e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2022; 14(12); 1436-1442

Original Research Article

Assessment of Pattern and Outcome of Pediatric Admissions in a Tertiary Care Center

Poonam Sinha[1], Nimisha Rani[2], Prabhat Kumar[3]

[1]Associate Professor, Department of Pediatrics, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India

[2]Assistant Professor, Department of Pediatrics, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India

[3]Associate Professor, Department of Pediatrics, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India

Received: 13-10-2022 / Revised: 17-11-2022 / Accepted: 21-12-2022

Corresponding Author: Dr. Nimisha Rani

Conflict of interest: Nil

Abstract:

Introduction: Admissions in pediatric patients reveal the burden of disease and health status of children. Understanding admission trends and outcomes assists in enhancing the quality of pediatric health services.

Objectives: To analyze the trend and outcome of pediatric admissions in a tertiary care hospital.

Methodology: An observational retrospective study was conducted in the Department of Pediatrics, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India. One thousand two hundred pediatric patients' admissions were analyzed with respect to demographic details, disease trend, seasonal trend, duration of hospital stay, and outcome of treatment using SPSS version 25.0.

Results: The admission rate of children between the ages of 1-5 years was the highest (37.5%) among which male patients exceeded female patients (57.5%). Admission rate due to respiratory disorders accounted for 30%. Admissions due to gastrointestinal and infectious disorders ranked second with an admission rate of 26%. The highest percentage of admissions occurred during the monsoon season (35%). More than 40% of the patients stayed in the hospital for 4-7 days where 90.4% of the patient's showed recovery after discharge.

Conclusion: The common reasons for admitting pediatric patients were respiratory disorders and communicable diseases especially among children below five years of age.

Keywords: Pediatric admissions, Respiratory diseases, Hospital outcomes, Morbidity pattern, Tertiary care hospital, Pediatric mortality.

Introduction

Hospitalization of children serves as an important determinant of the health status of children in a specific population [1]. A wide range of diseases can occur among children due to their weak immune system and diverse environmental exposure [2]. The issue of pediatric admission continues to be a serious problem in the underdeveloped nations of the world like India despite the availability of improved health services in India [3]. Children's hospitalization differs according to age, sex, season, socio-economic status, and access to health services [4]. Information about the disease burden and results of pediatric hospitalization is critical in planning healthcare services at a tertiary care hospital [5]. The study of trends in hospitalization helps in identifying causes of pediatric hospitalization, vulnerable groups, and factors contributing to adverse outcomes [6]. Therefore, this research study was undertaken to examine the trends and results of pediatric hospitalization in a tertiary care hospital [7].

Background of the Study: The morbidity and mortality rates in pediatric populations remain significant public health issues for developing countries as a result of unavailability of health centers, poor sanitation, malnutrition, and high prevalence rate of contagious diseases [9,10]. The trends in pediatric admission cases in the hospital can help provide important information concerning existing diseases in the community, seasonality, utilization of health facilities, and effectiveness of pediatric health care facilities. The major causes of pediatric admissions are respiratory infections, gastroenteritis, infectious diseases, and malnutrition in children below five years of age [11]. Various factors may influence the effectiveness of pediatric admissions which include severity of illness, early diagnoses, availability of tertiary health facilities, and effective health care provision [12]. Thus,

analysis of the trend and outcome of pediatric admissions in tertiary hospitals will provide information about risk factors for diseases.

Pattern and Clinical Outcome of Pediatric Admissions: The pattern of pediatric admissions is defined as the occurrence of illnesses and other health disorders that necessitate hospitalization among the pediatric population at a given healthcare institution [13]. The pattern of admissions considers various factors like demographics, including age and sex; seasonality; reasons for admission; and time spent in the hospital [14]. Information on the patterns of pediatric admissions is critical in recognizing prevalent illnesses among children and determining the necessary healthcare services [15]. The clinical outcome of pediatric admissions is the final condition of admitted children following the delivery of medical care and could involve the discharge, transfer, prolonged hospitalization, against medical advice, or even death of the patient [16].

