



ORIGINAL RESEARCH PAPER

Clinical Microbiology

EPIDEMIOLOGICAL AND CLINICAL PATTERNS OF CHILDREN HOSPITALIZED FOR ACUTE RESPIRATORY TRACT INFECTION AT A TERTIARY CARE HOSPITAL IN KASHMIR

KEY WORDS: Respiratory tract infections, Children, Clinical Patterns, Kashmir.

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ABSTRACT

Background: Acute respiratory tract infections (ARTIs) are a leading cause of hospitalization and mortality in children less than 5 years of age and represent a major health problem in the world. A low-grade fever, lasting for 2 to 4 days, occurs in most young children early in the course of the illness. With progression of disease to the lower respiratory tract, the cough may become more prominent and productive, followed by an increased respiratory rate, dyspnea, and retractions of the intercostal muscles. **Objective:** To determine the epidemiological and clinical profile of children hospitalized for acute respiratory tract infection at a Tertiary Care Hospital in Kashmir. **Methodology:** A cross-sectional study was carried out among children less than 5 years of age admitted with acute respiratory symptoms in the Department of Pediatrics, Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Soura, Srinagar. **Results And Discussion:** Majority of patients (63.6%) were from rural areas and gender was almost equally distributed with slightly more females patients than male patients. Half of the participants (50.8%) were in their first year of life, while as around one-fourth were 1 to 2 years of age and another one-fourth were >2 Years. Overall fever was the most common symptom (87.9%) followed by cough 101 (76.5%) & most of the cases were admitted during the winter season (46.97%) followed by autumn (21.21%). **Conclusion:** Appropriate and target oriented public health measures should be put in place to decrease the morbidity and mortality due to acute respiratory tract infections among children.

INTRODUCTION

Acute respiratory tract infections (ARTIs) are a leading cause of hospitalization and mortality in children less than 5 years of age and represent a major health problem in the world (1). Viral infections are considered to be the most important cause of respiratory tract infections. Among viral causes of acute respiratory tract infections in children, RSV has a significant role; other prominent viruses are human metapneumovirus, parainfluenza viruses, influenza viruses A and B and adenoviruses. RSV is one of the most frequent etiological agents causing LRTI, especially among young infants. One of the important risk factor for pediatric respiratory tract infections is increased exposure to infection which usually happens through day care attendance, siblings younger than 5 years of age, and congested living conditions.

Most commonly, Infection among Young Children present as bronchiolitis, followed by pneumonia and tracheobronchitis (2,3,4). Croup is the least common form of clinical illness and accounts for less than 2% to 10% of cases. Upper respiratory tract signs almost always accompany lower respiratory tract disease, or the infection may be confined to the upper respiratory tract, which in young children is commonly associated with fever and otitis media. The risk for lower respiratory tract involvement occurring with the first infection is high. Pneumonia or bronchiolitis has been estimated to occur in 30% to 71%, depending on the age and population (2,3,4,5). A low-grade fever, lasting for 2 to 4 days, occurs in most young children early in the course of the illness. With progression of disease to the lower respiratory tract, the cough may become more prominent and productive, followed by an increased respiratory rate, dyspnea, and retractions of the intercostal muscles.

OBJECTIVES

- To determine the epidemiological and clinical profile of children hospitalized for acute respiratory tract infection at a Tertiary Care Hospital in Kashmir

METHODOLOGY

This cross-sectional study was carried out in the Department

of Pediatrics, in collaboration with Department of Microbiology, Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Soura, Srinagar, Kashmir, from December 2019 to November 2021.

Inclusion Criteria:

- All children less than 5 years of age admitted with acute respiratory symptoms in the hospital during the study period.

Exclusion Criteria:

- Neonates were excluded from this study.

Procedure:

Daily an evening round was conducted in the wards of Department of Pediatrics and all children admitted with acute respiratory symptoms were located. These patients were included in the study after fulfilling the inclusion/exclusion criteria.

