

## EPIDEMIOLOGICAL PROFILE OF CHILDREN WITH ACUTE RESPIRATORY INFECTIONS IN PEDIATRICS OUTPATIENT DEPARTMENT IN SECONDARY CARE HOSPITAL OF TANDO MUHAMMAD KHAN, SINDH, PAKISTAN

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### ABSTRACT

**Objective:** To determine the epidemiological profile of children with acute respiratory infections from 1 month to 1 year of age attending the pediatric out patient department (OPD) of secondary care hospital in TMK, Sindh and determine the frequency of treatment methods used by mothers when encountered with acute respiratory infection in children.

**Study Design:** A cross-sectional study.

**Place and Duration of Study:** Pediatrics outpatient department, Taluka Headquarter Hospital District Tando Muhammad Khan (TMK), Sindh Pakistan, from Jul to Sep 2017.

**Material and Methods:** During the study period of three months about 230 children from 1 month to 14 years of age were sampled through non-probability convenient sampling technique according to the set criteria and structured pro-forma was administered to their mothers to gather the required information. The proforma was pre-tested in the similar setting at THQ hospital, Kotri before its administration at the study setting. The findings of questionnaire were analyzed in SPSS version 22.

**Results:** Out of 230 patients 53% (n =121) were males and 47% (n = 109) were females. The age group maximally affected was 5-14 years which were almost 47.9% (n=110) and the other age groups contributed to the remaining part of the patients that is 52.1% (n=120). Most of the patients belong to the lower class and lower middle class that approximately comprised 75% (n=170) of the patients and the remaining 25% (n=60) comprised of poor patients. Approximately 95% (n=218) of mothers were preferring medical practitioners for treatment with 5% (n=12) going in favor of local remedies.

**Conclusion:** Our study revealed that age group of 5-14 years is mostly the victims of the disease with male predominance as compared to females in this part of the world. Poor socioeconomic status seems to have no effect on occurrence of ARI. Future research is needed in this area to further enhance the study findings.

**Keywords:** Acute Respiratory, Frequency, Infections, Secondary care hospital.

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### INTRODUCTION

One of the most important asset of any nation are there children<sup>1</sup>. Therefore, index of development of any nation depends upon health status of children<sup>1</sup>. Today's children are future adults. The healthy generations are very much dependent on healthy children. The relationship between unhealthy children and worsened future of the world is very strong. Almost one third of the population of the world is comprised of children<sup>2</sup>. According to World Health Organization respiratory tract infections are considered

one of the leading cause of morbidity and death among children especially in developing countries<sup>1</sup>. Globally, experience of ARI is 6-8 spells per year<sup>3</sup>. The mortality due to ARIs is 2-6 times higher in developing countries as compared to developed countries<sup>3</sup>. Around 11.6 million cases of ARI are reported annually in Pakistan with an incidence of 16% of ARI as shown by a survey in 2011<sup>3,4</sup>. Studies have revealed that most of the ARIs are occur in rural areas as compared to Urban community<sup>5</sup>. According to research evidence available there are number of factors associated with the development of ARIs, and these factors differ from country to country. Acute respiratory tract infections are diverse group of diseases which are caused by wide

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variety of microorganisms majority of which are viral in origin<sup>6</sup>. They are large and heterogeneous group of infections and can affect any part of respiratory tract from nose to lungs and adjoining pleural cavity<sup>6</sup>. According to WHO most common reasons for which parents seek medical attention for children are acute infection related cough or other pus related infections like acute sinusitis, acute otitis media and acute pharyngitis. ARIs are classified into upper and lower ARIs<sup>6</sup>. Upper ARIs include rhinitis, sinusitis, ear infections, acute pharyngitis, tonsillo-pharyngitis, epiglottitis and laryngitis<sup>6</sup>. It includes new episode when a person is free of symptoms since last 48 hours and had a new episode and also all infections where the duration is less than 30 days with the exception of middle ear infection where acute infection duration is less than 14 days<sup>7</sup>. These infections can exert both local as well as systemic effects<sup>6</sup>. Most of the acute respiratory infections can spread easily among the children as well as adults by sneezing and coughing only<sup>8</sup>. These infections are more common in low income countries. Approximately 1.4 million children died of acute lower respiratory infection (ALRI) worldwide according to report generated in 2012<sup>9</sup>. In developed countries incidence of ALRI is low but still it ranges between 15-27% in USA only<sup>10</sup>. Studies from UK suggest that about 66% of children under four years visiting general practitioners are suffering from ARI with predominant symptom of cough<sup>11</sup>. Similar study revealed that approximately 40% mortality burden is beard by Bangladesh, India, Indonesia and Nepal<sup>11</sup>. Few studies conducted in Pakistan and Bangladesh have also revealed that a single episode of ARI cost around US\$ 13 for OPD patient<sup>12</sup>. However, the studies further revealed that the inpatient cost can be as high as US\$ 75-US\$ 235 per patient<sup>12</sup>. More than 75% of families spent there 50% of monthly income on treatment of ARIs<sup>12</sup>. The same research study revealed that Pneumonia is the single most largest killer in children under 5 years of age<sup>12</sup>. A study conducted in Indian Punjab revealed that acute upper respiratory infection (AURI) is the major cause of

absenteeism of children from school in the developing world<sup>13</sup>. However, one of the studies found out that AURI if left untreated leads to severe complications in about 29% to 50% of patients<sup>14</sup>. The main objective of this study is to improve the pool of knowledge regarding the epidemiological profile of children affected from ARI and frequency of treatment methods used by mothers when encountered with the disease, as the studies regarding the subject are scarce in this part of the world according to knowledge of the author.

