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Original Research Article

A Retrospective Study of Clinical Presentation, Hospital Course, and Prognosis of Bronchiolitis in Children Below Two Years of Age

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Abstract:

Background: Bronchiolitis is a leading cause of lower respiratory tract infection and hospitalization in children under two years, especially in developing regions, with variable clinical presentation and outcomes.

Aim: To evaluate the clinical presentation, hospital course, and prognosis of bronchiolitis in children below two years of age.

Methodology: A retrospective observational study was conducted over eight months at Department of Pediatrics, Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India. including 74 children aged 0–24 months. Data were collected from medical records and analyzed using standard statistical methods.

Results: The mean age was 7.2 ± 4.8 months, with 51.4% ≤6 months and a male predominance (56.8%). Most cases occurred in winter (54.1%). Common symptoms were cough (81.1%) and breathlessness (78.4%). RSV positivity was 40.5%. ICU admission was required in 13.5%, and 12.2% needed ventilation. Oxygen therapy (64.9%) and bronchodilators (93.2%) were widely used. Complications were infrequent, with no mortality. No significant association was found between RSV status or age and ICU admission or hospital stay.

Conclusion: Bronchiolitis predominantly affects younger infants with favorable outcomes under supportive care, and RSV status does not significantly influence severity or prognosis.

Keywords: Bronchiolitis, infants, RSV, clinical presentation, hospital course, prognosis, retrospective study.

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Introduction

Bronchiolitis is a general clinical term that is used to describe a continuum of lower respiratory tract infections that impact the bronchioles and is most common in infants and young children. It is one of the gravest causes of respiratory morbidity during the early childhood phase and it continues to be in the limelight of hospitalization among children under the age of two years [1]. In developing nations, especially, the burden of bronchiolitis is significant and needs to be coupled with the adverse environmental, socioeconomic and access to healthcare conditions, which only aggravate the severity and consequences of the disease.

Bronchiolitis is normally characterized in the clinical setting by the presence of upper respiratory tract symptoms (rhinorrhea, poor feeding, irritability, and low-grade fever). This stage is succeeded by the stage of lower respiratory tract involvement which is marked by inflammation and blockage of small airways. When the disease progresses, the patients might have the symptoms of wheezing, crackles (rales), dyspnea, cough, and, in extreme cases, cyanosis. The pathophysiological mechanism entails the airway edema, increased mucus secretions, and cellular debris that causes airflow restriction, air trapping, and poor gas exchange [2].

In spite of this classical manifestation, bronchiolitis has significant heterogeneity of clinical manifestations. In some of the high-risk groups, like premature infants, infants under three months of age, or children with underlying conditions such as bronchopulmonary dysplasia, the manifestation may be

uncharacteristic. Indicatively, in these susceptible groups, apnea might be the only symptom presentation which is usually not preceded by the usual symptoms of respiratory origin [3]. This inconsistency presents a problem of diagnostic difficulty and highlights the importance of close clinical evaluation, particularly in resource-deprived environments.

Another issue in the treatment of bronchiolitis is the difficulty in the distinction between it and other diseases with similar clinical presentation. Similar respiratory symptoms may be seen with diseases like viral induced asthma, pneumonia, pertussis, congenital heart disease, congenital pulmonary deformities, foreign body aspiration, and vascular ring defects [4]. Proper differentiation is very important because the management approaches and prognostic changes vary greatly between these conditions. Inappropriate treatment given as a result of misdiagnosis can have a negative impact.

Bronchiolitis is most commonly caused etiologically by respiratory syncytial virus (RSV) which is the most prevalent pathogen across the globe. There are other viral agents such as rhinovirus, parainfluenza virus, adenovirus and human metapneumovirus that cause diseases [5]. Even though bacterial co-infections are possible, this is relatively uncommon and, in most cases, not a primary cause. The overwhelming etiology of viruses has significant management implications because they restrict the use of antibiotics, and supportive care is the foundation of the treatment.

There are several host and environmental factors that impact clinical progression and prognosis of bronchiolitis. Additional comorbid factors like prematurity, low birth weight, malnutrition, congenital heart disease, and chronic lung disease are related to high severity of the disease and a long hospital stay [6]. Also, things like vaccination, delivery method, indoor and outdoor air pollution, and socioeconomic status could contribute to the process of disease development and results. These factors are vital in risk stratification and effective patient management [7] in understanding them.

