

Knowledge, Attitude and Practices on Acute Respiratory Infections among Urban and Rural Mothers of Under-Five Children in North India

Neeraj Sehgal¹, Jasmeet Singh^{2*}, Rupam Pasricha³, Ruchika⁴, Arushi Arora⁵

¹Associate Professor, Department of Paediatrics, Government Medical College, Amritsar, Punjab, India

^{2*}Associate Professor, Department of Community Medicine, Government Medical College, Amritsar, Punjab, India

³Senior DNB Consultant (Gynae & Obstt.) at Civil Hospital Amritsar, Punjab, India

⁴Senior Consultant, Department of Gynae & Obst, Fortis Escorts Hospital, Amritsar, Punjab, India

⁵MBBS Student, Government Medical College, Amritsar, Punjab, India

***Address for Correspondence:** Dr. Jasmeet Singh, Associate Professor, Department of Community Medicine, Government Medical College, Amritsar, Punjab, India

E-mail: jasmeetazad1982@gmail.com

Received: 19 Apr 2025/ Revised: 21 Jun 2025/ Accepted: 22 Aug 2025

ABSTRACT

Background: Due to inadequate knowledge and faulty cultural practices regarding ARI, many mothers could not differentiate AURI from ALRI, which delays treatment. Delayed recognition and help-seeking by the family are important factors in the high mortality associated with pneumonia.

Methods: 250 mothers of children under five years of age, having acute respiratory tract infection who visited in OPD were included in the study. Mothers were questioned about various symptoms of ARI, whether they can differentiate between AURI and ALRI depending upon symptomatology. Those mothers who could not differentiate (designated as group B) were questioned about various symptoms of ARI. The perception of that mother who could differentiate between AURI and ALRI (designated as group A) was noted.

Results: From 250 children coming in OPD 60% suffered from AURI, while 40% suffered from ALRI. The ability to distinguish between AURI and ALRI is more common in urban mothers. Knowledge regarding symptoms of AURI (fever, cough, cold, ear discharge and vomiting) was more in urban mothers as compared to rural counterparts. Treatment from the medical personnel was more commonly found in urban mothers than in rural mothers. Prevalence of self-medication was seen at 15.6%.

Conclusion: Mothers play an important role in preventing and managing ARI's through correct knowledge and cultural practices. Adopting good practices by the mother has a direct effect on the health and well-being of her child.

Key-words: Acute respiratory tract infections, Knowledge, Attitude, Practices, Mothers, Children of age 0-5 years, Urban-rural

INTRODUCTION

Acute hospital infection can be defined as an infection of less than 30 days' duration in any part of the respiratory tract and related structures. In the case of infections of the upper airway, the duration of the acute respiratory tract episode is taken as 14 days or less.

Acute respiratory infection is further divided into upper and lower ARI depending upon the site of infection. AURI include cold, pharyngitis, sinusitis, and otitis media, while ALRI include epiglottitis, laryngitis, laryngo-tracheo-bronchitis, bronchitis, bronchiolitis, and pneumonia, which is responsible for the majority of deaths due to ARI [1].

Acute respiratory tract infection is a disease of public health concern. It is not only caused by a heterogeneous group of organisms that affect human airways but linked with various modifiable factors, including demographic, environmental, social, and nutritional factors. Many studies have shown that comorbid illnesses, especially

How to cite this article

Sehgal N, Singh J, Pasricha R, Ruchika, Arora A. Knowledge, Attitude and Practices on Acute Respiratory Infections among Urban and Rural Mothers of Under-Five Children in North India. SSR Inst Int J Life Sci., 2025; 11(5): 8216-8222.



Access this article online
<https://ijls.com/>

HIV, malnutrition, prematurity, measles, family history of ARI, low socioeconomic status, inappropriate weaning time, anaemia, cooking fuel other than LPG, indoor air pollution, maternal illiteracy, passive smoking, rural residency, overcrowding, etc., are associated with acute respiratory tract infections. If associated modifiable risk factors could be modified or avoided through the implementation of various intervention strategies, then disease burden in the community could be reduced.

Globally, an acute respiratory illness has a 20% mortality among children under five years of age. If neonatal pneumonia is also considered, the mortality increases to 35 to 40%. Among children under five, accounting for 2.04 million deaths per year. South-East Asian countries like Bangladesh, India, Indonesia, and Nepal together account for 40% of the global ARI mortality. Acute respiratory tract infection is responsible for 30% to 50% of visits to health facilities and for about 20% to 40% of hospital admissions for children under the age of five [2,3].