Research Objectives

The objectives of the study are:

- To assess the demographic profile of pediatric patients admitted to a tertiary care hospital with respect to age and gender distribution.
- To evaluate the pattern of diseases responsible for pediatric admissions and identify the most common causes of hospitalization among children.
- To analyze the seasonal variation and duration of hospital stay among pediatric admissions during the one-year study period.
- To determine the clinical outcomes of pediatric admissions, including recovery, referral, mortality, and their association with different disease categories.

Methodology: The current study was carried out in order to examine the nature and results of pediatric admissions in the tertiary care hospital. In the course of this research, the demographics, illness category, length of hospitalization, and therapeutic outcomes of the admitting children were studied. The methodological approach was aimed at collecting and analyzing information on hospitalized patients during a period of one year.

Study Design: This research was carried out as an institutional study of the retrospective type. The data used for the research were obtained from the medical records of hospitalized children within the study period. The purpose of the study was to evaluate the pattern of pediatric illnesses and their outcomes.

Study Area: This research was conducted at Department of Pediatrics, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India.

Study Duration: The study was conducted over a period of one year.

Study Participants

Inclusion Criteria

- The participants involved in this study comprised those ranging from age one month up to 14 years, who were admitted into the pediatric ward.
- Those having their complete medical information, such as demographics, diagnosis, treatment received, and outcome, were used in the study.
- Both male and female pediatric patients admitted for medical conditions were considered for analysis.

Exclusion Criteria

- Infants admitted into the neonatal intensive care unit were excluded from the study.
- Patients who were discharged against medical advice were excluded from the study.
- Files lacking complete data regarding their clinical conditions were not included in the analysis.

Sample Size: A total of 1,200 pediatric admission records fulfilling the inclusion criteria were included in the study. The sample size was determined based on the total number of eligible admissions recorded during the one-year study period.

Procedure: Following necessary authorization from the hospital management, medical records of patients admitted in pediatrics were analyzed from the hospital records section. Information related to patient's age, sex, place of residence, main reason for hospital admission, length of stay in hospital, seasonality of the disease, and outcome was gathered using a pre-prepared form of data collection sheet.

Diseases were classified on the basis of their involvement in body systems, which include respiratory infections, digestive problems, infectious diseases, nervous disorders, blood diseases, and others. Results of hospital admission were noted as discharged due to recovery, referred, left without consent of doctor, or dead.

All data obtained was checked for accuracy prior to entering in the data sheet.

Statistical Analysis: Microsoft Excel and Statistical Package for Social Sciences (SPSS), version 25.0, were used to conduct data collection and analysis. Data analysis involved descriptive statistics including frequency and percentage

distributions, means, and standard deviation. Categorical variables were shown on charts and tables. Statistical significance was determined by Chi-square tests for associations between demographic and clinical variables, and P-values of less than 0.05 were considered statistically significant.

Results

In this study, a total of 1,200 pediatric cases admitted to the department of pediatrics in Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India. Were evaluated. It was noted that there were differences in the admission patterns according to variables like age, gender, disease, seasonal variation, duration of hospital stay, and clinical outcome.

Table 1: Distribution of Pediatric Admissions According to Age Group and Gender

Variables	Frequency (n=1200)	Percentage (%)
Age Group		
1 month – 1 year	320	26.7%
1 – 5 years	450	37.5%
6 – 10 years	270	22.5%
11 – 14 years	160	13.3%
Gender		
Male	690	57.5%
Female	510	42.5%

As illustrated in the table above, the largest proportion of patients seen at the clinic during the period under study were within the age range of 1 to 5 years (450 individuals representing 37.5%), while infants between the age range of 1 month and 1 year constituted 320 people accounting for 26.7% of all the admissions at the facility. Those within the age group of 11 to 14 years represented the lowest percentage with 13.3%.

