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Original Article

Trends and Causes of Emergency Pediatric Admissions in a Tertiary Hospital in Bangladesh

Abu Bakkir Siddique[1*], Afsar Ahammed[2], Saiful Islam[3], Halima Akter Tripty[4], Bikush Chandra Paul[5]

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*Corresponding author

ABSTRACT

Background: Global pediatric emergency admissions are rising, primarily because of respiratory infections, gastroenteritis, and fever in young children, leading to significant healthcare challenges. Comparable trends are observed in Bangladesh, although recent thorough data is scarce. This research seeks to evaluate existing patterns and reasons for pediatric emergency admissions in a tertiary hospital to enhance management and prevention strategies. **Methods & Materials:** This study was a retrospective descriptive analysis conducted in the pediatric emergency department of emergency, Bangladesh Shishu Hospital & Institute, Dhaka, Bangladesh over a span of 18 months (June 2022–November 2023). All 3,860 pediatric patients who were admitted were included. Information regarding admissions, diagnoses, and outcomes was obtained from hospital records bronchiolitisand evaluated with descriptive statistics by using SPSS-25, displayed as frequencies, percentages, and trends. **Results:** A total of 3,860 emergency admissions for pediatric patients were documented over a period of 18 months, showing distinct seasonal spikes during the monsoon and winter. The majority of patients (94.1%) were released, whereas 3.3% were sent to another facility and 2.6% either left against medical advice or died. The primary causes were acute gastroenteritis (20.4%), pneumonia (15.9%), and acute watery diarrhoea (13.5%). Gastrointestinal infections reached their highest levels in the monsoon, respiratory infections during winter, and dengue cases emerged in the post-monsoon period, indicating significant seasonal fluctuations. **Conclusion:** Pediatric emergency admissions primarily resulted from infectious diseases exhibiting distinct seasonal fluctuations. The majority of cases were effectively managed and *released, emphasizing the necessity for enhanced prevention and seasonal readiness to alleviate the burden in Bangladesh*.

Keywords: *Common Causes, Trends of Diseases, Paediatric Emergency Admissions*

1. *Assistant Professor, Department of Emergency, Observation & Referral, Bangladesh Shishu Hospital & Institute, Dhaka, Bangladesh (ORCID: 0009-0007-4077-8588)*
2. *Associate Professor, Department of Endocrinology, Bangladesh Medical University, Dhaka, Bangladesh (ORCID: 0000-0002-1910-0613)*
3. *Registrar, Department of Measles ICU, Bangladesh Shishu Hospital & Institute, Dhaka, Bangladesh (ORCID: 0000-0001-9330-1758)*
4. *Registrar, Emergency, observation and Referral Department, Bangladesh shishu hospital and Institute, Dhaka, Bangladesh (ORCID: 0009-0007-5614-6278)*
5. *Assistant Professor, Department of Pediatric Neurology, IPNA, Institute of Pediatric Neurodisorder & Autism, Bangladesh Medical University, Dhaka, Bangladesh (ORCID: 0009-0007-2936-3269)*

INTRODUCTION

Unscheduled hospital admissions among children have been steadily increasing over recent years in many developed countries, with a substantial proportion of cases presenting through emergency departments [1]. These unplanned admissions place a considerable financial burden on healthcare systems while also contributing to overcrowding and increased demand for limited hospital resources. In addition, hospitalized children are exposed to several risks, including hospital-acquired infections, medication errors, adverse drug reactions, and psychological stress associated with emergency care settings [2,3]. The rising trend in pediatric emergency admissions is multifactorial in origin. Key contributing factors include parental health-seeking behavior, the availability and accessibility of community-based pediatric healthcare services, and variations in hospital admission practices and healthcare system capacity [4]. Among the leading clinical causes, respiratory infections—particularly viral infections such as respiratory syncytial virus (RSV) and influenza—remain the most common reason for pediatric hospital admissions, often requiring oxygen therapy and supportive care [5]. Gastrointestinal infections, especially acute gastroenteritis, also constitute a major proportion of emergency admissions worldwide, frequently leading to dehydration and electrolyte imbalance and contributing to recurrent emergency visits [6,7].

