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INCIDENCE OF ACUTE RESPIRATORY TRACT INFECTIONS AMONG UNDER TWO YEAR CHILDREN

Pediatrics

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ABSTRACT

INTRODUCTION: Acute respiratory infection (ARI) is an infection of the respiratory tract. It may interfere with normal breathing of the Individual and is communicable in nature. **METHODS:** study consists of 300 under two year children who attended pediatric department, Jawaharlal Nehru Medical College and Hospital, Bhagalpur in outdoor and indoor department during a period from June 2013 to May 2014 was studied. In the beginning, the mothers were instructed regarding the symptoms of AURI and ALRI. At every visit the mothers were enquired regarding any episode of ARI in between two subsequent visits. **RESULTS:** highest incidence rate of ARI, AURI and ALRI was found in the age group of ≤12 months (3.77, 3.59 and 0.6 episodes per child per year respectively) while the lowest incidence was found in the age group of 13-24 months (2.37, 1.67 and 0.6 episodes per child per year) respectively. **CONCLUSION:** The results suggested that ARIs are still a major health problem of under two year children.

KEYWORDS

Acute Respiratory Infection, Under Two Children, Respiratory Tract

INTRODUCTION

Acute respiratory infection (ARI) is an infection of the respiratory tract. It may interfere with normal breathing of the Individual and is communicable in nature [1]. ARIs, however, still continue to be the single largest contributor of childhood morbidity and mortality with estimated 3–5 episodes every year, 4 million pneumonias, and 1 million deaths [2–4]. Estimates also indicate that 30–50% of OPD attendance and 20–40% of hospital admissions may be attributed to ARI and pneumonia [5]. Upper respiratory tract infections such as common cold, pharyngitis, and otitis media are more common among children and few such conditions peak from infancy to 5 years. Boys below 3 years of age are more affected frequently and severely [2] .Children are more affected especially in developing countries because of low-birth weight and malnutrition is a major problem [2]. Vaccines are available against the causative organisms of ARI that are a potential intervention against ARI. The vaccines available for ARI in universal immunisation program are for Diphtheria, Pertussis, Measles, and Hemophilus influenza b (Hib). Vitamin A solution is administered from 9 months of age along with measles rubella vaccine[2,5].The target of the fourth Millennium Development Goals (MDGs) was to reduce the mortality among children below five years of age in India by two thirds between 1990 to 2015[6]. As remarkable milestones have been achieved through the MDGs, the Sustainable Developmental Goals (SDGs) will favor in reducing ARI among children by ending all forms of hunger and malnutrition (Goal 2), by providing access to safe and effective medicines and vaccines to all (Goal 3) and access to clean water and sanitation (Goal 6)[7].Because the epidemiology of ARI is associated with so many modifiable risk factors and more data are not available regarding its present status. This study was done to evaluate the incidence of ARI in under two year children.

METHODS

This study was a hospital based longitudinal study conducted over a period of one year. The study was done in Jawaharlal Nehru Medical College and Hospital, Bhagalpur among under two year children. The informant was the parent of the child. In the initial visit self-introduction to the mother and other family members was done and purpose and importance of the study was explained to them. Their oral consent was obtained. The child's name, age, sex, weight, immunization status, complete medical history up to the present date, feeding, practices general physical examination with special reference to nutritional status and systemic examination was recorded in pre-coded proforma. Verification of records like immunization cards were made wherever available.

All mothers were given health education about ARI, nutrition, feeding, danger signs of ARI, availing medical facilities on time and general education on health and hygiene. All mothers were also educated regarding the symptoms of AURI and ALRI (pneumonia, severe pneumonia and very severe pneumonia) as per the WHO guidelines. They were also instructed regarding what constituted an episode of AURI and ALRI. They were also asked to keep all the doctor's prescriptions and hospital discharge cards for later verification.

RESULTS

CATEGORIZATION OF CHILDREN BY AGE GROUP

In the present study, it was observed that children in the higher age group had significantly lower incidence rate of ARI, AURI and ALRI. highest incidence rate of ARI, AURI and ALRI was found in the age group of ≤12 months (3.77,3.59 and 0.6 episodes per child per year respectively) while the lowest incidence was found in the age group of 13-24 months (2.37, 1.67 and 0.6 episodes per child per year)respectively (Table-1).

CATEGORIZATION OF CHILDREN BY SEX

Out of 300 children 155 are male (51.66%), female children are 145(48.33%) male children suffering with ARI 53%, AURI 44.2%, ALRI 2.8%, while female children are suffering with ARI 46%, AURI 45.30%, ALRI 8.70% In this study findings are observed that female children are having more incidence in ALRI, than male children .Categorization of ALRI In the present study out of 300 Cases 17 children were suffering with ALRI (11.50%).