The Sustainable Development Goals set the target to end deaths from preventable diseases among newborns and children under five years old by 2030. Nevertheless, in 2017, an estimated 5.5 million children belonging to age book died from preventable diseases [4]. India is one of the 15 highest burden countries in terms of total pneumonia episodes and related childhood mortality [5,6]. In India, the National Family Health Survey-5 conducted in 2019-20 reported that in India the prevalence of ARI was 2.8% proceeding two weeks to survey in the urban areas and 3.8% in full areas in Maharashtra state. In the Indian slum areas. ARI constitutes more than two-thirds of all childhood illnesses [7]. In India 14.3% of deaths among infants and 15.9% of deaths among children aged between one to five years of age are due to ARI, and most of these are preventable [8]. Acute respiratory tract infections accounted for 69% of the total cases of communicable diseases in India [9]. Around four lakh children under the age of five die every year from acute respiratory infections. ARI is a significant public health concern in India [5,6].

Due to inadequate knowledge and faulty cultural practices regarding ARI, many mothers could not differentiate AURI from ALRI, which delays treatment. Delayed recognition and help-seeking by the family an important factors in the high mortality associated with pneumonia. In our social setup, most mothers practice some home treatment before seeking advice from a

medical practitioner, even though a child with bacterial pneumonia cannot be cured with home remedies. Delayed recognition and help-seeking by the family worsen the outcome in pneumonia. False practices and beliefs related to breastfeeding, weaning, bottle feeding, evil eye, immunization, etc., also play a vital role in increasing mortality and morbidity. Knowledge of mothers about ARI varies from region to region. Mother education, socio-economic status, and the socio-cultural-environment are directly associated with the health-seeking behaviour of families. So, keeping this in mind, this study was planned to assess the knowledge, attitudes, and practices of mothers and the community about the various aspects of acute respiratory tract infections in children.

MATERIALS AND METHODS

Research Design- A cross-sectional study was conducted in Rajindra Hospital, Patiala, Punjab, India. A total of 250 mothers of children under five years of age with acute respiratory tract infections (ARI) who visited the Paediatrics OPD were enrolled. A detailed pretested questionnaire was used, which included sociodemographic profile and questions related to ARI and pneumonia. For the study, ARI were classified into acute upper respiratory tract infection (AURI) and acute lower respiratory tract infection (ALRI). Symptoms of AURI included cough, cold, fever, earache, ear discharge and vomiting without features of severe pneumonia. Symptoms of ALRI included rapid breathing, chest indrawing, high-grade fever, convulsions, cyanosis, refusal to feed and excessive drowsiness.

Inclusion Criteria

- ✓ Mothers of children under 5 years of age attending Paediatrics OPD with symptoms of acute respiratory tract infection (ARI).
- ✓ Mothers who gave consent to participate in the study.

Exclusion Criteria

- ✓ Children with chronic respiratory diseases (e.g. asthma, congenital lung disease, tuberculosis).
- ✓ Children with other systemic illnesses unrelated to ARI.
- ✓ Mothers who refused to participate in the study.

Data Collection- Mothers were questioned about various symptoms of ARI and whether they could differentiate between AURI and ALRI. Those who could not differentiate (Group B) were further questioned regarding their perception of ARI. The responses of mothers who could differentiate (Group A) were also recorded. Feeding practices during ARI, knowledge of the protective role of breastfeeding and immunization, and perceptions regarding pneumonia were assessed.

Statistical analysis- The data were compiled and analysed using Epi Info 07 (CDC, USA). Proportions and means were calculated for categorical and continuous data, respectively. Chi-square test was applied to assess the significant differences across categories.

Ethical approval- Approval for the study was obtained from the institutional ethical committee, Government

Medical College Patiala, Punjabi University Patiala, June 1995.

RESULTS

A total of 250 mothers of children under five years having ARI attending the Paediatrics OPD in a tertiary care hospital in North India were studied. 39% of mothers of children from rural backgrounds and 61% from urban backgrounds. Of 250 children coming in OPD 60% suffered from AURI while 40% suffered from ALRI. Depending upon the knowledge of mothers about ARI, mothers were divided into 2 groups, i.e. Group A mothers who can differentiate between ALRI and AURI (166) 66% and Group B mothers who cannot differentiate between ALRI & AURI (84) 34%. In Group A, there is a higher percentage of urban mothers 75% as compared to rural mothers 53%, while in Group B, rural mothers were more (47% vs 25%) (Table 1).

