



ACUTE RESPIRATORY TRACT INFECTIONS (ARIS); CLINICO-EPIDEMIOLOGICAL PROFILE IN CHILDREN OF LESS THAN FIVE YEARS OF AGE

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ABSTRACT... Objective: To determine the epidemiological and clinical profile of patients suffering from acute respiratory tract infections in our area. **Study design:** Descriptive study, **Setting:** Frontier Medical & Dental College, Abbottabad, Pakistan. **Period:** July to December, 2014. **Materials and methods:** All those children who were less than five years of age and clinically diagnosed with acute respiratory tract infections were included in the study. Whereas children who were more than five years of age, or suffering from chronic respiratory illnesses, or having congenital disease of respiratory tract were excluded from the study. Structured proforma was used to record demographic and clinical data. World health organization's criteria were used to categorize the cases of ARIs. **Results:** A total of 229 patients were included in the study. There were 109 male patients while 120 female patients with male to female ratio of 1:1.18. Maximum number of patients, 43%, was in the age group of 13-24 months followed by 31% in age group of 1-12 months and 15% in the age group of 25-36 months. The majority of patients presented with shortness of breath as their main symptom followed by sore throat and cough. About 97% of our patients sought treatment from trained health care professional while only 03% resort to self-medication. **Conclusion:** Acute respiratory tract infections are an important group of diseases in children of less than five years of age. These infections mostly affect children between 1-2 years of age. The predominant symptom is shortness of breath followed by sore throat and cough. Therefore, any child presenting with these symptoms should be carefully evaluated for ARIs and their severity using World Health Organization's criteria. Early diagnosis and treatment will, in turn, improve prognosis and reduce burden on health care facilities.

Key words: Acute respiratory tract infections, pneumonia.

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INTRODUCTION

Acute respiratory tract infections (ARIs) are a diverse group of diseases which are caused by a wide variety of microorganisms. They can involve any part of respiratory tract and its associated structures including para-nasal sinuses and pleural cavity. These infections exert both local and systemic effects. Systemic effects are attributed to the presence of microbial toxins, lung dysfunction or due to inflammation.¹ The mortality rate associated with these infections is 2-6 times higher in developing countries as compared to developed countries.² These infections are responsible for about one-third of all deaths in children who are less than five years of age in developing countries.³ ARIs and ARI-related

complications account for about 40% of hospital out-patient consultations and 20-30% of hospital admissions.^{4, 5} All these factors, collectively, contribute to significant health care burden and economic costs associated with these infections.²

Different factors are associated with the higher incidence of ARIs in developing countries. These factors include poverty and malnutrition, lack of medical infrastructure as well lack of access to health care facilities especially in rural areas, higher rate of smoking, overcrowding and injudicious use of antibiotics leading to antibiotic misuse and resistance.⁶⁻⁸ Therefore, the prevalence of ARIs is reported to be 21.7% to 40% in developing countries like Thailand, Uruguay

and Philippines which is higher as compared to developed nations.⁶

ARIs constitute significant health care burden. Therefore, we have conducted this study to determine the epidemiological and clinical profile of patients suffering from ARIs in our area.

MATERIALS AND METHODS

This was a descriptive study which was conducted in Frontier Medical & Dental College, Abbottabad, Pakistan from July to December, 2014. It was a consecutive, non-probability sampling.

All those children who were less than five years of age and clinically diagnosed with ARIs were included in the study. Whereas children who were more than five years of age, or suffering from chronic respiratory illnesses, or having congenital disease of respiratory tract were excluded from the study. Informed consent was obtained and structured proforma was used to record demographic and clinical data. World health organization's criteria were used to categorize the cases of ARIs.² The data was managed using statistical package for social sciences, (SPSS, version 19).

RESULTS

A total of 229 patients were included in the study according to inclusion and exclusion criteria. There were 109 male patients while 120 female patients with male to female ratio of 1:1.18 (Figure 1).

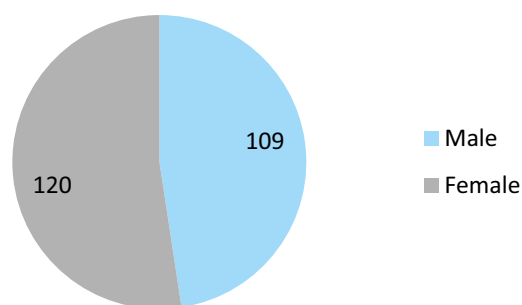


Figure-1. Gender-wise distribution of study population, (n=229)

Maximum number of patients, 43%, was in the age group of 13-24 months followed by 31% in age group of 1-12 months and 15% in the age group of 25-36 months (Table I), showing that the children of 1-2 years of age were predominantly affected.