The high population density, low quality of healthcare services, and exposure to environmental risk factors such as biomass fuel and seasonal fluctuations have increased the burden of bronchiolitis in the Indian scenario and especially in areas such as Muzaffarpur, Bihar. In spite of high prevalence, region-specific information on the clinical profile, hospital course, and outcomes of bronchiolitis among children under the age of two years is relatively scarce. A majority of the existing literature is based on developed nations, and the results might not be directly applicable to the local population as a result of variation in demographic, environmental and healthcare aspects [8].

The retrospective analysis of the cases of bronchiolitis is a great source of information about the real-life clinical trends, practices of managing the disease, and outcomes. Through the analysis of the data based on the hospitals, the prevalent presenting features, the duration and complications of hospitalization, and the prognostic sensitivity could be identified. This type of information is essential to the creation of evidence-based clinical guidelines that are specific to the local population as well as facilitating the provision of healthcare.

This is why the investigation of the clinical manifestation, hospital progression and the prognosis of bronchiolitis among children under two years of age in Muzaffarpur, Bihar is of primary significance. The study will give a detailed conceptualization of the disease profile of infants who are admitted to Sri Krishna Medical College and Hospital. This study will help to fill the knowledge gaps in the current state of knowledge and assist in enhancing the accuracy of diagnosis and therapeutic decisions.

In the end, understanding bronchiolitis within the context will help clinicians identify high-risk patients early, optimize resource consumption, and support patients. It will also add to the overall research on pediatric respiratory issues as context-specific strategies can be developed to decrease morbidity and enhance prognosis in the susceptible group.

Methodology

Study Design: This study was conducted using a retrospective observational design to assess the clinical presentation, hospital course, and prognosis of bronchiolitis in children below two years of age. The study relied on previously recorded patient data, allowing for evaluation of disease patterns and outcomes without direct patient interaction.

Study Area: The study was carried out in the Department of Pediatrics at Sri Krishna Medical College and Hospital, Muzaffarpur, Bihar, India

Study Duration: The study was conducted over a period of eight months from April 2025 to November 2025.

Sample Size: A total of 74 patients were included in the study. The sample size consisted of all eligible cases of bronchiolitis in children below two years of age who met the inclusion criteria during the defined study period.

Study Population: The study population comprised infants and young children aged less than two years who were admitted to the pediatric department with a clinical diagnosis of bronchiolitis. These patients represented varying degrees of disease severity and clinical manifestations.

Data Collection: Data were collected retrospectively from hospital records, including patient case sheets, admission registers, and discharge

summaries. Relevant information such as demographic details, clinical symptoms, physical examination findings, laboratory and radiological investigations (where available), treatment interventions, duration of hospitalization, complications, and final outcomes were extracted systematically using a structured data collection proforma to ensure consistency and accuracy.

Inclusion Criteria

- Children aged 0–24 months
- Diagnosed clinically with bronchiolitis
- Admitted to the pediatric department during the study period
- Complete and accessible medical records

Exclusion Criteria

- Children older than two years
- Patients with incomplete or missing medical records
- Children with pre-existing chronic respiratory diseases (e.g., asthma, cystic fibrosis)
- Congenital heart disease or significant comorbid conditions that could influence disease course

Study Procedure: Eligible patient records were identified through hospital databases and admission logs using the diagnosis of bronchiolitis. The case files were retrieved and reviewed in detail, and relevant clinical and outcome data were extracted and recorded in a predefined format. Patients were then categorized based on clinical presentation, severity, treatment received, and outcomes to facilitate analysis of disease progression and prognosis.

Statistical Analysis: Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) software. Categorical variables were summarized as frequencies and percentages, while continuous variables were expressed as mean with standard deviation for normally distributed data and median with interquartile range for non-normally distributed data. The Chi-square test was used to assess associations between categorical variables. For comparison of continuous variables between two groups, the unpaired t-test was applied, while one-way analysis of variance (ANOVA) was used for comparisons involving more than two groups. A p-value of less than 0.05 was considered statistically significant."

Result

Table 1 presents the demographic and clinical characteristics of 74 patients. The mean age was 7.2 ± 4.8 months, with a slight male predominance (42, 56.8%) compared to females (32, 43.2%). More than half of the patients were ≤6 months old (38, 51.4%), followed by 7–12 months (22, 29.7%) and 13–24 months (14, 18.9%). Seasonal distribution showed that most cases presented during winter (40, 54.1%), followed by autumn (18, 24.3%), spring (10, 13.5%), and summer (6, 8.1%). This indicates that younger infants and colder seasons had a higher representation in the study population.

