

Current Disease pattern and Out-come of patients in a Medical Unit of a Pediatric Hospital

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Abstract

Background : Epidemiological trends of diseases and causes of mortality is not constant, it is always changing. Analysis of admitted patients gives us information on the burden of diseases in the community as well as cause of mortality.

Objectives : To determine current pattern of admissions and their outcomes in a tertiary care Pediatric hospital.

Material and Methods : A descriptive study was carried out at Dhaka Shishu (Children) Hospital over a period of one year from 1st January to 31st December, 2015. All the admitted patients during the study period were included and data were collected from medical records for analysis of age, residence, mode of admission, referral source, disease profile and outcome. Final diagnosis and mortality were grouped according to involved organ system. Data were analyzed by using SPSS version 17.0.

Results : Total 1424 children with a male and female ratio of 1.5:1 were admitted in one year. Patients younger than 5 years were 73% and 27% were less than one year. Respiratory infection, neurologic, hematology, oncologic conditions were the main diseases. Mortality was 2.6% and it was highest in nonspecific infection group followed by respiratory, hematologic, neurologic, and oncologic diseases. Mean duration of hospital stay was 11.5 days. Most patients 59.1% were admitted through Emergency Department (ED) and came directly to the hospital. Fifty percent of admissions were from Dhaka and neighboring areas and rest were from other cities and rural areas of Bangladesh.

Conclusion : Non-specific infection, respiratory or neurologic diseases are main diseases found in admitted patients and these diseases were the main contributor to death as well. Most of the patients approach directly to this hospital and also through emergency department.

Key Words: Pediatric; Admission; hospital stay, emergency department

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Introduction

An understanding of epidemiological trends of hospital admissions, including mortality pattern is critical for health care planning and appropriate resource allocation.^{1,2} Analysis of Hospital admission gives us information on the burden of diseases in the community. Knowing the important causes of childhood mortality enables planners to design proper priority setting and intervention planning. The diseases which contribute most in pediatric admissions are respiratory tract diseases, infections and gastrointestinal problems. The major cause of death in children less than 5 years of age is also acute respiratory infection and diarrheal diseases³. There is variation in pattern of admissions which partly result from the referral and admission process that is via general practitioner, other hospital or self referral to

tertiary care hospital. The demand on inpatient services is increasing with more children admitted to hospital. Hospital admission rate continues to rise annually worldwide⁴. The increase in hospital admissions reflect more awareness among parents and also being attributed to increase demand from public and primary care team to changing technology^{5,6,7}

There is little information available on the pattern of pediatric admissions and mortality as well as referral mode in our country. Therefore we try to find out important causes of pediatric medical admissions and outcome in relation to diseases. It also identifies catchment area and mode of referral to the hospital.

Materials and Methods

Dhaka Shishu (Children) Hospital is the largest tertiary care pediatric hospital in Bangladesh. It

has 11 medical units including 5 surgical units. These units receive patients from outpatient clinics and Emergency Department (ED). This was a descriptive study; all the patients admitted in pediatric infectious diseases and community pediatric unit from 1st January 2015 to 31st December 2015 were included in this study. These patients come either directly to the hospital or are referred by a general practitioner, local and other hospitals. The medical record of all admissions were reviewed for age, gender, address, mode of admission, referral source, duration of hospital stay, final diagnosis and outcome. Referral to Hospital grouped as general practitioner, other hospitals or self visit to the hospital. Final diagnosis was grouped according to affected organ system e.g. respiratory, neurologic, renal problem. Outcome of patient analyzed as Discharge, Refer, Death and Left Against Medical Advise (LAMA).

Data was analyzed using SPSS version 17.0. Descriptive analysis was done and categorical data was measured for frequencies and percentages.

Results

During the study period of 1 year, a total of 1424 patients were admitted. Out of these, 854(59.9%) were boys and 630 girls (40.1%) with male to female ratio of 1.5:1. Admissions were greatest among infant and children under the age of 5 years. Seventy percent of patients were below 5 years of age and 30% less than 1 year (Table I).

Table I: Gender and age distribution of admitted patients

Sex	Total
Male	854 (59.9%)
Female	630 (40.1%)
Age	1424
< 1 year	427(30%)
1-<5 years	997 (70%)

In the study we noted that 50% of admissions were from Dhaka and neighboring areas. Twenty-five percent were from other cities of Bangladesh. A significant number 27% came from rural areas (Table II).

Table II : Residence of the admitted patients

Dhaka city and surroundings area	712 (50%)
Other cities	328 (23%)
Rural area	384 (27%)

In the study we monitored the mode of admission and referral source. We found that 582(40.9%) patients were admitted through outpatient department (OPD) and 842(59.1%) through emergency department (ED). Similarly looking at referral source 1035(72.7%) patients came by self, 205((14.4%) by other hospitals and 184(12.9%) were referred by General Practitioner. Current pattern of admission is presented in Table III.

Table III : Admission mode and referrals (n=1424)

	Frequency	% age
Admitted through:		
● OPD	582	40.9%
● Emergency dept.	842	59.1%
Referred by:		
● Self	1035	72.7%
● Other Hospital	205	14.4%
● General practitioner	184	12.9%

In infection unit Acute Respiratory Infection (ARI) was highest (25%) and Non specific Infection were (19.6%). On the other hand in the community pediatric unit significant diagnosed cases were Neurological (11.6%), Hematologic (10.3%), Gastrointestinal (5.8%), Cardiovascular (5.4%), Renal (4.7%) and Rheumatic Diseases (2.4%). Among 38 deaths, 13(34.2%) had Non specific Infection, 10(26.3%) had ARI, 6(15.8%) had hematological problems, 5(13.1%) had neurological problems, and 4(10.5%) had oncologic problems (Table-IV).

