Original Article

Distribution of diseases among Children under 15 years of age Admitted in Dhaka National Medical College Hospital (DNMCH)

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Abstract

Background: Children of under 15 comprises one third of our population and more than half of total deaths occurs in this group which is the major health problem of our country. An understanding of epidemiological trend in hospital admissions including disease pattern, is critical for health care planning, including effective case management strategies, appropriate resource allocation and improving existing services facilities.

Objectives: To evaluate the disease pattern among children for reducing the morbidity and mortality rate and also to identify the demographic profile of the patients attending in the department of paediatric, Dhaka National Medical College Hospital (DNMCH).

Materials and Methods: This was a prospective study. Sample collected of all patients admitted in the department of pediatrics, DNMCH, from 1st Jan 2015 to 30th June 2015 were analyzed.

Result: Total 432 patients (aged 1 day to 12 years) were admitted during this study period; among them Neonate 19.21%, Infant (1month-12 month) 24.30%, preschool age group (1-5 years) 33.56% and children (6 years-12 years age) 22.9%. Among the admitted cases, Acute Respiratory Infection (ARI) 53%, Diarrhoea (33.33%), Bronchial Asthma (4.76%), Enteric fever (2.86%) in infant (1-12 month age group). Enteric fever and Diarrhoea, were found as top two causes of admission in Preschool age (1-5 yrs age group) and Children (6-12 yrs age group). Most frequent five diseases in case of neonates (1-28 days age group) from admission are shown in this study. Among the admitted neonates, Perinatal Asphyxia (30.12%), Neonatal Jaundice (24.09%), Neonatal Sepsis (20.48%), preterm Low Birth Wt. (18.07%), Intra uterine growth retardation (IUGR) 3.6%. Maximum of our patients are found male (51.62%) and 48.38% are female. The maximum patients about 74.54% have come form old part of Dhaka city. Among the admitted patients live in concrete house about 48.61% and 41.67% housing are semi-concrete. The patients family member are (4-5 person) about 52.55%, 45.83% family member are (2-3 person).

Conclusion: Finding of this study helps us to understand Paediatric admission trend and disease pattern of this institution, which are essential for health sector planning, including effective case-management strategies.

Key words: Admission, Dhaka National Medical College Hospital (DNMCH).

Introduction

Bangladesh is a developing country with a population of more than 140 million. Nearly 45% of its population are under age 15 years, of whom 17% is of 0-4 years and 28% 5-14 years of age[1]. Mortality in under five children in low to middle income countries is still very high. Every year more than 10 million children in these countries die before they reach their fifth birthday. Seven in 10 of these deaths are due to acute respiratory infections (mostly pneumonia), diarrhoea, measles, malaria or malnutrition and often a combination of these condition. In Bangladesh, common illness in children under 5 years of age include fever (40.1%), Acute Respiratory infections (20.8%), diarrhoea (7.5%) and malnutrition (45%) and often in combination. Majority of child death occur in our country due to Diarrhoea, pneumonia, malnutrition, Tetanus etc. Infant Mortality Rate to be high at 52/1000 live births and under five mortality Rate at 65/1000 live births per year. Neonatal mortality 37/1000 live birth contributes to over 2/3 of infant deaths, which are a direct consequence of factors such as low birth weight (LBW), preterm delivery, birth asphyxia etc.[2]