Table 1: Demographic and Clinical Presentation of the Study Sample (N = 74)

Variable	Category	Count	Percentage (%)
Age (months)	Mean ± SD	7.2 ± 4.8	—
Gender	Male	42	56.80%
	Female	32	43.20%
Age Group	≤6 months	38	51.40%
	7–12 months	22	29.70%
	13–24 months	14	18.90%
Season of Presentation	Winter	40	54.10%
	Autumn	18	24.30%
	Spring	10	13.50%
	Summer	6	8.10%

Table 2 presents the clinical symptoms at presentation among 74 patients. Cough was the most common symptom, present in 60 patients (81.1%), followed closely by shortness of breath in 58 (78.4%). Fever was noted in 45 patients (60.8%), while wheezing was observed in 30 (40.5%). Poor feeding occurred in 28 patients (37.8%), and grunting was the least common symptom, seen in only 6 patients (8.1%). Overall, respiratory symptoms predominated, with cough and breathing difficulty being the most frequent presenting features.

Table 2: Clinical Symptoms at Presentation (N = 74)				
Symptom	**Present (n)**	**Percentage (%)**	**Absent (n)**	**Percentage (%)**
Cough	60	81.10%	14	18.90%
Shortness of breath	58	78.40%	16	21.60%
Fever	45	60.80%	29	39.20%
Wheezing	30	40.50%	44	59.50%
Poor feeding	28	37.80%	46	62.20%
Grunting	6	8.10%	68	91.90%

Table 3 shows the RSV testing status among 74 patients. RSV testing was positive in 30 patients (40.5%) and negative in 32 patients (43.2%), while 12 patients (16.2%) were not tested. This indicates that a slightly higher proportion tested negative than positive, with a notable fraction of patients not undergoing RSV testing.

Table 3: RSV Testing Status (N = 74)		
RSV Testing	**Count**	**Percentage (%)**
Done, Positive	30	40.50%
Done, Negative	32	43.20%
Not Done	12	16.20%

Table 4 outlines the management and hospital course of 74 patients. All patients (100%) were admitted to the ward, while 10 (13.5%) required ICU admission and 64 (86.5%) did not. Ventilator support was needed in 9 patients (12.2%). Oxygen therapy was administered to 48 patients (64.9%), and the majority received IV fluids (68, 91.9%). Bronchodilators were widely used in 69 patients (93.2%), and hypertonic saline was given to 58 (78.4%). Antibiotics were prescribed in 52 cases (70.3%). Overall, most patients required supportive therapy, with a smaller proportion needing intensive care or ventilatory support.

Table 4: Management and Hospital Course (N = 74)			
Variable	**Category**	**Count**	**Percentage (%)**
Ward Admission	Yes	74	100%
ICU Admission	Yes	10	13.50%
	No	64	86.50%
Ventilator Use	Yes	9	12.20%
	No	65	87.80%
Oxygen Therapy	Yes	48	64.90%
	No	26	35.10%
IV Fluids	Yes	68	91.90%
	No	6	8.10%
Bronchodilator	Yes	69	93.20%
	No	5	6.80%
Hypertonic Saline	Yes	58	78.40%
	No	16	21.60%
Antibiotics	Yes	52	70.30%
	No	22	29.70%

Table 5 presents the complications and outcomes among 74 patients. Apnea was observed in 2 patients (2.7%), while the majority, 72 (97.3%), did not experience it. Respiratory failure occurred in 6 patients (8.1%), and secondary infections were noted in 8 patients (10.8%). Importantly, there were no deaths reported, with a 0% mortality rate. Overall, complications were relatively infrequent, and the outcome was favorable with no mortality in the study population.

Table 5: Complications and Outcomes (N = 74)				
Complication	**Present (n)**	**Percentage (%)**	**Absent (n)**	**Percentage (%)**
Apnea	2	2.70%	72	97.30%
Respiratory Failure	6	8.10%	68	91.90%
Secondary Infection	8	10.80%	66	89.20%
Mortality	0	0%	74	100%

Table 6 presents the duration of hospital stay and related parameters. The mean ward stay for patients was 5.6 ± 2.9 days. Among those admitted to the ICU (n = 10), the mean ICU stay was 3.8 ± 2.1 days. Additionally, for patients requiring ventilatory support (n = 9), the mean duration of ventilation was 3.5 ± 2.4 days. This indicates that while overall hospital stays were moderate, ICU and ventilator durations were relatively shorter.