Fever is another common presentation in pediatric emergency departments and is frequently associated with underlying infectious etiologies. It consistently ranks among the top three reasons for emergency visits, alongside respiratory and gastrointestinal conditions [8]. Evidence from high-income settings further demonstrates an increasing trend in pediatric emergency admissions. In Scotland, for example, a substantial rise in pediatric admissions over more than a decade has been observed, largely driven by respiratory and viral infections, including bronchiolitis and tonsillitis [9,10]. Similarly, a decade-long nationwide study in Taiwan reported that children accounted for approximately one-quarter of all emergency department visits, with the highest burden among children under five years of age. The most common diagnoses included acute respiratory infections, fever, and acute gastrointestinal illnesses, indicating a persistent and consistent pattern over time [8].

In the South Asian context, it has been reported that fever and respiratory complaints are among the most common presenting symptoms among pediatric outpatients, while respiratory and gastrointestinal disorders represent the leading clinical diagnoses. A significant proportion of these cases require hospital admission, highlighting the ongoing burden of preventable childhood illnesses in clinical practice [11].

Despite these global and regional observations, there remains a lack of recent and comprehensive data on the patterns and trends of pediatric emergency admissions in Bangladesh. Understanding the local disease burden and seasonal variation of common pediatric emergencies is essential for improving preparedness, optimizing resource allocation, and strengthening preventive strategies. Therefore, this study aims to assess the trends and common

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causes of pediatric emergency admissions in a tertiary care hospital in Bangladesh over an 18-month period.

METHODS & MATERIALS

This was a retrospective, descriptive, hospital-based study conducted in the Paediatric Emergency Department of a tertiary-level hospital in Bangladesh over an 18-month period from June 2022 to November 2023. All paediatric patients admitted through the emergency department during the study period were included in the analysis, yielding a total of 3,860 admissions.

Secondary data were obtained from hospital emergency registers and patient medical records. Information collected included sociodemographic and clinical characteristics, monthly admission counts, primary diagnoses, and patient outcomes (discharge, referral, leave against medical advice, and death). Diagnoses were grouped into major disease categories based on documented clinical records.

Data were compiled and entered into SPSS-25 for analysis. Descriptive statistical methods were applied to summarize the findings. Results were presented in the form of frequencies, percentages, and trends over time using tables and figures to illustrate monthly and seasonal variations in admission patterns and disease distribution.

RESULTS

A total of 3,860 paediatric emergency admissions were recorded over the 18-month study period from June 2022 to November 2023 in a tertiary-level hospital in Bangladesh. Monthly admissions showed clear fluctuation with seasonal peaks, particularly during the monsoon and winter seasons.

Overview of Paediatric Emergency Admissions

The overall admission profile is presented in *Table I*. The average monthly admission was 214.4 cases, with weekly admissions ranging from 10 to 58 cases. Most patients (94.1%) were discharged following treatment. A small proportion required referral (3.3%) and 2.6% resulted in LAMA or death.

Table I

Overview of Paediatric Emergency Admissions and Outcomes (18 months).

Variables	Findings
Study period	June 2022 – November 2023
Total admissions	3,860
Average monthly admissions	214.4
Range of weekly admissions	10 – 58
Peak admission seasons	Monsoon & Winter
Total discharges	3,632 (94.1%)
Referred cases	128 (3.3%)
LAMA / Death	100 (2.6%)

Disease pattern among admissions

Table II shows the distribution of paediatric emergency admissions by diagnosis. The leading cause was acute gastroenteritis (20.4%), followed by pneumonia (15.9%) and acute watery diarrhoea (13.5%). Gastrointestinal infections collectively represented the highest burden. Respiratory infections were also prominent contributors, while dengue fever and enteric fever showed seasonal clustering.

Table II

Common Causes of Paediatric Emergency Admissions

Diagnosis	Number (n)	Percentage (%)
Acute gastroenteritis	787	20.4
Acute watery diarrhoea	521	13.5
Pneumonia	613	15.9
Bronchiolitis	287	7.4
Nutritional anaemia	214	5.5
Dengue fever	263	6.8
Enteric fever	229	5.9
Febrile seizure	183	4.7
Meningitis	109	2.8
Neonatal sepsis	141	3.7
Epilepsy	162	4.2
Hepatitis	94	2.4
Urinary tract infection	177	4.6
Others	80	2.1
Total	3,860	100%

Monthly trend of admissions and outcomes

Monthly admissions showed seasonal fluctuation ranging from 175 to 240 cases (*Table III*). Highest admissions were observed in January 2023 and August 2023 (240 cases each), while the lowest was in June 2022 (175 cases). Seasonal peaks were evident during monsoon and winter periods.