Children are the future of Nation. They are most vulnerable

group composed of highest percentage of total very much neglected. In our country there are studies on disease pattern of children which are mainly hospital based or done on selected area of urban and rural area of Bangladesh which reflect the light on the total situation of disease of the children. Morbidity and mortality among children are merely estimated in developing countries, because of the difficulties in obtaining data accurately. Useful information on this regard can easily be obtained from periodic review of morbidity and mortality in medical institutions as it reflects what is occurring in a community.[3] Such understanding of epidemiological trend in hospital admissions is critical for health care planning and appropriate resource allocation.[4] Childhood mortality is a reliable indicator of health care facilities of a country and its development.[5] Moreover, evaluation of characteristics of children who dies in hospitals gives an insight into main medical illness in children and measures to over come those.[6] Therefore, review of such information help to draw attention to the pattern of childhood illness in the community. Considering that children of under 15 years of age comprises one third of our population and more than half of total death occurs in this group, which is the major health problem of our country. Therefore, the purpose of the study was to find out the pattern of diseases among children for reducing the morbidity and mortality rate of the disease and also to find out the socio-economical status and to identify the demographic profile of the patients attending in paediatric department of Dhaka National Medical College Hospital. Dhaka National Medical College Hospital located in Old Dhaka, more dense population area and also serving the population of both old and new Dhaka City. Analysis in this hospital should therefore give better evaluation of patients caring service of these regions.

Materials and Methods

Study type: This was a prospective study.

Setting: Department of Paediatrics, Dhaka National Medical College Hospital, Dhaka (DNMCH)

Period: 1st Jan 2015 to 30th June 2015.

Population: All the admitted Children aged 1 day to 12 years (upper age limit for admission in pediatric ward), in the department of Paediatrics, DNMCH over a period of 6 months.

Sample size: 432.

Data Collection: Data collection was done by using questionnaires through face to face interview to collect the information about the current problem of admitted cases (Aged 1 day to 12 years). Data was collected at the bedside from the patient's attendant of the study of children. The record contained the name, age, sex, weight, residence, housing condition, family member, food habit, socio-economic condition, provisional diagnosis, etc., diagnosis was based on the final assessment by the managing unit. It was based on the presenting clinical features with or without the results of laboratory tests. The collected data were analyzed and tabulated using distribution tables as percentages and suitable diagrams.

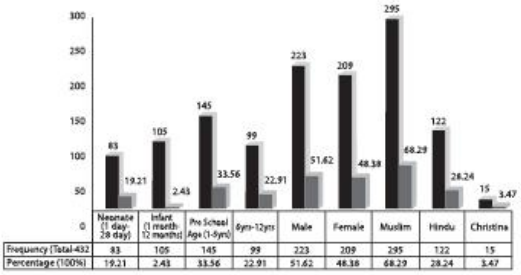
Results

Over a span of six months, there were total 432 patients admission. All the patients were segregated into four age groups. This age wise distributions of patients in admissions and sex were depicted in Table - 1. Among the admitted cases, the maximum patients are from pre school age group (1-5 yrs) have represented 33.56%, Infant (1 month - 12 months) are 24.30%, children from 6 yrs - 12yrs. of age have represented 22.9% and 19.21% are Neonate (1 day - 28 days). Table - 1 also shows that maximum of our patients are found male 51.62% and 48.38% ate female.

Table: 1
Title: Age & Sex Distribution of Patients.

Age	Frequency (Total-432)	Percentage (100%)
Neonate (1day-28days)	83	19.21%
Infant (1month-12months)	105	24.30%
Pre School Age (1-5yrs)	145	33.56%
6yrs-12yrs	99	22.91%
Sex	**Frequency (Total-432)**	**Percentage (100%)**
Male	223	51.62%
Female	209	48.38%

Figure-01
Age, Sex & Religion Distribution of Patients



	Neonate (1 day-28 day)	Infant (1 month-12 months)	Pre School Age (1-5yrs)	6yrs-12yrs	Male	Female	Muslim	Hindu	Christina
Frequency (Total-432	83	105	145	99	223	209	295	122	15
Percentage (100%)	19.21	2.43	33.56	22.91	51.62	48.38	68.29	28.24	3.47

Table 2: Shows the maximum patients about 74.54% have comes from old part of Dhaka City. 15.74% and also 9.72% patients have come from new Dhaka City and outside of Dhaka. This Table -2 also shows that majority of the patients live in concrete house about 48.61%, 41.67% housing are semi concrete and 9.72% are tinshed house. Table -2 also shows that maximum of the patients family member are (4-5) person about 52.55%, 45.83% family member are (2-3) person and 1.62% family member are (6-7) person.

Table: 2
Title: Residence, Housing & Family Member Distribution of Patients.

