Original Research

ARI in underfive children with associated risk factors.

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ABSTRACT: INTRODUCTION:- Acute respiratory diseases are one of the major causes of mortality and morbidity in children below 5 years of age, especially in situations prevailing in developing countries like India. 26.3 million episodes of ARI were reported with 2,492 deaths in India (2011). Seasonal variations S.ES and smoking contribute to 20-30% incidence of pneumonia in developing countries as opposed to 3-4% incidence in developed countries. **MATERIAL AND METHOD:** Prospective longitudinal community based study was carried out in the rural field practice area of 'Rama Medical College and Research centre' under five children constituted 14.94% of the total population. **RESULTS & DISCUSSION:** All children under 5 years of age were examined using WHO guidelines for signs symptoms and severity of ARI and no of average episodes Maximum episode of ARI were reported in the 4th quarter Nov-Jan. Children from family where no bidi/cigarette was smoked suffered 1.50 average episode, in contrast to children from family where smoking was there, suffered from 4.17 average episode to 6.69 episodes. Respiratory episodes were highest 4.16 per child/year in children coming from family with per capita income < Rs. 500 in comparison to children coming from families from higher SES suffered 2.08 average episode. Although immediate causes of acute respiratory infections are bacteria and virus but seasonal influence, smoking and poverty are the under lying drivers of vulnerability. **CONCLUSION:** from the above study, it can be concluded that seasonal influence, smoking of bidi/cigarette and low SES play a key role in the causation of ARI. A reduction in these risk factor s can significantly lower the prevalence of ARI in the rural community.

Key Words: Acute respiratory infection, children 0-5 years, socio economic, status seasonal influence, smoking.

INTRODUCTION:

A child constitutes the most priority and vulnerable group in terms of survival, growth and development. Acute respiratory infections (ARI), particularly lower respiratory tract infection (LRTI), are the leading cause of under-five morbidity for an estimated just about two million childhood deaths globally.[1] Every year, about 12 million children in developing countries die before they reach their fifth birthday, many during the first year of life. Seven in ten of these deaths are due to acute respiratory infections (mostly pneumonia), diarrhea, measles, malaria or malnutrition or a combination of these conditions.[2]

It is estimated that Bangladesh, India, Indonesia and Nepal together account for 40% of the global ARI mortality. ARI is responsible for about 30-50% of visits to health facilities and for about 20-40% of admissions to hospitals.[3] Many risk factors for respiratory tract infections have been identified. Which include not only climatic conditions but also the poverty poor nutrition, poor housing condition, indoor air pollution such as parental smoking absence of ventilation, overcrowding individualization, social cultural values, over use & misuse of antibiotics, lack of basic health services and lack of awareness.[4] According to the World Health Organization (WHO), children below 5 years of age in the developing world suffer about 2-6 episode of ARI annually.[5] Despite their toll, acute respiratory infection have been called "the forgotten pandemic" because they have not attracted sufficient attention from government, the global health community donors, the pharmaceutical industry or the public[6].

MATERIAL & METHODS:

1. **Type of Study:** Descriptive, epidemiological community based study done by interviewing the mothers, of the children aged 0-5 years in the PHC, sub centre, remote villages of RHTC Shivrajpur.
2. **Study Area:** 26 villages of Shivrajpur, RHTC service area under Community Medicine Department of RMC, Kanpur were selected, to give complete coverage of rural population. Villages were divided into stratas---PHC village, sub-centre, and remote village. Villages & household from each stratum were selected by simple random techniques & total 3135, under 5 population were registered for study.
3. **Methodology:** The longitudinal study was conducted in field practice areas of rural health training centre (RHTC), Shivrajpur, managed by Community Medicine Department of Rama

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Medical College Hospital & Research Centre, Mandhana, Kanpur from Jan. 2009 to Dec. 2009. Shivrajpur block provides services to surrounding 65 villages. Out of these 26 villages household were selected by simple random sampling to give complete coverage of rural population. 3135underfive children were registered & constituted about 14.94% of total population. Workers were trained to diagnose & manage ARI on WHO guidelines.