Age-group, (months)	Number	Percentage
1-12	72	31%
13-24	99	43%
25-36	35	15%
37-48	23	11%
Total	229	100%

Table-I. Age-wise distribution of study population (n=229)

The majority of patients presented with shortness of breath as their main symptom followed by sore throat and cough (Table II).

Symptom	Number	Percentage
Shortness of breath	88	38%
Sore throat	65	28%
Cough	10	05%
Non-specific	66	29%
Total	229	100%

Table-II. Clinical presentation of ARI patients, (n=229)

About 97% of our patients sought treatment from trained health care professional while only 03% resort to self-medication (Table III), showing that mostly people rely on trained health care professionals for the treatment of their children.

Type of treatment	Number	Percentage
Clinicians	221	97%
Self-medication	08	03%
Total	229	100%

Table-III. Type of treatment sought by patients, (n=229)

DISCUSSION

ARIs constitute a significant public health problem globally and it is a common cause of disease in children of less than five years of age in developing countries.^{4,7} It is an acute infection of less than 30 days duration (excluding middle ear infections where the duration is less than 14 days) which involves respiratory tract and its associated structures. In 95% of cases, ARIs

involve upper part of respiratory tract where rest is involved in only 5% of cases.⁴ The infection can range from self-limiting disease to pneumonia which in-turn requires in-patient monitoring and treatment.⁷ But, mostly, the ARIs present in the form of bronchiolitis or pneumonia. Globally, the annual incidence of ARIs is estimated to be 5-7 and 3-5 episodes per child in urban and rural areas respectively.⁴

Our study has shown that there was a preponderance of female patients, 52.40%, who were affected by ARIs. A similar study was conducted in Assam, India by Islam et al. They have also reported that the females were predominantly affected by ARIs than males.⁹ On the other hand, Ujunwa et al and Prajapati et al have demonstrated that it was the male gender that was preferentially affected by ARIs in Nigerian and Indian patients respectively.^{2,6} While a study conducted by Siziya et al have showed that the number of Iraqi male and female patients suffering from ARIs was almost equal.¹⁰ This discrepancy in the rate of ARIs in different genders in various studies could be due to the fact that the studies were conducted in different geographical locations e.g. rural, urban, and slum areas which in turn affect the incidence of ARIs among different genders.

In our study, the children who were mostly affected were between the ages of 01 to 24 months whereas the incidence of ARIs was low in children who were more than 25 months of age. The same is reported by Islam et al in their study conducted in India. In their study, children between the age group of 01-24 months were mostly affected and the incidence of ARIs after 25 months of age was considerably low.⁹ It might be that the rate of these infections decreases with advancing age. Similarly, according to Ujunwa et al, the highest incidence of ARIs was in children between the ages of 10 to 19 months. The reason that this age group is preferentially affected might be due to the i) gradual cessation of breast feeding at this age and hence, lowering of levels of maternal antibodies that have been acquired from mother and ii) introduction of weaning to children at this age.

Our study has shown that majority of our patients presented with shortness of breath as their main symptom followed by sore throat and cough. Similarly, most of our patients sought treatment of their children suffering from ARIs from trained clinicians. This could be due to the fact that we have conducted this study in an urban setting where trained clinicians are easily accessible. Secondly, there is a large tertiary care hospital established by the Government in this city and most of the people get treatment from there. Other studies have also proved that the frequency of ARIs was higher in urban settings. This is due to fact that there is easy access to health care facilities in cities as well increased awareness and increased health seeking attitude among parents.^{2, 11}

CONCLUSION

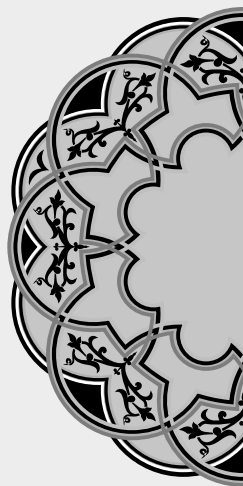
ARIs are an important group of diseases in children of less than five years of age. These infections mostly affect children between 1-2 years of age. The predominant symptom is shortness of breath followed by sore throat and cough. Therefore, any child presenting with these symptoms should be carefully evaluated for ARIs and their severity using World Health Organization's criteria. Early diagnosis and treatment will, in turn, improve prognosis and reduce burden on health care facilities.

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“Knowing yourself is the beginning of all wisdom.”

Aristotle

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