Table III
Monthly Trend of Paediatric Emergency Admissions and Discharges (18 months).

Month	Admissions	Discharged	Referred	LAMA/Death
Jun 2022	175	164	7	4
Jul 2022	190	179	7	4
Aug 2022	225	212	9	4
Sep 2022	210	198	7	5
Oct 2022	195	184	7	4
Nov 2022	205	193	8	4
Dec 2022	235	221	9	5
Jan 2023	240	225	10	5
Feb 2023	220	207	9	4
Mar 2023	205	193	8	4
Apr 2023	200	188	8	4
May 2023	215	202	9	4
Jun 2023	230	216	9	5
Jul 2023	230	216	9	5
Aug 2023	240	224	10	6
Sep 2023	235	220	9	6
Oct 2023	210	197	8	5
Nov 2023	195	183	8	4
Total	3,860	3,632	128	100

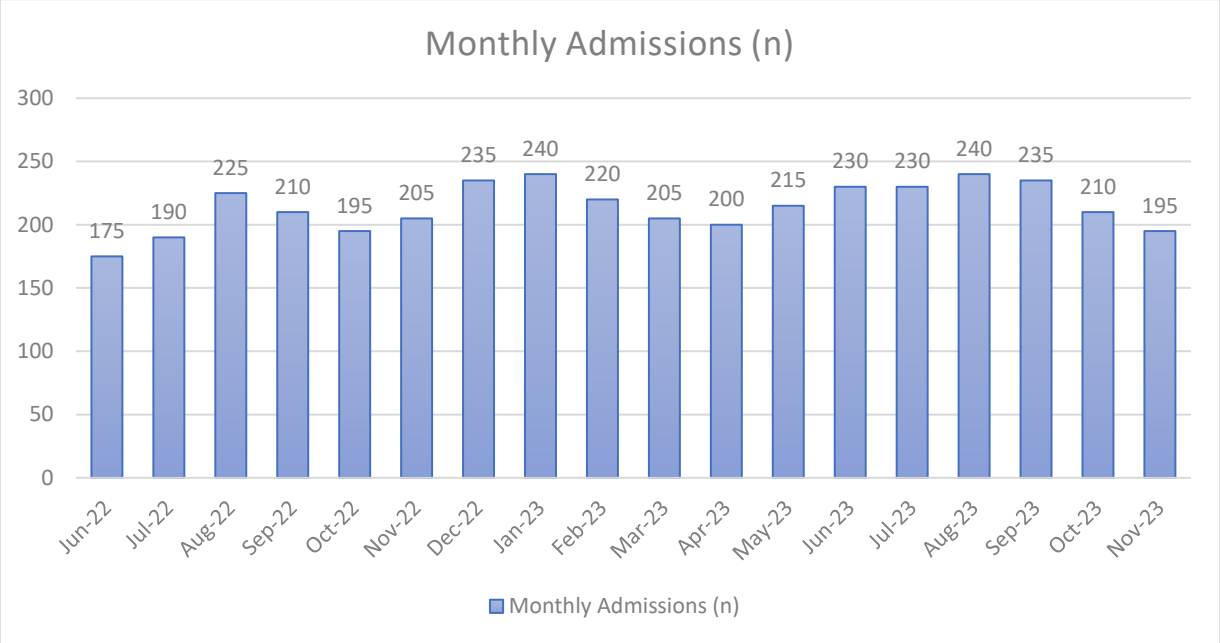


Figure 1 Monthly Admission of Paediatric Emergency Patients (18 months).

Figure 1 illustrates the monthly distribution of paediatric emergency admissions over the 18-month study period (June 2022–November 2023). Admissions showed clear seasonal fluctuation, ranging from 175 to 240 cases per month**.**

Seasonal pattern of major diseases

Table IV demonstrates a clear seasonal variation in the pattern of paediatric emergency diseases over the 18-month study period.