Table IV : Diagnosis of study patients and mortality rates

	Diagnosis (n=1424) Mortality (n=38)	
	No. (%)	No. (%)
Acute Respiratory Infection (ARI)	356 (25%)	10 (26.3%)
Non specific Infection	280 (19.6%)	13 (34.2%)
Neurological	165 (11.6%)	5 (13.1%)
Hematologic	146 (10.3%)	6 (15.8%)
Oncologic	128 (8.9%)	4 (10.5%)
Gastrointestinal	83 (5.8%)	0 (0%)
Cardiovascular system(CVS)	77(5.4%)	0 (0%)
Renal	68 (4.7%)	0 (0%)
Rheumatic Diseases	34(2.4%)	0 (0%)
Musculoskeletal	28(1.9%)	0 (0%)
Hepatobiliary	22(1.5%)	0 (0%)
Endocrine	16(1.1%)	0 (0%)
Storage disease	16(1.1%)	0 (0%)
Miscellaneous	5(0.35%)	0 (0%)

Regarding duration of Hospital stay the mean was 11.5 days and range was 2.21 days The outcome of study patient were 94.6% discharged, 2.6% Died,1.5%,1.3% Left Against Medical Advice (Table V).

Table V : duration of Hospital stay and Outcome of the patients (n=1424)

	Frequency	Percentage
Discharged	1346	94.6%
Died	38	2.6%
Referred	22	1.5%
Left Against Medical Advice	18	1.3%
Duration of Hospital stay (days):		
● Mean	11.5	
● Range (min – max)	2-21	

Discussion

In the present study there is increased frequency of admissions in younger children and infant that is 70% and 30% respectively. Stewart et al and Browne GJ et al reported that 50% and 58% of admissions are of children less than 2 years of age.^{8,10} In another study showed that 76% of Hospital admissions were less than or equal to 5 years of age.⁹ This figure is comparable to our study.

Male gender dominate the admissions in the study as reported by other studies, it reflects a gender bias in parental health seeking behavior regarding their children or alternatively there may be epidemiological reasons for male susceptibility to infection or other conditions requiring admission.¹¹⁻¹³

The Dhaka Shishu (Children) Hospital receives patients from different cities. In present study we found that half (50%) of the patients were from Dhaka and neighboring areas. A significant number of patients came from other cities (23%) and rural area (27%); most of them were referrals from local hospitals and doctors. According to these figures this Hospital has a wide catchment area.

Most of the patients 59.1% were admitted through Emergency department due to an acute problem or referral from Hospitals or by doctors of distant places. Referral figures were 14.4% from other local hospitals and 12.9% from local treating physicians. Whereas (72.7%) patients were self referrals and came directly to OPD or Emergency department, this result was consistent with other studies.^{1,7} As this is a well-known hospital and largest tertiary care pediatric hospital of our country that could be the reason of direct approach of the patient to this hospital. Referred patients mainly had diagnostic problems, or very sick and needed specific treatment and evaluation at tertiary care hospitals.

In the present study ARI, nonspecific infection, neurological, oncological, and hematological conditions were the commonest diseases. This disease pattern of admissions is comparable to other studies. ARI and nonspecific infection made the largest contribution. A report from Korea indicates pneumonia as the most common disease requiring admission (17%).¹⁴⁻¹⁶ Muluneh D, Shimelis, Menti D in their study found pneumonia as a reason for admission 38.6% of total admission.¹¹ Respiratory disorder usually dominates the admissions and were also a leading cause of mortality¹⁵⁻¹⁶ which is close to our observation.

Neurological and oncological diseases were other dominating illnesses. Neurological disorders include viral and bacterial Central Nervous System (CNS) infections, acute flaccid paralysis and seizure disorder. Being a tertiary care referral hospital and availability of these subspecialties could be the reason for such a high number of patients of this group. Non Specific infections like sepsis were found as a major contributor to admission and mortality in this study. Infections are still the main problem in developing countries. Malnutrition, unhygienic living conditions and lack of awareness of preventive measure are contributing factors. In developing countries infectious cases still remain

important contributors to Hospital admissions in children as shown in studies from Ethiopia and Kenya.^{11,15}

In the present study, 2.6% of admitted patients expired. Leading causes of deaths were infection like sepsis, ARI and CNS infections (e.g., meningitis, encephalitis, etc). A study by Muluneh D, Shimelis D, Benti D showed mortality rate of 14.3% which was contributed by pneumonia, meningitis, sepsis and gastroenteritis.¹¹ Pneumonia, CNS infection, gastroenteritis and sepsis are still leading killer in developing countries especially in young children.^{1, 17}

Conclusion

This study gives an overview of the pattern of Pediatric admissions with mortality rate, catchment area and referral mode. Non-specific infection, respiratory or neurologic diseases are main diseases found in admitted patients and these diseases were the main contributor to death as well. Admissions load and mortality mainly contributed by under five children and most of the patients approach directly to this hospital and also through emergency department.

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