Table 2: Distribution of Pediatric Admissions According to Disease Categories

Disease Category	Frequency	Percentage (%)
Respiratory diseases	360	30.0%
Gastrointestinal diseases	240	20.0%
Infectious diseases	210	17.5%
Neurological disorders	110	9.2%
Hematological disorders	90	7.5%
Nutritional deficiencies	80	6.7%
Renal diseases	55	4.6%
Miscellaneous conditions	55	4.6%
Total	**1200**	**100%**

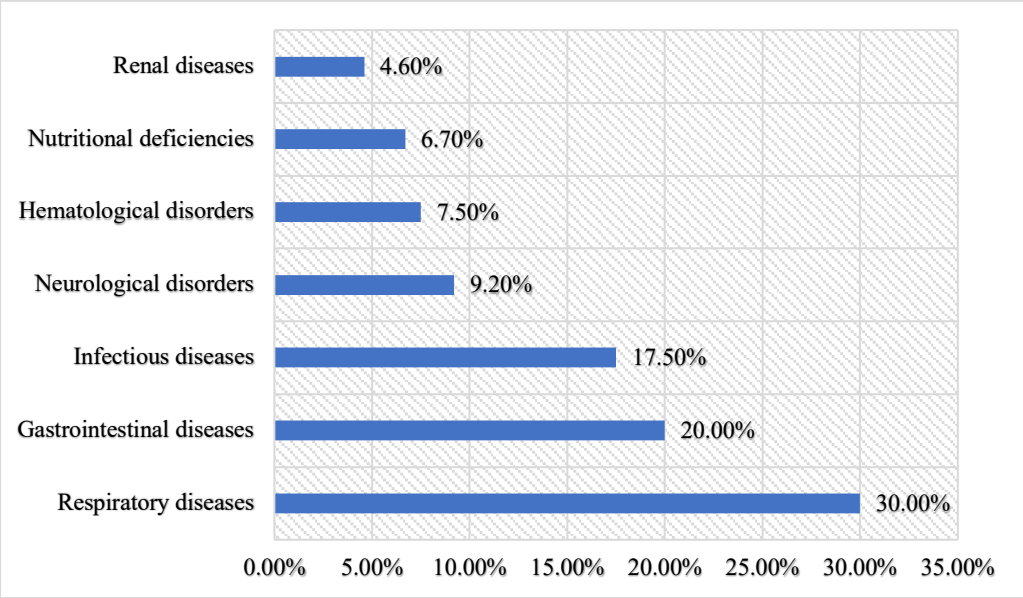

Figure 1: Visual Representation of Distribution of Pediatric Admissions According to Disease Categories

As shown in Table 2, respiratory conditions contributed to the most admissions and accounted for 360 admissions (30.0%) among pediatric patients. Gastrointestinal diseases were the second highest contributing factor, contributing to 240 admissions (20.0%), whereas infectious diseases were the third highest contributing factor, representing 210 admissions (17.5%). Neurological diseases were the fourth highest contributing factor and represented 9.2% of all admissions, while hematological diseases were the fifth highest contributing factor, contributing to 7.5% of all admissions.

Table 3: Seasonal Distribution of Pediatric Admissions

Season	Frequency	Percentage (%)
Summer	290	24.2%
Monsoon	420	35.0%
Winter	360	30.0%
Spring	130	10.8%
Total	**1200**	**100%**