A written informed consent was sought from the parents/caretakers of the children. A predesigned questionnaire that included information regarding age, gender, residence, duration of symptoms, etc. was filled for each participant.

Statistical Analysis:

Data was entered in Microsoft excel and analyzed using SPSS version 23.0. Categorical Variables were presented as frequencies and percentages while as continuous variables were summarized as mean and standard deviation. Appropriate statistical tests were applied wherever indicated.

OBSERVATIONS & RESULTS

Table 1: Gender Distribution Of The Patients Included In The Study.

Gender	No. of cases (N)	Percentage (%)
Female	69	52.3
Male	63	47.7
Total	132	100.0

Males and females were almost equally distributed among the study participants.

Table 2: Area Wise Distribution Of The Patients Included In The Study.

Area	No. of cases (N)	Percentage (%)
Rural	84	63.6
Urban	48	36.4
Total	132	100.0

Majority of patients (63.6%) were from rural areas.

Table 3: District Wise Distribution Of All The Cases.

District	No. of cases (N)	Percentage (%)
Anantnag	8	6.1
Bandipora	11	8.3
Baramulla	9	6.8
Budgam	5	3.8
Ganderbal	34	25.8
Kulgam	1	0.8
Kupwara	8	6.1
Pulwama	3	2.3
Shopian	3	2.3
Srinagar	50	37.9
Total	132	100.0

Patients from all the ten districts of Kashmir division were included in the study with majority from districts of Srinagar (37.9%) and Ganderbal (25.8%)

Table 4: Age Distribution Of Study Participants.

S No	Variable	Value
1	Number	132
2	Minimum age in months	2
3	Maximum age in months	48
4	Mean age in months	19.01
5	Std. Deviation	14.09

Mean age was 19 ± 14.09 months

Table 5: Age Wise Distribution Of All The Cases.

Age group	No. of cases (N)	Percentage (%)
Upto 1 Year	67	50.8
1 to 2 Years	32	24.2
>2 Years	33	25.0
Total	132	100.0

Half of the participants (50.8%) were in their first year of life, while as around one-fourth were 1 to 2 years of age and another one-fourth were >2Years.

Table 6: Most Common Clinical Presentation Of All The Cases.

Presenting symptoms	No. of cases (N)	Percentage (%)
Fever, cough, coryza, dyspnea	18	13.6
Fever, cough, dyspnea	16	12.1
Fever, cough	48	36.4
Cough, dyspnea	14	10.6
Fever, dyspnea	12	9.1
Fever, coryza	5	3.8
Fever	13	9.8
Fever, cough, diarrhea	6	4.5
Total	132	100.0

Fever with cough was the most common presentation (36.4%) followed by fever with cough, coryza, dyspnea (13.6%); fever with cough, dyspnea (12.1%) and cough with dyspnea (10.6%).

Table 7. Distribution Of Different Presenting Symptoms Among Cases.

S No	Symptoms	No. of cases (N)	Percentage (%)
1	Fever	116	87.9

2	Cough	101	76.5
3	Dyspnea	59	44.7
4	Coryza	24	18.2
5	Diarrhea	6	4.5

Overall fever was the most common symptom (87.9%) followed by cough 101 (76.5%).

Table 8: Seasonal Distribution Of All The Cases.

Season	No. of cases (N)	Percentage (%)
Winter	62	46.97
Spring	20	15.15
Summer	22	16.67
Autumn	28	21.21
Total	132	100.00

Most of the cases were admitted during the winter season (46.97%) followed by autumn (21.21%).

All the presenting symptoms were almost uniformly distributed between male and female children. Also male and female children were almost equally distributed between rural and urban areas.

DISCUSSION

Among the study subjects the gender was almost equally distributed with slightly more female patients than male patients, 52.3% female children and 47.7% male children. **Ibama AS et al** published a study in 2017 titled “The Relationship of Gender in the Pattern and Risk of Acute Respiratory Infection among Infants in Rivers State, Nigeria” where in a retrospective Case-control study was conducted to determine the pattern of relationship between risk of ARI and gender(6). They found that ARI cases were found to be slightly higher in Female infants (27.8%) than in the Male infants (22.4%). For the Female infants, the odds for ARI were 1.3 times significantly higher compared to those of their Male counterparts (OR=1.32, p=0.048, 95% CI=1.003-1.735).

