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Acute respiratory infections in rural underfives

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A prospective study was conducted in rural areas of Ballabgarh Block, Haryana by following 5,078 children for a period of 1 year in 1986. The morbidity due to ARI was 3·67 attacks/child/year with lowest attack rates in summer (2·1 in June), and highest in winter (4·78 in January). The moderate and severe cases constituted 14·7% of all *cases. Proportional mortality rate due to ARI was 22·6% in these children. 66·5% of deaths were in infants. But the case fatality was 1·31% ana the ARI related mortality was 6·3/1000 children and underfives mortality was 26·0/1000 children.*

Key words : ARI morbidity; Attack rates; Mortality; Proportional mortality; Case fatality; ARI related mortality.

Acute Respiratory Infections (ARI) constitute a major morbidity load in populations all over the word. In developing countries only 14% of child population (less than 5 years) contributes roughly to 50% of all deaths in the community. Causes of mortality in underfives show that 20—25% of mortality is due to ARI. Calculating on this basis, one million deaths in underfives in this country would be due to ARI and most of these in infants.

Though mortality figures for ARI are available, reliable data on morbidity in the community is lacking. Therefore, this study was planned to find out the morbidity and mortality due to ARI, and their seasonal variation.

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Material and Methods

All the underfives of 25 villages of Ballabgarh block were studied. The trained field assistants followed these children every month to record the episodes of ARI occurring in the preceding 2 weeks, including the day of the visit. The births and deaths were also recorded during these domiciliary visits. The causes of death were verified by a physician who interrogated the mothers of the dead children every month. A followup form was filled for every child every month. Those children who crossed the age of 5 years or migrated or died, did not contribute to the follow-up. So the number of children followed varied from month to month. Hence each child's contribution is counted by months followed and analysis done for calculating attack rates per child per year.

At follow-up parents were asked regarding episodes of running nose, cough, ear pain or discharge lasting less than 2 weeks. The moderate cases were recognised by the history of fast respiration or counting the respiration by the assistants, if the child was ill at the time of visit. Severe cases were recognised by history or observing intercostal retraction and looking for danger signs like cyanosis, wheeze or inability to drink fluids.

Results

The study was started with 5078 children. They were followed from January 1986 through December 1986. Due to changes in the number of children every month, as explained above, these children contributed a total of 54,081 child months. They reported 16,558 attacks of which 2,440 were moderate/severe.

Morbidity. There were 3·67 attacks of ARI per child per year. The attack rate by month is presented in Table I. The attack rate was lowest in June (2·1) and highest in January (4·78). The percentage of moderate and severe attacks was 14·7% of total ARI attacks. The percentage of moderate and severe cases were also high in winter months.

Mortality. Of 141 children who died in the year under study, 32 died of ARI giving a proportional mortality rate of 22·6% (22·5% and 22·9% in infants and post-infancy children respectively). Case fatality rates based on moderate and severe cases was 1·32%. The ARI related mortality was 6·3/1000 children and underfives mortality was 26/1000 children. Of all ARI deaths 65·6% were in infants.

Table I. Seasonal variation of attack rates of ARI in underfives

Month	No. of attacks per child/year	Moderate & severe (%)
January	4·75	17·3
February	3·43	15·2
March	3·17	14·7
April	2·37	11·8
May	2·51	14·4
June	2·10	10·2
July	2·66	15·1
August	2·49	14·4
September	2·88	9·1
October	3·45	13·5
November	3·18	18·0
December	3·58	21·0
Mean	3·67	14·7

Discussion

In this study the ARI attack rate was 3·67/child/per year which is comparable to other studies.[1,2] This figure is less than that reported in developed countries and in urban areas.[3-5] This may be due to environmental factors and density of population, as usually in urban areas over-crowding and air pollution is higher. The attack rate was higher in winter months than in summer months showing a distinct seasonal variation. Similar seasonal variations have been observed by others.[6-8]

The percentage of moderate and severe cases was 14·7% in this study (0·538 attack per child per year). This rate is quite higher than reported in rural Punjab (94/1000),[1] and may be due to predisposing factors like malnutrition. Of underfives-deaths 22·6% were the due to ARI,

similar to other reports.[9] As most of moderate and severe ARIs respond to antibiotic treatment, deaths can be prevented by applying existing technology of standardised case management.[10]

But the case fatality rate observed in the field was 1·31% for moderate and severe cases. The high rates reported in hospital data (5-12%) may be due to severity and late arrival at the hospital.[10]

The ARI related mortality observed among the children was 6·3/1000 children. At least 50% of this can easily be prevented by strengthening immunization in children and appropriate case management strategies already available.

Of the deaths, 65·9% were in infants. Therefore infants are more at risk than pre-schoolers, and are also more difficult to reach. Therefore mechanisms must be evolved to reach this group if we want to make any dent in solving this problem.

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