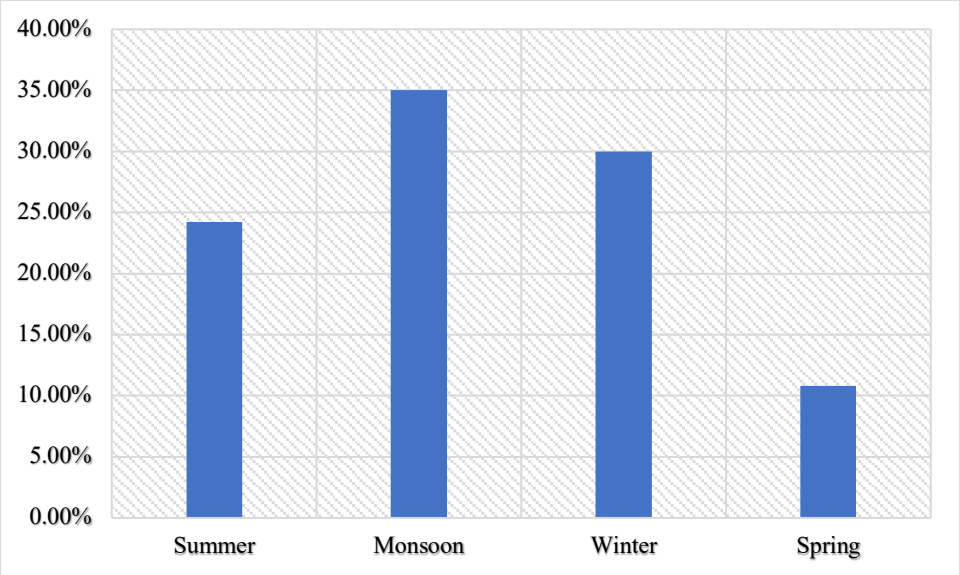

Figure 2: Visual Representation of Seasonal Distribution of Pediatric Admissions

Table 3 below indicates that the highest admission rate occurred during the monsoon season, with a total of 420 cases, which is equivalent to 35%. The second-highest admission rate occurred during the winter season, with a total of 360 cases, which is 30% of all admissions. However, the lowest admission rate occurred during the spring season, with only 130 cases, accounting for 10.8% of all admissions.

Table 4: Duration of Hospital Stay Among Pediatric Patients

Duration of Stay	Frequency	Percentage (%)
1–3 days	420	35.0%
4–7 days	560	46.7%
More than 7 days	220	18.3%
Total	**1200**	**100%**

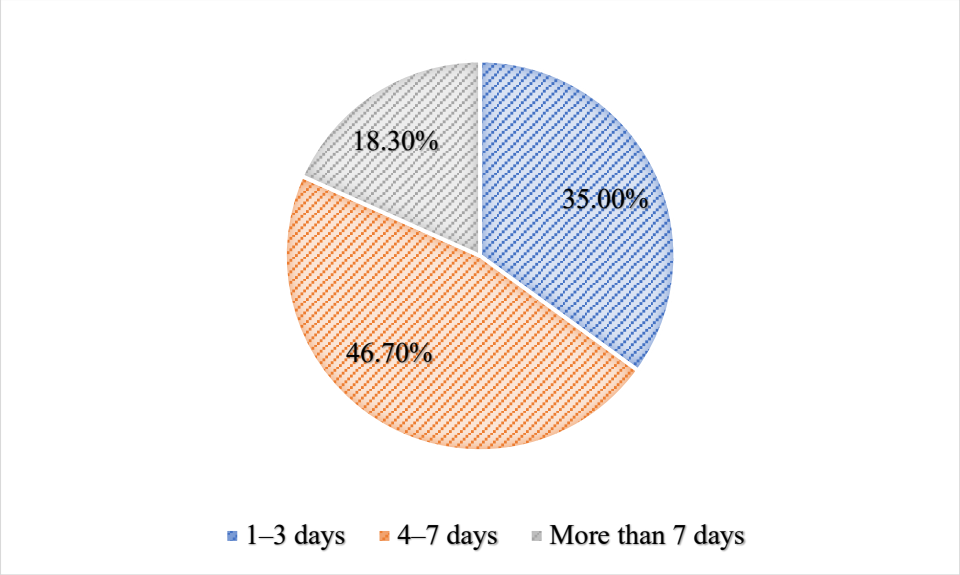

Figure 3: Visual Representation of Duration of Hospital Stay Among Pediatric Patients

The results shown in Table 4 revealed that the number of patients who spent 4 to 7 days in hospital was 560 (46.7%). It was followed by the number of those who were in hospital for 1 to 3 days (420; 35.0%), and lastly, the number of those who spent more than 7 days in hospital was 220 (18.3%).