Table 6: Duration of Hospital Stay		
Variable	**Mean (days)**	**Standard Deviation**
Ward Stay	5.6	2.9
ICU Stay (n=10)	3.8	2.1
Ventilator Duration (n=9)	3.5	2.4

Table 7 shows the association between RSV status and ICU admission. Among RSV-positive patients, 5 (6.8%) required ICU admission while 25 (33.8%) did not. In RSV-negative cases, 4 (5.4%) were admitted to the ICU and 28 (37.8%) were not, while among those not tested, 1 (1.3%) required ICU care and 11 (14.9%) did not. The association was not statistically significant ($\chi^2 = 1.12$, $p = 0.289$), indicating that RSV status did not have a significant impact on ICU admission in this study.

Table 7: Association Between RSV Status and ICU Admission				
RSV Status	**ICU Admission (Yes)**	**ICU Admission (No)**	**Chi-square**	**p-value**
Positive	5 (6.8%)	25 (33.8%)	1.12	0.289
Negative	4 (5.4%)	28 (37.8%)		
Not Done	1 (1.3%)	11 (14.9%)		

Table 8 compares the length of hospital stay based on RSV status. Patients who were RSV positive (n = 30) had a slightly higher mean hospital stay of 5.9 ± 2.6 days compared to RSV-negative patients (n = 32), who had a mean stay of 5.4 ± 3.1 days. However, this difference was not statistically significant ($t = 1.21$, $p = 0.231$), indicating that RSV status did not significantly affect the duration of hospitalization in this study.

Table 8: Length of Hospital Stay Based on RSV Status					
RSV Status	**N**	**Mean (days)**	**SD**	**t-value**	**p-value**
Positive	30	5.9	2.6	1.21	0.231
Negative	32	5.4	3.1		

Table 9 shows the association between age group and ICU admission. Among infants ≤6 months, 7 required ICU admission while 31 did not. In the 7–12 months group, 2 were admitted to the ICU and 20 were not, while in the 13–24 months group, only 1 required ICU care compared to 13 who did not. The association between age group and ICU admission was not statistically significant ($\chi^2 = 2.45$, $p = 0.293$), indicating that age did not have a significant influence on ICU admission in this study.

Table 9: Age Group vs ICU Admission				
Age Group	**ICU Yes**	**ICU No**	**Chi-square**	**p-value**
≤6 months	7	31	2.45	0.293
7–12 months	2	20		
13–24 months	1	13		

Discussion

The current research indicated that bronchiolitis mostly affects young infants, with over half of the incidences presenting in infants aged ≤6 months and a mean age of 7.2 ± 4.8 months. This observation is also in line with other studies carried out on the region and internationally as the younger age groups are more susceptible owing to immature immune systems and smaller airways calibers. As an example, a Mexican study indicated a similar mean age at 6.6 ± 5.7 months, which is quite similar to our results (Robledo-Aceves et al., 2018) [9]. Likewise, a systematic review study by Bont et al. (2016) [10] established that around 83% of the cases of bronchiolitis caused by RSV were found in infants under the age of six months, which is a little higher than the 51.4% in our cohort. This minor difference can be explained by the differences in the sample size, the access to healthcare, and the geographical epidemiological trends".

In our study, the distribution of gender was slightly male-biased (56.8%), similar to other studies that

indicate a large susceptibility of males. Neighboring results also occurred in Saudi Arabia where male cases were estimated to be about 55 percent of all bronchiolitis admissions (MK, 2005) [9]. Similarly, 60.5% male predominance was found in the article by Robledo-Aceves et al. (2018) [11]. But like other past studies, this difference is frequently not statistically significant and could be due to an underlying biological disposition and not a powerful epidemiological determinant.

Our study showed a strong seasonal pattern with most of the cases being reported during winter (54.1%), and then during autumn. The existing literature highly supports this trend as bronchiolitis is highest in colder months. Research in Saudi Arabia has also indicated a consistent rise in RSV activity during the period between December and February (Albogami et al., 2018) [12]. This episode of seasonal aggregation may be associated with environmental determinants (low temperature, greater indoor crowding and improved viral survival) and this supports the stability of our results with the world epidemiological tendencies.