## MATERIAL AND METHODS

A descriptive cross sectional study was conducted in Taluka Head Quarter Hospital District TMK, Sindh Pakistan from July to September 2017. With frequency of 16% (taken from previous study carried out in Gilgit, Baltistan)<sup>3</sup>, precision level 5% and confidence interval of 95% the sample size came out to be 207 through OPEN EPI software, with 10% margin of error final sample size was rounded off to 230. The sampling technique used was through non-probability convenient sampling during the study period and structured proforma was administered to their mothers to gather the required information. The proforma was pre-tested in the similar setting at THQ hospital, Kotri before its administration at the study setting. All those children who were diagnosed with acute respiratory infection were included in the study. Whereas, those children who were having chronic respiratory illness or any other congenital respiratory problem were excluded from the study. Informed consent was taken from all the mothers before the collection of data on structured questionnaire. The data collected was edited on an ongoing basis followed by double data entry in SPSS version 22. After entering the data into SPSS, data cleaning was performed. Frequencies and mean values of each variable section were calculated.

## RESULTS

A total of 230 patients were included in the study according to the set criteria. Majority of the

patients that is 47.9% belong to age group of 5-14 years followed by 34.8% in 1-4 years and 17.3% in 1 month to less than 1 year age category (table-I). There were 121 male patients and 109 female patients with male to female ratio of 1.09:1 (table-II). Most of the patients that is 39% suffering from ARI belong to lower class with monthly family income PKR 5000-10000 followed by lower middle class that is 36% with family income more than PKR 10000 (table-III). One of the other

years of age as compared to lower age group of 12-59 months and least prevalence was observed in under 12 months' age group. This relationship might be due to more exposure of higher age group to the outside environment and also cessation of breast feeding as well. The result is contrasting to the study conducted in rural Maharashtra revealed that it is more common in under 12 months' age group<sup>1</sup>. One of the studies conducted in Iran unveiled that majority of the

**Table-I: Age-wise distribution of study population (N=230).**

Age Group	Number	Percentage (%)
1 month - >1year	32	17.3
1-4 years	88	34.8
5-14 years	110	47.9
Total	230	100

**Table-II: Gender-wise distribution of study population (N=230).**

Gender	Number	Percentage (%)
Male	121	52.5
Females	109	47.5
Total	230	100

**Table-III: Socio-Economic Status of study population (N=230).**

SES	Frequency	Percentage (%)
Poor <5000/month	60	25.4
Lower class 5000-10000/month	88	38.6
Lower middle class >10000/month	82	35.9
Total	230	100

**Table-IV: Treatment methods used by the study population (N=230).**

Treatment Method	Number	Percentage (%)
Allopathic medicines	218	95%
Local remedies	12	5%
Total	230	100

major finding of our study was that approximately 95% of the mothers visited medical practitioners whenever their children suffered from the ARI, however only 5% of the mothers were of the opinion that local remedies are more effective than the allopathic medicines (table-IV).

## DISCUSSION

The present study is rural based cross-sectional study. One of the major finding of our study was that the prevalence of ARI increased with the age as well as it is more common in 5-14

LRTIs occur in children under 1 year of age, however our study revealed the contrasting results as most of the patients affected from ARIs were from 5-14 years of age<sup>15</sup>. Moreover, our study also revealed that ARI is more prone to affect male child than the female one's which is similar to a studies conducted in Pakistan and in UK by Anjum *et al* and Nair *et al* respectively and also in Assam, India by Islam *et al*<sup>6,9,16</sup>. Similar kind of study carried out in Nepal by Yadav *et al* and Nigeria by Ajobiewe H. Frevealed the similar kind of results in terms of male and female ratio

with male predominantly affected with ARI<sup>17,18</sup>. However, studies conducted in Iraq by Siziya *et al* have revealed that male to female ratio is almost equal for ARI<sup>19</sup> but a study by Gupta *et al* in India revealed that females were more prone to AURI and males were more prone to ALRI<sup>20</sup>. Most of the studies have revealed that family income being the one of the probable risk factors for the development of ARI, however our study found out that there is more prevalence of ARI in children who belong to lower middle class or middle class families as compared to those who belong to the poor families having very low income, the results are almost similar with the study conducted by Prajapati *et al*, in Gujarat which revealed that most of the cases of ARI belong to lower class communities<sup>6</sup>. Number of studies have revealed that low socio-economic status is a huge risk factor for the occurrence of ARI along with education status of the parents<sup>16</sup>. Another retrospective study carried out in Nigeria revealed contrasting results to our study as most of the children which were affected from ARI belong to poor wealth quantile as compared to middle and high wealth quintile<sup>21</sup>. Our study found out that almost 95% of mothers believed that allopathic medicines are effective than the local remedies which are almost similar to the results of the study conducted by Anjum *et al* in Pakistan<sup>6</sup>.

## CONCLUSION

Acute respiratory infections are one of the major cause of death in the developing countries. Age group of 5-14 years are more likely to be the victims of the diseases. Age group of 5-14 years are found to be the victims of the disease with male predominance in this part of the world. Poor socioeconomic status seems to have no effect on occurrence of ARI. Health education regarding proper medical care may further be ensured to reduce the substantial burden of acute respiratory infections on the health care system.

## CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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