Table 5: Outcome of Pediatric Admissions

Outcome	Frequency	Percentage (%)
Discharged after recovery	1085	90.4%
Referred to higher center	48	4.0%
Left against medical advice	37	3.1%
Death	30	2.5%
Total	**1200**	**100%**

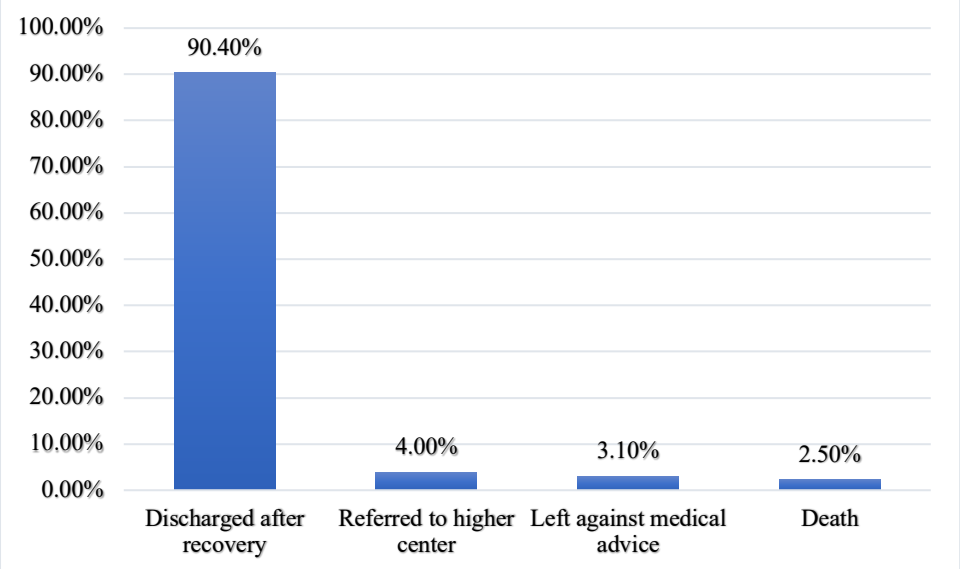

Figure 4: Visual Representation of Outcome of Pediatric Admissions

Based on Table 5, greater than 50% of all children who were sick were able to recover and discharged at the end of the study; 1,085 subjects (90.4%) had this experience. It should be stated that only 48 children (4.0%) required referral to another facility, while only 37 children (3.1%) left against medical advice. Mortality rate was recorded to be 30 individuals (2.5%).

Table 6: Association Between Disease Category and Treatment Outcome

Disease Category	Recovered n (%)	Referred n (%)	Death n (%)	p-value
Respiratory diseases	335 (93.1)	12 (3.3)	13 (3.6)	0.021
Gastrointestinal diseases	225 (93.7)	8 (3.3)	7 (2.9)	
Infectious diseases	180 (85.7)	15 (7.1)	15 (7.1)	
Neurological disorders	90 (81.8)	10 (9.1)	10 (9.1)	
Hematological disorders	78 (86.7)	3 (3.3)	9 (10.0)	

The results of Table 6 indicated a significant relationship between disease category and treatment outcome (P=0.021). Diseases of the respiratory system had the greatest number of recoveries at 335 (93.1%) while diseases of the nervous system and blood-related diseases accounted for a relatively greater mortality rate of 9.1% and 10%, respectively. Infection was also associated with a high death rate with 15 fatalities (7.1%).