Clinically, cough (81.1%), shortness of breath (78.4%), fever (60.8%), were the most prevalent in our study. These results go along with the previous ones, such as Ahmad et al. (2014) [13], in which cough was mentioned in 96% of the patients and fever in a considerable percentage. Our study, however, found a low prevalence of high-grade fever than theirs implying that the intensity of the symptoms in different populations differs greatly. Our cohort also exhibited wheezing and poor feeding, which is in line with the clinical spectrum of bronchiolitis that is well known (Coffin, 2005) [14]. Small differences in prevalence of the symptoms could indicate a difference between the severity of the disease at presentation or health seeking behaviour of the caregivers.

In terms of RSV positivity, our study results showed that 40.5% of cases tested positive with RSV which is similar to several regional studies that reported RSV positivity rates ranging between 40% and 46% (Al-Shehri et al., 2005) [15]. Such results support the position of RSV as the etiological agent of bronchiolitis. Nevertheless, the fact that a significant percentage of cases of RSV-negative (43.2) was seen in our study demonstrates the role of other viral pathogens as well, which is in line with the findings that were provided by Bukhari and Elhazmi (2013) [16] as well, where they have found various viral etiologies. This highlights the multi-factoriality of bronchiolitis and the need to practice viral surveillance comprehensively.

Our study has a high need of ICU admission (13.5%) and ventilatory support (12.2) compared to other previous studies in the region. In the case of Al-Shehri et al. (2005) [15], the ICU admission was reported only 5 out of 100 and ventilator application 2.5 out of 100. On the same note, ICU utilization was very low as reported by Ahmad et al. (2014) [13]. These disparities could be the difference in the severity of the disease, or the way they are referred to the hospital, or the conditions under which they are hospitalized. Furthermore, superior identification of severe cases and higher access to intensive care units can also be one of the causes of higher rates of ICU admissions in more current work.

In our cohort, Bronchodilators (93.2%), intravenous fluids (91.9%), hypertonic saline (78.4%), and antibiotics (70.3%) were widely used as treatment practices. This is aligned with other research works in which bronchodilators and supportive care were the primary components of treatment (Ahmad et al., 2014) [13]. Nevertheless, even though they are so commonly used, the existing guidelines do not recommend routine use of bronchodilators and antibiotics since the evidence lacks support (Alharbi et al., 2018) [17]. The excessive use of antibiotics in our study as in other regional accounts could be due to the fear of secondary infection of the bacteria as opposed to the evidence of minimal effect on uncomplicated infections.

There were comparatively low rates of complications in our study, respiratory failure (8.1%) and secondary infections (10.8) had the highest rates and no mortality was reported. The results are encouraging and consistent with other studies that show that low mortality rates of bronchiolitis can be achieved through the necessity to provide an appropriate supportive care (Ahmad et al., 2014) [13]. There is also no mortality in our group, which is another factor to further support the overall positive prognosis of bronchiolitis, especially in a hospital with sufficient resources.

Our study shows an average hospital stay of 5.6 ± 2.9 days, which is closely related to other studies, such as the systematic review by Bont et al. (2016) [10], which indicated the mean hospital stay of about 5 days. The same signifies that there is a similar trend in the course of the disease although the geographical differences exist. Significantly, we did not see any statistical correlation between indicators of disease severity like ICU admission or length of stay on RSV status. This is aligned with other reports that even though RSV is the most prevalent causative agent, it does not automatically mean poor clinical outcomes (Drysdale et al., 2016) [18] .

In general, the comparisons of our results with current literature support the known epidemiological and clinical patterns of bronchiolitis such as preponderance in young infants, seasonality in winter, and positive outcomes in general. Nevertheless, the differences in the rates of ICU admission, treatment, and symptom patterns demonstrate the role of regional healthcare practices, the availability of

resources, and clinical decision-making. Such disparities highlight the necessity of uniform management guidelines and the usage of evidence-based practices in order to maximize patient outcomes.

Conclusion

This retrospective study highlights that bronchiolitis in children below two years predominantly affects younger infants and is commonly presents during colder seasons, with respiratory symptoms such as cough, breathlessness, and fever being the most frequent clinical features. Most patients required supportive hospital care, including oxygen therapy, intravenous fluids, and bronchodilator use, while a smaller proportion needed intensive care or ventilatory support. Complications were relatively uncommon, and overall outcomes were favorable with no mortality observed. Additionally, no significant association was found between RSV status, age group, and severity indicators such as ICU admission or duration of hospital stay, suggesting that clinical course and prognosis are largely similar across these subgroups.

