

Trends and outcomes of admissions in the Paediatrics ward at a tertiary care hospital of urban Karachi

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Abstract

In order to improve the health care system in Pakistan, the first step is to assess which diseases are the most prevalent and to what extent among children and lead to hospital admissions. This would help to improve the facilities and management and thus reduce the duration of hospital stay. This study aimed to determine the spectrum of disease presentation and the outcome and duration of hospital stay of patients presenting to the paediatric ward of a tertiary care hospital.

A cross-sectional, descriptive study was conducted in the paediatric ward of a semi-private hospital PNS SHIFA in Karachi. The duration of the study was six months (March 2019 to August 2019) and the sample size was 431. Non probability convenience sampling was done and p-value \leq 0.05 was taken as significant. Data was analysed through SPSS version 22.

The study showed that gastroenterological diseases were the most common (138 [32%]), and all patients with these problems were discharged after treatment. Out of the 96 (22%) patients presenting with pulmonary diseases all were discharged except 2/96 patients (2%) who died as they had some co-morbidity (congenital heart disease and measles, respectively). One was referred (congenital heart disease). Seventy-five (17.5%) had infectious diseases with good outcome, 2 out of 19 (4.9%) had cardiac related illnesses. One neurological patient died, while the rest of 41 were discharged.

The study concluded that the most common cause of admission in children is gastroenterological, pulmonary and infectious diseases; almost all except a few with co-morbidities were discharged after a short hospital stay.

Keywords: Global burden of disease, Patient admission, Outcome assessment.

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Introduction

Any planning regarding development of health facilities

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has to be based on the health needs of the population.¹ The overall disease burden of children admitted to hospitals in an underdeveloped country like Pakistan is difficult to estimate. A survey for the purpose can help improve and upgrade disease management and health care outcomes and eventually decrease hospital expenditure, especially in this era of economic crisis. A better healthcare policy is needed for resource utilisation and cost-effectiveness. In a developing country like Pakistan, in an era of economic inflation, where the cost of healthcare is paid by the patients themselves, cost assessment and evaluation is vital.²

By evaluating admissions and assess the disease burden, we can try to improve the facilities and management conditions and thus reduce the duration of hospital stay. Better health care services are determinants of reduced hospital stay.³ Improvement in health care services will save precious resources that can be utilised for further improving health care facilities. This is a topic of concern for hospital management and healthcare community.⁴ Better utilisation of hospital resources by early discharges can result in a more efficient health care system; this will reduce costs and eventually improve disease management and overall health care outcomes. The prospects to save money and develop better health care are remarkable.⁵ Childhood mortality can be prevented and minimised by gaining knowledge about disease trends and the age at which the patients commonly presented.⁶ This can be achieved by improving institutional standard operational procedures and adapting universal protocols.

Methodology

This descriptive, cross sectional study was conducted at the paediatrics ward of a semi-private hospital — PNS SHIFA — in Karachi. It is the training hospital for Bahria University Dental and Medical college and IRB was granted by the research cell of the Institute which grants IRB for both the hospital as well as institute as they are affiliated and have a combined research cell. Data was collected during a period of six months (March 2019 to August 2019). Data of all patients was entered at the time of admission to the paediatric ward in a Performa. After exclusion of surgical cases, those admitted in the medical

ward were marked as sample size estimated by OpenEPI¹ and all admissions in the next six months were included with a confidence interval of 90%; hence, the sample size achieved was 431.

Sample Size for Frequency in a Population

Population size (for finite population correction factor or fpc) (N): 1000000

Hypothesized % frequency of outcome factor in the population (p): 50%±4

Confidence limits as % of 100(absolute ± %)(d): 4%

Design effect (for cluster surveys-DEFF): 1

Sample Size(n) for Various Confidence Levels

Confidence Level(%)	Sample Size
95%	600
80%	257
90%	431
97%	736
99%	1036
99.9%	1689
99.99%	2361

Equation

Sample size $n = [DEFF * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p*(1-p)]$

Non-probability convenience sampling technique was used. The purpose was to include all paediatric patients who were admitted during those six months in the paediatric ward through OPD or Emergency.*

Structured Performa was used to collect the data. This included name and age of the patient, mode and time of admission, while other columns such as date and time of discharge, final diagnosis, and outcome were filled at the time of discharge. The outcome included discharge, referral, and death. All children admitted in the paediatrics ward between the age of one month and 12

Table: Diagnosis with duration of stay and outcomes of admission.