Discussion

In the present research, the pattern and result of pediatric admission were analyzed in a tertiary care hospital within a year. According to the results of this research, it was found that the highest number of admitted children belongs to the age range from 1 to 5 years (37.5%) while male children comprised 57.5% of admitted cases. The same trend was reported in the study of GI Ugwu who carried out a prospective study on pediatric admissions in Nigeria. At the same time, the study conducted by BF Chukwu et al. (2013) [17] also revealed an increased number of admissions among male children in the University of Nigeria Teaching Hospital. This trend can be explained by low immunity, increased vulnerability to diseases, and poor nutrition of children younger than five years.

As for the causes of pediatric admissions, in the present study, respiratory disorders prevailed (30.0%) while other frequent reasons included gastrointestinal and infectious diseases (20.0% and 17.5%, correspondingly). Such trends of pediatric admissions correlated with those reported in a study conducted by BI Abhulimhen-Iyoha (2014) [18] in India where respiratory diseases accounted for the largest proportion of admissions. In addition, in the study of C Duru et al. (2013) [19], infectious and respiratory diseases were responsible for the largest proportion of pediatric emergency admissions. It should be noted that, according to the results of the present study, admissions also increased during the monsoon (35.0%) and winter seasons (30.0%), as they correlate with the prevalence of respiratory and communicable diseases.

As for the results of admission and treatment in the present study, 90.4% of admitted children recovered successfully while mortality rate reached only 2.5%. At the same time, neurological and hematological disorders were accompanied by higher mortality rate that reached 9.1% and 10.0%, respectively. As OD Osifo (2010) [20] reported, delay in seeking medical assistance and severity of illness are key factors that influence negative outcomes in hospitalized children. Moreover, a statistically significant association between disease category and treatment outcome (p=0.021) emphasizes the significance of appropriate diagnostics and treatment of children in order to reduce morbidity and mortality rates among them.

Conclusion

From the current study, it was found that the children below five years were admitted to the tertiary hospital more often than the older children, and the boys were more likely to be admitted compared to girls. The respiratory diseases were found to be the most common reasons for admissions followed by gastrointestinal and infectious diseases, suggesting that there is still a prevalence of communicable diseases among the children. In terms of seasonality, admissions were more prevalent during the monsoon and winter months, whereas most children stayed in the hospital for 4 to 7 days. The vast majority of children recovered and were discharged from the hospital, suggesting that the treatment and care provided in the hospital was adequate; however, there were cases where neurological and hematological diseases resulted in mortality.

References

1. Mato, C. N., Onwuchekwa, A. C., & Aggo, A. T. (2009). Pattern of admissions to the University of Port Harcourt Teaching Hospital intensive care unit–a 10-year analysis. Southern African Journal of Critical Care, 25(1).
2. Ezeonu, C. T., Uneke, C. J., Ojukwu, J. O., Anyanwu, O. U., Okike, C. O., Ezeanosike, O. B., & Agumadu, H. U. (2015). The pattern of pediatric respiratory illnesses admitted in ebonyi state university teaching hospital South-East Nigeria. Annals of medical and health sciences research, 5(1), 65.
3. Meehan, E., Freed, G. L., Reid, S. M., Williams, K., Sewell, J. R., Rawicki, B., & Reddihough, D. S. (2015). Tertiary paediatric hospital admissions in children and young people with cerebral palsy. Child: care, health and development, 41(6), 928-937.