CATEGORIZATION OF CHILDREN ACCORDING TO IMMUNIZATION STATUS

In the present study, it was observed that 80% children were completely immunized while 20% were incompletely immunized. Boys are 44%, Females are 36%

Table-1: Categorization of children by age group

Age group	No ARI	ARI	Total
<12 month	93 (31%)	105(35%)	198(66%)
12-24 month	42 (14%)	60(20%)	102(34%)
Total	135 (45%)	165(55%)	300(100%)

Categorization of children having ari on the basis of educational status of the mother

The study shows higher incidence of ARI cases are observed in mothers who had education up to upper primary as she don't know the signs and symptoms of the disease and has a less health seeking behavior. Severe pneumonia cases were observed in children of illiterate mother's and mother's having only primary education. This may be due to fact that illiterate mother's because of poor socioeconomic condition and fail to take care of their children when episode is mild. (Table-2)

Table-2: Categorization of children having ARI on the basis of educational status of the mother

	No ARI		ARI		Total	
Education	N	%	N	%	N	%

Illiterate	14	36.84%	24	63.16%	38	100%
Primary	36	35.29%	66	64.71%	102	100%
High school	55	55%	45	45%	100	100%
Higher education	27	47.37%	30	52.63%	57	100%
Professionals	3	100%	0	0	3	100%
	135	45%	165	55%	300	100%

PRESENTING SYMPTOMS

In present study most common clinical symptoms of ARI were Fever (95%), cough (83%), running nose, (65.3%), ear discharge (15%) wheeze (18.5%), and, chest in drawing (3.5%), and fast breathing (14.8%) (Table-3).

Table-3: Presenting symptoms of ari in ari cases

Fever	95%
Cough	83%
Running nose	65.3%
Ear discharge	15%
Wheez	18.5%
Chest indrawing	3.5%
Fast breathing	14.8%
Chest pain	0%

ARI MORBIDITY WITH RELATION TO SEASON

In the present study highest incidence was observed in November, December, January, and February and lowest in the month of March, May and August. This shows high significance.

DISCUSSION

The present study was a hospital based longitudinal study of one year duration, which was undertaken in Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar ,India among the under two year age children of both sexes and belonging to all strata of socio economic group to assess the magnitude of ARI in the region. Out of the 300 children, 155 (51.66%) were boys and 145 (48.33%) were girls. 80% of all the children had been found to be completely immunized.

TOTAL EPISODES RATE

The hospital based study in India have observed that under five children of urban areas suffer from 5-9 episodes per child per year where as in rural areas it is 1-3 episodes per child per year. In the present study, total number of ARI incidence 2.641 episodes per child per year,while AURI and ALRI were 1.88 and 0.6 episodes per child per year respectively. Higher incidence rate was observed in the studies conducted by Chhabra P et al [8]. Agarwal DK et al [9] and Vijaya Kumar [10], probably because these studies were carried out at the time when ARI control program was not implemented in our country. The lower incidence rate of ARI was observed in a study by Shah Hemangini Kishore conducted in rural Goa among under five children which was found to be 1.3 episodes per child per year. In a study conducted by Chhabra P. et al[8] observed the incidence rate of AURI and ALRI as 2.20 and 0.30 episodes per child per year which was higher when compared with present study.

AGE AND ARI

In the present study, it was observed that children in the higher age group had significantly lower incidence rate of ARI, AURI and ALRI. Highest incidence rate of ARI, AURI and ALRI was found in the age group of <12 months (3.77, 3.59 and 0.6 episodes per child per year respectively) while the lowest incidence was found in the age group of<13-24 months (2.36, 1.67 and 0.6 episodes per child per year) respectively. Similar observation was made by Chhabra P et al [8]. Who observed higher incidence rate of ARI in the first 2 years of life (3.0 and 3.1 episodes per child per year respectively) and lowest in the age group of 49-60 months (1.8 episodes per child per year). The highest and lowest incidence rate of ALRI was in the age group of 1-12 months (0.5 episodes per child per year) and 49-60 months (0.1 episodes per child). Shah Hemangini Kishore (1995) observed 1.7 episodes of ARI per child per year among infants and 1.0 episode per child per year among the children 2- 3 years of age6. In contrast Vijay Kumar (1987) observed lowest incidence of ARI during infancy (2.20 episodes per child per year) reaching a peak in children 2-3 years of age (4.47 episodes per child per year [10].

IMMUNIZATION STATUS AND ARI

In the present study, completely immunized children had lower incidence rate of ARI when compare to other children. But this difference was not found to be statistically significant. Hortal M. et. Al [12]. (19985-87) observed that low immunization rate did not increase risk of ARI. In contrast, Agarwal D.K. et. al. observed statistically significant association between immunization status and ARI where immunized children had lower incidence of ARI[4]. Seasonal variation and ARI In the present study, it was observed that highest incidence of ARI was found in the winter season (November-February) with a peak in December. This was found to be statistically significant. Similar results were also obtained in the study conducted by Reddaih V.P and Kapoor S.K.[11] .Socioeconomic status and ARI Of the total 300 families 64.76% belong to low socioeconomic status and show a high prevalence 71.03% of ARI in the children. This shows a strong association between socioeconomic status and the incidence of ARI in children. Similar results were observed by Walia BN et al[13]. Low socio economic status was a significant socio demographic risk factor causing ARI in children, in study by Savitha M.R (2005). In study by Mitra NK (1997) risk ratio analysis showed that Low socio economic class (Rs1000/- month) was significantly associated with increasing number and severity of ARI episodes [14].

CONCLUSION

The results suggested that ARIs are still a major health problem of under two year children and steps like improved complete immunization coverage, improved nutritional status and breast feeding can bring down incidence of ARI.

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