Diagnosis Category	n	%	Mean Hospitalisation Days	SD	Outcomes			P value
					Discharged	Referred	Died	
Gastroenterology	138	32.0	4.32	2.59	138	0	0	<0.005
Pulmonology	96	22.3	5.01	3.34	93	2	1	
Infectious disease	75	17.4	4.95	3.33	75	0	0	
Cardiovascular	21	4.9	5.33	2.58	19	0	2	
Haematology	17	3.9	3.71	1.36	17	0	0	
Oncology	5	1.2	7.6	4.16	3	1	1	
Neurology	42	9.7	4.76	3.29	41	1	0	
Surgery	18	4.2	4.33	2.8	18	0	0	
Burns	11	2.6	6.27	5.04	11	0	0	
Medical/Others	8	1.9	5.25	3.33	8	0	0	
Total	431	100.0	4.76	3.1	423	4	4	

years were included. Neonates and children above 12 years of age and surgical cases were excluded. Statistical analysis was done via SPSS version 22 and Data analysis was done through mean, median, mode used for gender percentage. P-value less than 0.05 was considered significant. Ethical approval was taken and the approval code was ERC 02/20.

Results

Data of all patients admitted through the paediatrics OPD and ER of the hospital was collected admitted in the paediatric ward. Out of the total of 541 patients admitted in the six-month duration, 110 were excluded as they were surgical cases. A total of 431 admitted patients were included, of which 194 out of 431 (45%) were males and 237 out of 431 (54%) were females. Mean age of the patients was 3.1±3 years and the mean duration of hospital stay was 4.7±3 days.

Gastroenterological diseases were the most common (32%) out of which all patients were discharged. Mean hospital stay was 4.32±0.59 days (Table). Out of the 96 (22%) patients with pulmonary diseases all except two (2%), who died because of comorbidity (congenital heart disease), were discharged. Mean hospital stay was 5.01±3.34 days (Table). There were 75 (17.4%) cases of infectious diseases including sepsis, measles, meningitis, bacterial infections, and pyrexia of unknown origin (PUO) and all were discharged. The mean duration of stay was 4.95±3.33 days (Table). Two out 19 suffering from congenital cardiac disease were referred. One out of 41 neurological patients, who was suffering from cancer, died, while the rest were discharged.

Diagnosis were grouped into categories by subspecialty as shown in Table.

Discussion

This study was conducted to determine the spectrum of

diseases requiring paediatric admission, hospital stay, and outcome. Knowledge of common illnesses will help us focus our attention on their management and improve the overall health care system.

In this study, gastrointestinal diseases including diarrhoea, dysentery, and enteric fever, were the most frequent cause of admission. It is also the most well-managed illness, which indicates that the admission protocol for gastrointestinal diseases is appropriate. The resources being used appropriately reduces length of stay and, hence, hospital expenditure. Quadri F. conducted a research in a peri-urban low-income area in Karachi and his results were similar to our study results.⁷ These results are comparable with those reported in the Pakistan Demographic and Health Survey (PDHS 2006-2007)⁸ and the Pakistan Living Standard Measurement Survey (PLSMS 2010-2011),⁹ indicating that our study sites are broadly representative of Pakistan as far as diarrhoeal disease burden is concerned.

The second most common (22.5%) cause of admission in paediatrics ward was pulmonary illnesses including acute respiratory tract infections, pneumonia and, asthma. Most of them were admitted according to the admission protocol and all were discharged except those with associated disorders (comorbidity) such as congenital cardiac disorders and measles. Most are usually managed in OPDs and those who have wheezing episodes and fulfil the WHO admission protocol are admitted and nebulised and given short-term and long-term treatments with early discharge and follow up. Patients with pneumonia are also managed according to WHO guidelines. A study done in urban settings of Karachi discovered that childhood pneumonia remains the second highest illness contributing to childhood morbidity and mortality in all ethnic groups in Pakistan.⁸

Infections are the third most common reason for admissions in a paediatric ward. They include sepsis, meningitis, viral infections, measles, bacterial infections, and unknown causes of pyrexia. The outcomes were very good although a few deaths did occur; however, those were mainly due to extreme conditions at the time of admission or comorbidity. The rest of admissions were for common conditions such as cardiovascular, neurological including febrile fits, haematology including blood transfusions for thalassaemia, and other childhood issues such as burns and surgical causes. A study done in Lithuania showed similar results.⁹

Our study shows female predominance with 237 (54%) patients being females whereas previous studies showed male predominance for diseases requiring admission. A

research done by Kam-lun, from Singapore showed consistent excess of male admissions (~ 59%). Gender difference in the occurrence of paediatric diseases has been seen by a number of researchers.¹⁰

Admission is a standard and desired solution to acute illness in some children. Our energies should be directed to making hospital stay as short as possible.

Our research shows the trends of admission and subsequent burden upon the hospital's paediatric care unit highlighting the effectiveness of management and utilisation of hospital resources. This ensures that cost-effective methods are being utilised. In order to reduce the length of stay, certain useful methods have been recommended in literature including clinical pathways and integrated care pathways.

Conclusion

The most common causes of admission in children are related to gastroenterological problems, pulmonary illnesses and infections. With proper management almost all, except a few with co-morbidities, can be treated and discharged.

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Patient Consent: Patient consent was not required because the data was collected via the admission/discharge data and the name was not included and diagnosis and outcomes were kept anonymous.

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