House to house visit was conducted to collect necessary information. After explaining the aim of study an interview was conducted by questionnaire method. Information collected was entered in Proforma & fortnightly follow ups were done. Reports were collected at monthly interval. 10% of the work was checked by direct observation. Reports collected at monthly interval were analyzed in Dept. of Community Medicine by direct observation.

Assessment of knowledge & skill of workers to recognize & manage ARI done using WHO guidelines. Training package included.

a) Identification of ARI.
b) Management of ARI.
c) Referral.
d) Impart health education to mothers.

Health education was given to mothers in group of 20-25 with help of flip charts, photographs and posters.

4. **Inclusion Criteria:** Any child having one or more of following symptoms was identified as ARI case.
   a) Cough.
   b) Blocked/Running nose.
   c) Ear ache/discharge.
   d) Sore throat.
   e) Difficulty in breathing/nosily breathing.
   f) Fever present or absent.
   New episode was considered as in which patient, had been free of symptoms for last 48 hours.
   a) **Exclusion criteria:** Patients having history of cough greater than 7 days were excluded from the study.
   b) Children whose families had not been residing in the community for the past 3 months.
5. **Statistical analysis:** Data were pooled and evaluated. Data analysis was done by-
   Calculating the percentages

RESULT & DISCUSSION:

Table: 1. Distribution of children (n=3135) according to gender and Type of family.

Gender		Family	
Male (%)	Female (%)	Nuclear (%)	Joint (%)
1714 54.67%	1421 45.33%	759 24.24%	2376 75.76%

In the present study total 3135 under five study subjects were enrolled. Age wise distribution was 24.30% in 0-1 years, 22.99% were 1-2 years age group, 19.20% were 2-3 years age group, 16.81% were 3-4 years age group and less than 5 years were 16.68%. Sex wise distribution of males was 54.67% were males and 45.87% were female. Majority of the rural population 75.76% belonged to joint family and the remaining 24.24% belonged to nuclear family (Table. 1).

Fig. 1 Bar Diagram Showing Distribution Of A.R.I. Cases.

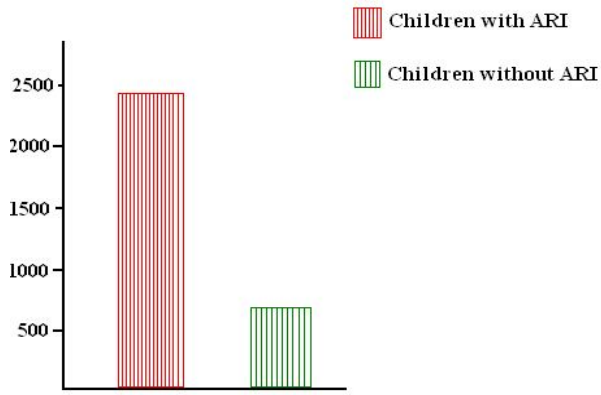
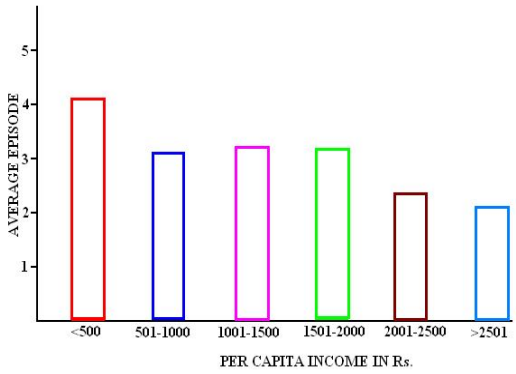


Table: 2. Morbidity pattern of ARI among 0-5 years of age group.

Sr. No.	ARI status in children 0-5 years age group	Total population (%)
1	Children with ARI	2477(79.02)
2	Children without ARI	658(20.98)
	Total	3135 (100%)

4.88% children were from families where per capita income was >2501, 17.38% of children were from families having per capita income was <500 Rs. (Table. 3) Children coming from families with per capita income <500 Rs. suffered highest average episode 4.16% per child per year and the children coming from families with per capita income >2501 Rs. suffered an average episode of 2.08% This may be attributed to the fact of, lack of proper food, clothing, shelter, malnutrition, low immunity, high susceptibility of infection. Banik et al, Gulati, S. Chatterjee[7] have also reported higher morbidity in lower socioeconomic status.