4. Aijaz, N., Huda, N., & Kausar, S. (2012). Disease burden of NICU, at a tertiary care hospital, Karachi. Journal of the Dow University of Health Sciences (JDUHS), 6(1), 32-35.
5. Ramesha, K. N., Rao, K. B., & Kumar, G. S. (2009). Pattern and outcome of acute poisoning cases in a tertiary care hospital in Karnataka, India. Indian journal of critical care medicine: peer-reviewed, official publication of Indian Society of Critical Care Medicine, 13(3), 152.
6. Rashid, U., Qureshi, A. U., Hyder, S. N., & Sadiq, M. (2016). Pattern of congenital heart disease in a developing country tertiary care center: Factors associated with delayed diagnosis. Annals of pediatric cardiology, 9(3), 210-215.
7. Bharti, N., Batra, Y. K., & Kaur, H. (2009). Paediatric perioperative cardiac arrest and its mortality: database of a 60-month period from a tertiary care paediatric centre. European Journal of Anaesthesiology| EJA, 26(6), 490-495.
8. Okocha, E. C., Aneke, J. C., Ulasi, T. O., Ezeudu, C. E., Umeh, E. O., Ebubedike, U. R., ... & Ugwu, J. O. (2015). Pattern of childhood and adolescent malignancies at a tertiary health institution in South-east Nigeria: A ten year study. Nigerian Journal of Paediatrics, 42(2), 111-115.
9. Sandoval, J. A., Sheehan, M. P., Stonerock, C. E., Shafique, S., Rescorla, F. J., & Dalsing, M. C. (2008). Incidence, risk factors, and treatment patterns for deep venous thrombosis in hospitalized children: an increasing population at risk. Journal of vascular surgery, 47(4), 837-843.
10. Humayoun, M. A., Waseem, T., Jawa, A. A., Hashmi, M. S., & Akram, J. (2010). Multiple dengue serotypes and high frequency of dengue hemorrhagic fever at two tertiary care hospitals in Lahore during the 2008 dengue virus outbreak in Punjab, Pakistan. International Journal of Infectious Diseases, 14, e54-e59.
11. Remesh, A., Salim, S., Gayathri, A. M., Nair, U., & Retnavally, K. G. (2013). Antibiotics prescribing pattern in the in-patient departments of a tertiary care hospital. Archives of pharmacy practice, 4(2-2013), 71-76.
12. Ganesamoni, S., Kate, V., & Sadasivan, J. (2010). Epidemiology of hospitalized burn patients in a tertiary care hospital in South India. Burns, 36(3), 422-429.
13. Ganesh, R., Janakiraman, L., Vasanthi, T., & Sathiyasekeran, M. (2010). Profile of typhoid fever in children from a tertiary care hospital in Chennai-South India. The Indian Journal of Pediatrics, 77(10), 1089-1092.
14. Cusini, A., Rampini, S. K., Bansal, V., Leder-gerber, B., Kuster, S. P., Ruef, C., & Weber, R. (2010). Different patterns of inappropriate antimicrobial use in surgical and medical units at a tertiary care hospital in Switzerland: a prevalence survey. PloS one, 5(11), e14011.
15. Al-Mahdi, H. S., Bener, A., & Hashim, S. P. (2011). Clinical pattern of pediatric ocular trauma in fast developing country. International emergency nursing, 19(4), 186-191.
16. Setty, B. A., O'Brien, S. H., & Kerlin, B. A. (2012). Pediatric venous thromboembolism in the United States: a tertiary care complication of chronic diseases. Pediatric blood & cancer, 59(2), 258-264.
17. Chukwu, B. F., Chinawa, J. M., Ikefuna, A. N., & Emodi, I. J. (2013). Pattern and outcome of paediatric medical admissions at the University of Nigeria Teaching Hospital (UNTH), Ituku-Ozalla, Enugu: A five year retrospective review (2007–2011). Nigerian Journal of Paediatrics, 40(4), 354-359.
18. Abhulimhen-Iyoha, B. I., Pooboni, S. K., & Vuppali, N. K. K. (2014). Morbidity pattern and outcome of patients admitted into a pediatric intensive care unit in India. Indian journal of clinical medicine, 5, IJCM-S13902.
19. Duru, C., Peterside, O., & Akinbami, F. (2013). Pattern and outcome of admissions as seen in the paediatric emergency ward of the Niger Delta University Teaching Hospital Bayelsa State, Nigeria. Nigerian Journal of Paediatrics, 40(3), 232-237.
20. Osifo, O. D., & Aduwa, I. P. (2010). Pattern and outcome of pediatric surgical admissions to a Nigerian Tertiary Hospital. Annals of Pediatric Surgery, 6(3-4), 161-166.