Gastrointestinal infections

Acute gastroenteritis (AGE) and acute watery diarrhoea (AWD) showed consistently high numbers throughout the year, with peak concentrations during the monsoon period (July–September). AGE was highest in August 2023 (n = 60), while AWD also peaked during the same period (August 2023, n = 42). This pattern indicates a strong association with seasonal water contamination and increased transmission of enteric pathogens during rainfall periods.

Respiratory infections

Pneumonia and bronchiolitis demonstrated a distinct winter predominance. Pneumonia cases peaked in January 2023 (n = 60) and remained high during December 2022 (n = 55) and February 2023 (n = 52). Bronchiolitis showed a similar trend, with the highest number observed in January 2023 (n = 28). This reflects increased respiratory infections during colder months, likely due to seasonal viral transmission and environmental factors.

Dengue fever

Dengue cases exhibited a sharp post-monsoon rise, with the highest number recorded in August 2023 (n = 40) followed by September 2023 (n = 30). This pattern is consistent with increased Aedes mosquito breeding following rainfall accumulation.

Enteric fever

Enteric fever showed a relatively steady distribution but with mild peaks during monsoon and early post-monsoon months, particularly in January 2023 (n = 21) and December 2022 (n = 20). This suggests continuous transmission with slight seasonal influence.

Overall pattern

Overall, the table highlights three distinct seasonal trends:

- Monsoon dominance: gastrointestinal infections (AGE, AWD)

- Winter dominance: respiratory infections (pneumonia, bronchiolitis)
- Post-monsoon peak: dengue fever

These findings indicate that paediatric emergency admissions are strongly influenced by seasonal environmental and infectious disease patterns in the study setting.

Table IV
Monthly distribution of major paediatric emergency diseases.

Month	AGE	AWD	Pneumonia	Bronchiolitis	Dengue	Enteric Fever
Jun 2022	38	24	28	15	10	14
Jul 2022	45	30	26	18	18	16
Aug 2022	52	35	30	22	25	18
Sep 2022	48	32	28	20	22	17
Oct 2022	40	28	35	18	12	16
Nov 2022	38	26	40	20	8	18
Dec 2022	42	24	55	25	6	20
Jan 2023	44	26	60	28	5	21
Feb 2023	40	28	52	25	4	18
Mar 2023	42	30	45	22	6	19
Apr 2023	40	32	38	20	10	17
May 2023	42	34	35	18	15	16
Jun 2023	48	36	32	15	18	15
Jul 2023	55	40	28	18	28	16
Aug 2023	60	42	25	22	40	17
Sep 2023	50	38	28	20	30	16
Oct 2023	44	34	32	18	14	15
Nov 2023	39	24	38	23	12	14
Total	787	521	613	287	263	229