Residence	**Frequency (Total-432)**	**Percentage (100%)**
Old Dhaka	322	74.54%
New Dhaka	68	15.74%
Outside of Dhaka	42	9.72%
Housing Condition	**Frequency (Total-432)**	**Percentage (100%)**
Concrete	210	48.61%
Semi concrete	180	41.67%
Tinshed	42	9.72%
Family Member	**Frequency (Total-432)**	**Percentage (100%)**
2--3	198	45.83%
4--5	227	52.55%
6--7	7	1.62%

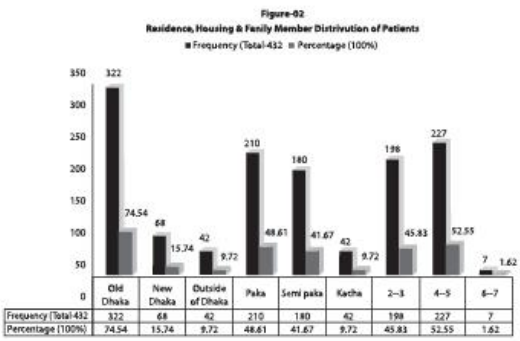


Table: 3-A
Title: Pattern of disease Distribution among the Neonates.

Name of Disease	**Frequency**	**Percentage (%)**
Neonates (1-28days)	**Frequency in Neonates (Total-432**	**Percentage (100%)**
Perinatal Asphyxia	25	30.12%
Neonatal Jaundice	20	24.09%
Neonatal Sepsis	17	20.48%
Preterm Low Birth Wt	15	18.07%
IUGR	3	3.61%
Others	3	3.61%

Table: 3-A-Shows the pattern of disease distribution among he patients. Most frequent five diseases in case of Neonates (1-28 days) from admission are shows in Table: 3-A. Among the admitted cases, Perinatal asphyxia (30.12%), Neonatal jaundice (24.09%), Neonatal sepsis (20.48%) preterm low birth wt. (18.07%), Intruterine growth retardation (IUGR) (3.61%) and also 3.61% are categorized as others.

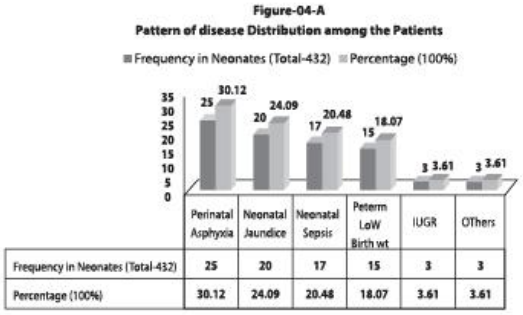


Table: 3-B also shows the pattern of disease distribution among the Infants (1-12 months). Among the admitted cases, Acute Respiratory Infection (ARI) [53%], Diarrhoea (33.33%), Bronchial Asthma (4.76%), UTI (Urinary Tract Infection (3.80%), Enteric fever (2.86%) & others (1.90%).

Table: 3-B

Title: pattern of disease distribution among the Infants (1-2 months).

Infants (1-12 month)	Frequency for Infants (Total-432)	Percentage (100%)
ARI	56	53.00%
Diarrhoea	35	33.33%
Bronchial Asthma	5	4.76%
Enteric Fever	3	2.86%
UTI	4	3.80%
Others	2	1.90%

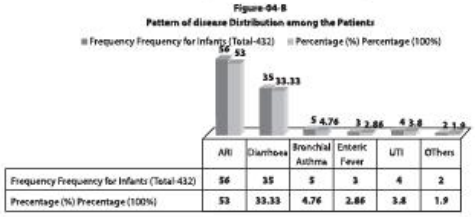


Table: 3-C Shows the pattern of disease distribution among the pre School age (1-5 yrs). Most frequent 8 (eight) diseases from admission are shown in figure: 3-C. Besides these, 6.90% diseases that are categorized as 'Others' Among the admitted cases, Enteric fever 33.79%, Diarrhea 17.24%, Acute Respiratory tract infection (ARI) 16.55%),Viral fever (11.72%) Bronchial Asthma (4.14%), Urinary tract Infection (UTI) 2.81%, Nephrotic Syndrome (2.81%), Viral Hepatitis (4.14%).