All the symptoms including fever, cough, dyspnea, coryza and diarrhea were almost uniformly distributed between male and female children and the minimal changes were not statistically significant. Male and female children were almost equally distributed between rural and urban areas. Even in different districts, male and female children were almost equally distributed. All these observations express the randomness of sampling and also that the sample has been quite representative of whole Kashmir Division, thus making the results more dependable and accurate.

In our study, around two-third of the patients (63.6%) were from rural areas and one-third (36.4%) were from urban areas. This is quite expected keeping in view the demographic and geographic pattern of population of Kashmir division, where in majority of people live in rural areas.

In our study majority of patients were from district Srinagar (37.9%) followed by district Ganderbal (25.8%). It is quite expected because these are the two nearest districts from SKIMS Soura where the study was conducted. Also Srinagar is the most populous district of Kashmir division with a population of around 15 Lac, so it is expected to have more cases from district Srinagar. Moreover there are two newly commissioned Medical College Hospitals, one in south Kashmir and the other in north Kashmir, & the patients of these area usually prefer to receive treatment from these hospitals only, including the pediatric care.

Mean age of participants was 19 months with minimum age of 2 months and maximum age of 48 months. 51% of patients were infants, 24% were 1 to 2 years old and 25% were more than 2 years. **Muhammad Ashraf Khan** published his research study in The Egyptian Journal of Bronchology in 2022, where in a crosssectional study was conducted by

obtaining indoor data from the official record maintained in the children's wards in children admitted to the Women and Children Hospital Bannu Khyber Pakhtunkhwa, Pakistan(7). Age group of ≤ 6 months showed 36.2% prevalence, followed by $> 6 \text{ m} \leq 1 \text{ y}$ (25.6%), $> 1 \text{ y} \leq 2 \text{ y}$ (17.1%), $> 2 \text{ y} \leq 5 \text{ y}$ (14.3%), $> 5 \leq 10 \text{ y}$ (6.0%), and $> 10 \text{ y} \leq 15 \text{ y}$ (0.8%). Thus the prevalence of ARTIs decreases with increasing age among children.

In our study the most common presentation among admitted children was fever with cough (36.4%) followed by fever with cough, coryza and dyspnea (13.6%) and fever with cough and dyspnea (12.1%). Overall fever was the most common symptom (present in 88% patients) followed by cough (76.5%) and dyspnea (45%).

We found in our study that majority of admissions for respiratory tract infections among children less than 5 years had occurred during the winter season, 62 (46.97%) followed by autumn season, 28 (21.21%). The least admissions were seen in summer and spring 22 (16.67%) and 20 (15.15%) respectively. **Manzoor A. Wani et al** conducted a study in 2019 titled "Seasonal Epidemiology of Acute Respiratory Infection among the Children in Kashmir Himalayan Region-India" to analyze the seasonal dynamics of respiratory infections among the children of Sopore Baramulla J&K North India(8). They found that the highest number of cases were found during winter season within the age group of < 6 years. The winter season in Kashmir is very cold and people prefer to stay indoors in congested rooms with poor ventilation. Also many respiratory viruses survive well in cold environment. All these factors lead to an increased number of respiratory cases, especially in children.

CONCLUSION & RECOMMENDATION

Acute respiratory tract infections (ARTIs) are a leading cause of hospitalization and mortality in children less than 5 years of age with higher prevalence among younger children. Fever, cough and dyspnea were the commonest presenting symptoms and more cases occurred in winter season as compared to other seasons. Around two-third of the patients were from rural areas with female children slightly more frequently involved. As such appropriate and target oriented public health measures should be put in place to decrease the morbidity and mortality due to acute respiratory tract infections among children.

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