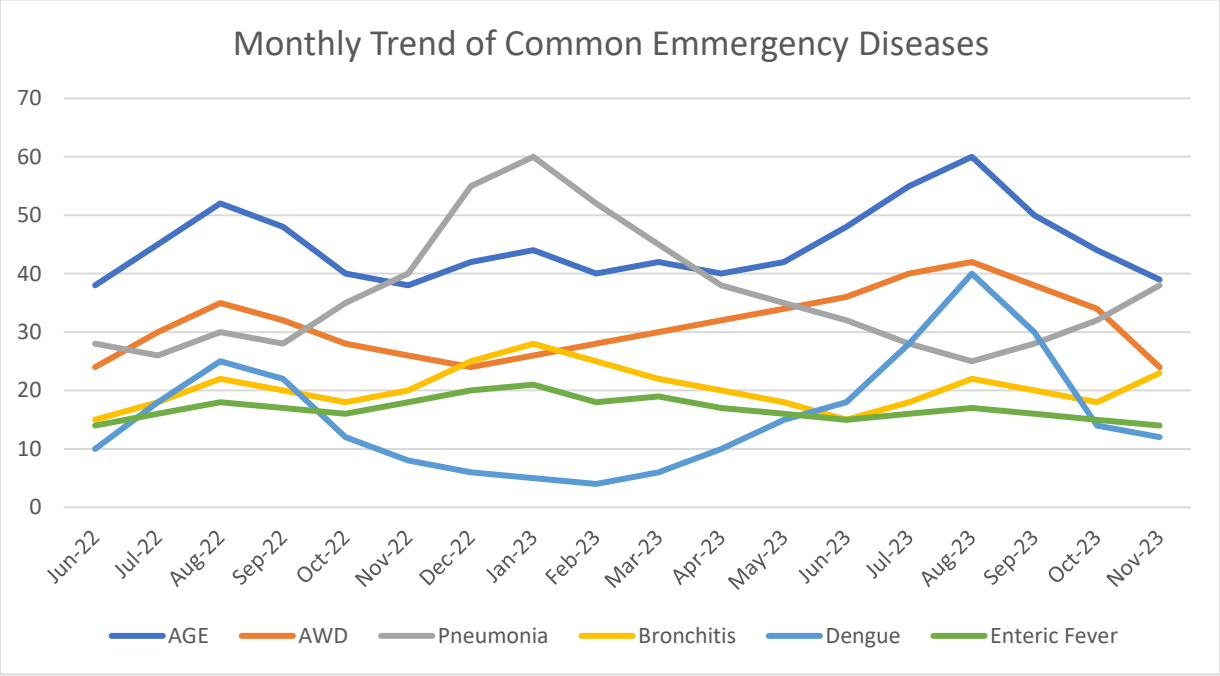


Figure 2 Monthly trend of major paediatric emergency diseases over 18 months (June 2022–November 2023).

Figure 2 demonstrates distinct seasonal variation in paediatric emergency diseases. Gastrointestinal infections (acute gastroenteritis and acute watery diarrhoea) showed consistent peaks during the monsoon months. Respiratory illnesses, particularly pneumonia and bronchiolitis, increased during the winter months, with the highest burden observed in December 2022 and January 2023. Dengue fever exhibited a sharp seasonal surge during August–September 2023, corresponding to post-monsoon transmission dynamics, while other conditions remained relatively stable throughout the study period.

DISCUSSION

The study revealed significant seasonal fluctuations in pediatric emergency admissions, with surges in the monsoon and winter, mirroring earlier studies that noted a rise in infectious and respiratory illnesses during these times. The elevated discharge rate suggests that most situations were handled well with prompt intervention, whereas only a handful of cases needed referral or led to unsatisfactory results [12].

Acute gastroenteritis, pneumonia, and acute watery diarrhoea were identified as the leading causes of paediatric emergency admissions in the current study, highlighting the persistent burden of infectious diseases among children in Bangladesh. Previous studies have similarly reported diarrhoeal diseases, pneumonia, and neonatal infections as major causes of childhood morbidity and hospitalization in Bangladesh. These findings reflect the continuing impact of preventable infectious diseases on paediatric emergency healthcare services in low- and middle-income settings [13].

The study indicated seasonal fluctuations in pediatric emergency admissions, with increases noted in the monsoon and winter, mirroring earlier Bangladeshi studies that documented a rise in respiratory and diarrheal illnesses during these times. The elevated discharge rate suggests that the majority of cases were successfully handled with prompt care [14].

The study demonstrated significant seasonal fluctuations in emergency pediatric illnesses, with respiratory infections peaking in winter and dengue increasing after the monsoon, while gastrointestinal infections were most prevalent during the monsoon. Comparable trends have been observed in Bangladesh, where acute respiratory infections consistently peak during the colder months, even though there is a general long-term decrease [15]. The spread of dengue is significantly affected by variations in rainfall and temperature that encourage mosquito reproduction [16]. These results validate the ongoing influence of seasonal environmental elements on pediatric emergency health trends in Bangladesh.

Overall, pediatric emergency admissions were primarily influenced by avoidable infectious diseases that show distinct seasonal patterns, underscoring the necessity for enhanced preventive measures and prompt healthcare actions in Bangladesh.

CONCLUSION

In this study, pediatric emergency admissions primarily resulted from preventable infectious diseases, exhibiting distinct seasonal patterns—gastrointestinal infections peaked during the monsoon, respiratory infections in winter, and dengue in the post-monsoon season. The majority of cases were handled successfully and released, demonstrating efficient emergency treatment. These results emphasize the necessity for enhanced preventive strategies, prompt diagnosis, and focused seasonal readiness to alleviate the pediatric emergency load in Bangladesh.