Table: 3-C

Title: Pattern of disease Distribution among the Preschool age (1-5 Yrs.)

Preschool age (1-5yrs)	Frequency for Preschool age (Total-432)	Percentage (100%)
Enteric Fever	49	33.79%
Diarrhoea	25	17.24%
ARI	24	16.55%
Viral Fever	17	11.72%
Bronchial Asthma	6	4.14%
UTI	4	2.81%
Nephrotic Syndrome	4	2.81%
Viral hepatitis	6	4.14%
Others	10	6.90%

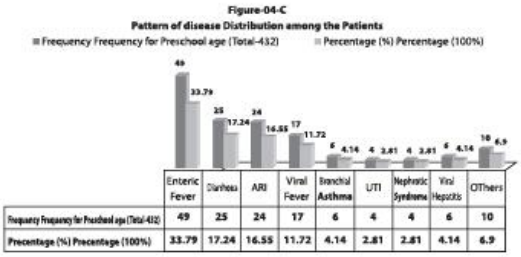
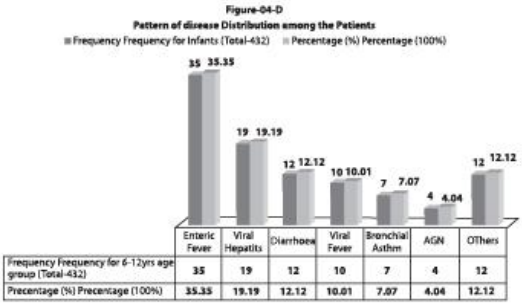


Table: 3-D Shows the pattern of disease distribution among the (6-12yrs) age group. Most frequent 6(six) diseases from admission are shown in figure: 3-D. Among the admitted cases, Enteric fever (35.35%), Viral Hepatitis (19.19%), Diarrhoea (12.12%), Viral fever (10.10%), Bronchial Asthma (7.07%), Acute glomerulonephritis (AGN) 4.04% and besides these, 12.12% diseases are categorized as 'Others'.

Table: 3-D

Title: Pattern of diseases distribution among (6-12 yrs) age group.

6-12yrs age group	Frequency for 6-12yrs age group (Total-432)	Percentage (100%)
Enteric Fever	35	35.35%
Viral Hepatitis	19	19.19%
Diarrhoea	12	12.12%
Viral Fever	10	10.10%
Bronchial Asthma	7	7.07%
AGN	4	4.04%
Others	12	12.12%



Discussion

Over a period of 6 months, total 432 patients were admitted in this hospital In this study, all the patients were segregated into four age groups, the maximum

patients were from pre School age group (1-5yrs) represented 33.56%, Infant (1month-12 months) were 24.30%, Children (6 yrs-12 yrs of age) were 22.9% and also Neonate (1 day- 28 days of age) represented 19.21%. Although, Dhaka National Medical College & Hospital (DNMCH) located in old part of Dhaka, more dense population area but the tendency of lower number of admissions in comparison to other hospital for limitation of hospital beds in paediatric department of this hospital. In this study 77.07% of the total admissions were from the under five age group, as in other study.[7] On admission maximum of our patients were male in this study, similar male preponderance is found other studies done in Nigeria.[3,4] This finding may reflect a gender bias in health seeking behavior regarding their children.[3] Alternatively, there may be epidemiological reasons for male susceptibility to infections or other condition requiring admission.[8]