Fig. 2 Bar Diagram Showing Average Episode In Relation To Per Capita Income.



Seasonal variation in episode of ARI was 22.2%, 9.95%, and 27.65% in the I II III quarter respective. Maximum episode of ARI 40.2% were reported in the IV quarter Nov-Jan (Table. 4). This could be attributed to the fact (I) low environmental temperature (II) children are not clothed properly (III) people like to stay indoors with closed door and windows. Thus decreasing the ventilation and promoting spread of infection via droplet route. Panjab study, Mysore[8] study also reported lack of ventilation was significantly related with ARI in under fives.

24.91% children were from families where no bidi/cigarette were consumed. 11.41% children were from families where more than 31 bidis consumed per day. Children from family where no bidi/cigarette was smoked suffered 1.50 average episode and children from family >31 cigarette/bidi consumed suffered an average episode of 6.69% (Table no. 5). This could be explained by the fact that nicotine released from smoking irritates the respiratory mucosa. Brazil study[9] Bangladesh study[10] have also reported increase incidence of morbidity with increase cigarette smoking. The government of India in its policy document of health for all by 2000 A.D recommends the ARI control programme to reduce infant and preschool child mortality.[11]

Table: 3. Co-relation between per capita income and average episode.

Sr. No.	Per Capita income	Population	Total episode	Average episode Per person
1.	<500	545 (17.38%)	2270 (22.42%)	4.16
2.	501-1000	822 (26.20%)	2570 (25.39%)	3.13
3.	1001-1500	898 (28.64%)	2909 (28.739%)	3.23
4.	1501-2000	423 (13.49%)	1354 (13.37%)	3.20
5.	2001-2500	294 (9.37%)	700 (6.91%)	2.38
6.	>2501	153 (4.88%)	319 (3.15%)	2.08
	Total	3135	10122	

FIG. 3 SEASONAL VARIATION IN EPISODES OF ACUTE RESPIRATORY INFECTION IN FOUR QUARTERS.

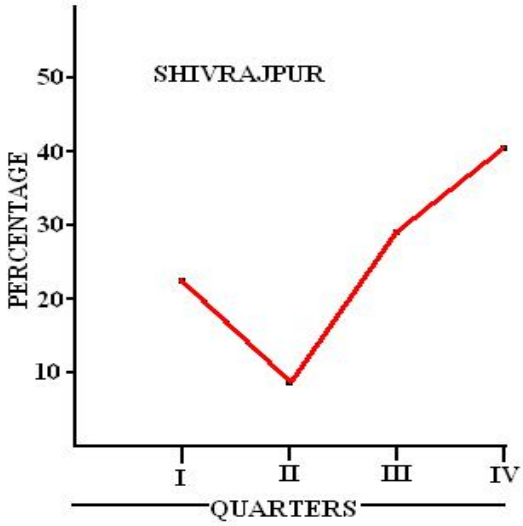


Table: 4. Seasonal variation in episode of acute respiratory infection in four quarters.

Sr. No.	RHTC	Quarters			
		Feb-Apr	May-July	Aug-Oct	Nov-Jan
1	Shivrajpur	22.2%	9.95%	27.65%	40.2%

Table: 5. co-relation between bidi, cigarette and average episode.

Sr. No.	Bidi/cigarette Consumed per day	Population	Total Episode	Average Episode per person
1.	0	781 (24.91%)	1174 (11.54%)	1.50
2.	1-10	1210 (38.59%)	2962 (29.26%)	2.45
3.	11-20	420 (13.39%)	1982 (19.58%)	4.71
4.	21-30	366 (11.67%)	1608 (15.89%)	4.39
5.	+31	358 (11.41%)	2396 (23.67%)	6.69
	Total	3135	10122	

CONCLUSION:

Morbidity pattern of ARI is directly related to risk factors like, type of family, SES smoking habits and seasonal influence. Seasonal influence is also indirectly related to the SES. Improvement of SES is a comprehensive task, which will hopefully improve with the development of nation. Thus the present study presses the need, to identify the risk factors and disseminate public awareness campaigns on combating malnutrition, replacing smoky chullahs to smokeless chullahs and cessation of smoking.

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