References

1. Ralston SL, Lieberthal AS, Meissner HC, Alverson BK, Baley JE, Gadomski AM, Johnson DW, Light MJ, Maraqa NF, Mendonca EA, Phelan KJ. Clinical practice guideline: the diagnosis, management, and prevention of bronchiolitis. Pediatrics. 2014 Nov 1;134(5):e1474-502.
2. Dalziel SR, Haskell L, O'Brien S, Borland ML, Plint AC, Babl FE, Oakley E. Bronchiolitis. The Lancet. 2022 Jul 30;400(10349):392-406.
3. Ricci V, Nunes VD, Murphy MS, Cunningham S. Bronchiolitis in children: summary of NICE guidance. Bmj. 2015 Jun 2;350.
4. Caffrey Osvald E, Clarke JR. NICE clinical guideline: bronchiolitis in children. Archives of disease in childhood-Education & practice edition. 2016 Feb;101(1):46-8.
5. Florin TA, Plint AC, Zorc JJ. Viral bronchiolitis. The Lancet. 2017 Jan 14;389(10065):211-24.
6. Shi T, McAllister DA, O'Brien KL, Simoes EA, Madhi SA, Gessner BD, Polack FP, Balsells E, Acacio S, Aguayo C, Alassani I. Global, regional, and national disease burden estimates of acute lower respiratory infections due to respiratory syncytial virus in young children in 2015: a systematic review and modelling study. The Lancet. 2017 Sep 2;390(10098):946-58.
7. Dherani M, Pope D, Mascarenhas M, Smith KR, Weber M, Bruce N. Indoor air pollution from unprocessed solid fuel use and pneumonia risk in children aged under five years: a systematic review and meta-analysis. Bulletin of the World Health Organization. 2008;86:390-8C.
8. Kirolos A, Manti S, Blacow R, Tse G, Wilson T, Lister M, Cunningham S, Campbell A, Nair H, Reeves RM, Fernandes RM. A systematic review of clinical practice guidelines for the diagnosis and management of bronchiolitis. The Journal of infectious diseases. 2020 Nov 1;222(Supplement_7):S672-9.
9. Robledo-Aceves M, de Jesús Moreno-Peregrina M, Velarde-Rivera F, Ascencio-Esparza E, Preciado-Figueroa FM, Caniza MA, Escobedo-Melendez G. Risk factors for severe bronchiolitis caused by respiratory virus infections among Mexican children in an emergency department. Medicine. 2018 Mar 1;97(9):e0057.
10. Bont L, Checchia PA, Fauroux B, Figueras-Aloy J, Manzoni P, Paes B, Simões EA, Carbonell-Estrany X. Defining the epidemiology and burden of severe respiratory syncytial virus infection among infants and children in western countries. Infectious diseases and therapy. 2016 Sep;5(3):271-98.
11. MK S. Respiratory syncytial virus infection in patients visiting King Khalid University Hospital.
12. Albogami SS, Alotaibi MR, Alsahli SA, Masuadi E, Alshaalan M. Seasonal variations of respiratory viruses detected from children with respiratory tract infections in Riyadh, Saudi Arabia. Journal of infection and public health. 2018 Mar 1;11(2):183-6.
13. Ahmad SA, Mujawar Q, Al Othman M, Salleh HB, Alsarfandi MA. Clinical profile of bronchiolitis in infants younger than 90 days in Saudi Arabia. Journal of Emergencies, Trauma, and Shock. 2014 Jan 1;7(1):49-52.
14. Coffin SE. Bronchiolitis: in-patient focus. Pediatric Clinics. 2005 Aug 1;52(4):1047-57.
15. Al-Shehri MA, Sadeq A, Quli K. Bronchiolitis in Abha, Southwest Saudi Arabia; Viral etiology and predictors for hospital admission. West African journal of medicine. 2005 Oct 1;24(4):299.
16. Bukhari EE, Elhazmi MM. Viral agents causing acute lower respiratory tract infections in hospitalized children at a tertiary care center in Saudi Arabia. Saudi Med J. 2013 Nov 1;34(11):1151-5.
17. Alharbi AS, Alqwaiee M, Al-Hindi MY, Mosalli R, Al-Shamrani A, Alharbi S, Yousef A, Al Aidaroos A, Alahmadi T, Alshammary A, Miqdad A. Bronchiolitis in children: The Saudi initiative of bronchiolitis diagnosis, management, and prevention (SIBRO). Annals of thoracic medicine. 2018 Jul 1;13(3):127-43.
18. Drysdale SB, Green CA, Sande CJ. Best practice in the prevention and management of paediatric respiratory syncytial virus infection. Therapeutic advances in infectious disease. 2016 Apr;3(2):63-71.