REFERENCES

1. Saxena S, Bottle A, Gilbert R, Sharland M. Increasing short-stay unplanned hospital admissions among children in England; Time Trends Analysis' 97–'06. PloS one. 2009 Oct 15;4(10):e7484.
2. Cromwell DA, Mays N. The NHS outcomes framework 2012-3. BMJ. 2012 Feb 17;344.
3. Gill PJ, Goldacre MJ, Mant D, Heneghan C, Thomson A, Seagroatt V, Harnden A. Increase in emergency admissions to hospital for children aged under 15 in England, 1999–2010: national database analysis. Archives of disease in childhood. 2013 May 1;98(5):328-34.
4. Wijlaars LP, Hardelid P, Guttmann A, Gilbert R. Emergency admissions and long-term conditions during transition from paediatric to adult care: a cross-sectional study using Hospital Episode Statistics data. BMJ open. 2018 Jun 1;8(6):e021015.
5. Havdal LB, Nakstad B, Fjærli HO, Ness C, Inchley C. Viral lower respiratory tract infections—strict admission guidelines for young children can safely reduce admissions. European Journal of Pediatrics. 2021 Aug;180(8):2473-83.
6. Supat B, Brennan JJ, Vilke GM, Ishimine P, Hsia RY, Castillo EM. Characterizing pediatric high frequency users of California emergency departments. The American journal of emergency medicine. 2019 Sep 1;37(9):1699-704.
7. Greenfield G, Okoli O, Quezada-Yamamoto H, Blair M, Saxena S, Majeed A, Hayhoe B. Characteristics of frequently attending children in hospital emergency departments: a systematic review. BMJ open. 2021 Oct 1;11(10):e051409.
8. Jeng MJ, Lee YS, Tsao PC, Yang CF, Luo YC, Soong WJ. A 10-year population-based nationwide descriptive analysis of pediatric emergency care. BMC pediatrics. 2014 Apr 10;14(1):100.
9. Wood R, Blair M, Wilson P. Trends in emergency hospital admissions of children: observations from Scotland. Archives of disease in childhood. 2013 Dec 1;98(12):1024-5.
10. Al-Mahtot M, Barwise-Munro R, Wilson P, Turner S. Changing characteristics of hospital admissions but not the children admitted—a whole population study between 2000 and 2013. European journal of pediatrics. 2018 Mar;177(3):381-8.
11. Parveen L, Chowdhury MH, Liza S, Sultana D, Ghosh K. Clinicopathological Profile of Pediatric Outpatients at Bangladesh Shishu Hospital & Institute–A Cross-Sectional Study. The Insight. 2025 Nov 6;8(02):340-4.
12. Vidal K, Sultana S, Patron AP, Salvi I, Shevlyakova M, Foata F, Rahman M, Deeba IM, Brüssow H, Ahmed T, Sakwinska O. Changing epidemiology of acute respiratory infections in under-two children in Dhaka, Bangladesh. Frontiers in Pediatrics. 2022 Jan 10;9:728382.
13. Rahman AE, Hossain AT, Siddique AB, Jabeen S, Chisti MJ, Dockrell DH, Nair H, Jamil K, Campbell H, El Arifeen S. Child mortality in Bangladesh–why, when, where and how? A national survey-based analysis. Journal of global health. 2021 Sep 11;11:04052.
14. Saha S, Hasan M, Kim L, Farrar JL, Hossain B, Islam M, Ahmed AN, Amin MR, Hanif M, Hussain M, El-Arifeen S. Epidemiology and risk factors for pneumonia severity and mortality in Bangladeshi children< 5 years of age before 10-valent pneumococcal conjugate vaccine introduction. BMC public health. 2016 Dec 7;16(1):1233.
15. Hossain MS, Tasnim S, Chowdhury MA, Chowdhury FI, Hossain D, Rahman MM. Under-five children's acute respiratory infection dropped significantly in Bangladesh: An évidence from Bangladesh demographic and health survey, 1996–2018. Acta Paediatrica. 2022 Oct;111(10):1981-94.
16. Sharmin S, Glass K, Viennet E, Harley D. Interaction of mean temperature and daily fluctuation influences dengue incidence in Dhaka, Bangladesh. PLoS neglected tropical diseases. 2015 Jul 10;9(7):e0003901.