In Bangladesh, common illness in Children under 5 years of age include Acute Respiratory infection (20.8%), Diarrhea (7.5%), Malnutrition (45%) and often in combination.[2] This study also showed, common diseases like Diarrhoea, Acute Respiratory tract infection (ARI), Enteric fever and Bronchial Asthma, in under 5 age group. Among the admitted cases include infant (1-12 months) and preschool age (1-5yrs), Acute Respiratory Infection (ARI) [53%], Diarrhea (33.33%), Bronchial Asthma (4.76%) Enteric fever (2.86%) in Infant (1-12 months age) and in case of preschool age (1-5yrs) Acute Respiratory Infection (ARI) 16.55%, Diarrhoea (17.24%), Enteric fever (33.79%) and Bronchial Asthma. In this study also showed most frequent six diseases among the children (6-12 yrs age group) were Enteric fever (35.35%), Diarrhoea (12.12%) Bronchial Asthma (7.07%), viral hepatitis (19.19%) Viral fever (10.10%). Acute glomerulonephritis (AGN) 4.04%. Majority of admissions from Respiratory illness, Diarrhoea and Enteric fever are also the common findings in other hospitals of the country. A seasonal variation in some of the diseases with Acute Respiratory Infection (ARI), Bronchial Asthma, Diarrhoea and Enteric fever in this study is consistent with global epidemiological trend.

Acute Respiratory tract infection (ARI) is the major cause of morbidity and mortality in paediatric age group. In Bangladesh, Acute Respiratory tract infection (ARI) alone is responsive for 33.4% of total under five death, 38.8% of total paediatric OPD visit[9]. In this study 86.1% of the total hospital admission in paediatric age group especially under five children was Acute Respiratory tract infection (ARI). The diarrhoeal diseases are a leading cause of childhood morbidity and mortality in the developing countries, and a major cause of undernutrition. In Bangladesh alone Diarrhoea and dysentery kill some 270,000 children; and estimates from various studies suggest that about 2-4 episodes of diarrhoea per child per year occurs in the under five age group. Thus diarrhoeal illnesses put a heavy burden on the meagre health facilities and resources of a poor country like Bangladesh.[10] In this study, 62.69% of total admission was Diarrhoea.

Neonatal mortality 37/1000 live births (BDIHS, 2006) contributes to over $^{2}/_{3rd}$ of the infant deaths, which are a direct consequence of factors such as low birth weight (LBW), preterm delivery, Birth asphyxia etc.[2] Perinatal asphyxia constitutes the major bulk of Neonatal morbidity and mortality in the hospital. Begum et al. Study showed that perinatal Asphyxia was the leading cause of admission (52.09%, 311cases out of total 597 cases).[11,12] In this study, perinatal Asphyxia (30.12%) was admitted in Neonatal ward of this hospital preterm low birth wt (<2.5kg LBW) is common and a major risk factor for poor infant survival and growth in south Asia. Approximately 22% of infant born in northern rural Bangladesh are preterm. Nearly half are born small in multiple dimensions of size for sex-specific gestational age.[12,13] In this study, preterm low birth weight (PLBW) 25% was admitted in neonatal ward of this hospital. Prematurity and Intrauterine growth retardation leading to excessive mortality risk represent major public health concerns for newborns in Bangladesh. Neonatal Jaundice is a common finding in the majority of newborn premature and full term infants. An elevation of serum bilirubine >2mg/dl is found in most newborns in the first several days of life. 65% of newborns are clinically Jaundice (serum bilirubine concentration >5mg/dl). It may cause potential complications if not managed properly. One study showed that total 264 newborn babies were admitted in SCABU, BIRDEM during the 6 months period. Among them Jaundice developed in 190 babies and 133 babies were included that study who had significant Jaundice.[13,14] But in this study shows that significant Neonatal jaundice developed 24.09% of total neonatal admission, multiple aetiology were responsible for most cases.

In this study shows that the tendency of more number of admission with communicable diseases for many risk factors. They include not only the climatic conditions but also the housing, socio-economic and parental education status and also overcrowded dwellings, polluted water sources, inadequate sanitation, poor nutrition, low birth weight, environmental factors which could influence admission patterns[14,15] Therefore, this study includes residence, housing and family member distribution of patients.

Conclusion

Findings of this study helps us to understand paediatric admission trend and disease pattern of this institution, which are essential for health sector planning, including effective case management strategies.

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