arabia [30], the major reason for revisits was a recurrence of the same complaint or no improvement. At the same time, those who revisited ED for different issues/complaints were about 19%.

Hoffman *et al.* [31], recommended that a good and proper health education system will significantly reduce the frequency of emergency revisits by parents.

In the United Arab Emirates, the most common reason for revisiting the ED within 72 hours was illness related to the first visit illnesses. So, in Dubai, they recommended a systemic outpatient follow-up system for patients seen in the emergency department to reduce the incidence of revisiting the PEM and to improve the outcome. [32]

The insignificant correlation observed between revisiting the PED and parental age raises questions about other social determinants of health, such as education levels, socioeconomic status, and access to healthcare, which could also influence child health outcomes.

In conclusion, our study showed that few siblings were associated with frequent emergency department revisits. Most of our study population's parents were young and had no good experience. The significant association between time revisiting PEM and revisiting Validity.

Limitations of Our Study

It's a one-centre study, and our data does not include parents' education level with

their socioeconomic status. So, more detailed demographic and socioeconomic data are recommended in future studies.

Ethics Approval and Consent to Participate

The Institutional Review Board of Scientific Research granted ethical approval to conduct the study.

Availability of Data and Materials

All data generated or analyzed during this study are included in this article.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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