Table 1: Distribution of participants of the study (Mothers & children)

Category	n=250	Rural	Urban	% Rural	% Urban
AURI (Acute Upper Respiratory Infection)	150	-	-	60%	-
ALRI (Acute Lower Respiratory Infection)	100	-	-	40%	-
Can differentiate (Group A)	166	52 (53%)	114 (75%)	-	-
Can't differentiate (Group B)	84	46 (47%)	38 (25%)	-	-
Total Children	250	98 (39%)	152 (61%)	-	-

The maximum number of children was suffering from AURI. Most of the urban children (102; 67%) had AURI, while 50 (33%) children had ALRI as their presenting illness. Similarly, in the rural group, 48 (49%) of children had AURI, and 50 (51%) had ALRI. In the present study, fever, cold and cough were the three most common

symptoms of AURI reported by Group A mothers. Knowledge regarding symptoms of AURI (fever, cough, cold, ear discharge and vomiting) was more in urban mothers as compared to their rural counterparts, though the difference was statistically not significant (Table 2).

Table 2: Distribution of children according to type of respiratory infections (AURI/ALRI) and knowledge of Group A mothers regarding symptoms of AURI

Variable	Rural (n=98 / 52*)	Urban (n=152 / 114*)	Total	p-value
Children with AURI	48 (49%)	102 (67%)	150 (60%)	0.0042
Children with ALRI	50 (51%)	50 (33%)	100 (40%)	
Group-A mothers knowing AURI symptoms				
Fever	40 (77%)	100 (88%)	140 (84%)	>0.05
Cough	46 (88%)	105 (92%)	151 (91%)	>0.05
Cold	44 (86%)	110 (96%)	154 (93%)	>0.05
Ear discharge	-	4 (3%)	4 (2%)	-
Vomiting	2 (3%)	6 (5%)	8 (5%)	>0.05

*Note: For AURI/ALRI distribution, denominators are total rural (n=98) and urban (n=152) children. For AURI symptom knowledge, denominators are Group-A mothers (Rural=52, Urban=114)

Various symptoms of ALRI reported by Group A mothers in order of frequency were cough (87%), chest indrawing (81%), high-grade fever (70%), rapid breathing (68%), refusal to feed (53%), noise from chest (42%), cyanosis (5%) and convulsions (4%). Knowledge regarding these symptoms was higher in urban mothers as compared to rural mothers, but the difference was not statistically significant. Similar findings were observed in Group B

mothers, although their knowledge was comparatively poorer. Fever, cough and cold were the most commonly reported symptoms, while recognition of rapid breathing, chest indrawing, refusal to feed and noise from the chest was less frequent. Differences between urban and rural mothers were not statistically significant (Table 3).

Table 3: Distribution of mothers according to knowledge regarding signs and symptoms of ARI/ALRI

Sign & Symptoms	Rural	Urban	Total
ALRI (Group A, n=166)			
Rapid breathing	33 (63%)	80 (70%)	113 (68%)
Chest indrawing	38 (73%)	96 (84%)	134 (81%)
High grade fever	36 (69%)	80 (70%)	116 (70%)
Convulsions	–	6 (5%)	6 (4%)
Cyanosis	2 (4%)	6 (5%)	8 (5%)
Refusal to feed	26 (50%)	62 (54%)	88 (53%)
Noise from chest	20 (38%)	50 (44%)	70 (42%)
Cough	42 (81%)	103 (90%)	145 (87%)
ARI (Group B, n=84)			
Fever	36 (78%)	30 (79%)	66 (79%)
Cough	40 (87%)	30 (79%)	70 (83%)
Cold	36 (78%)	28 (74%)	64 (76%)
Rapid breathing	10 (22%)	14 (37%)	24 (29%)
Chest indrawing	16 (35%)	16 (42%)	32 (38%)
Cyanosis	–	–	–
Refusal to feed	16 (35%)	18 (47%)	34 (40%)
Noise from chest	14 (30%)	16 (42%)	30 (36%)
Convulsions	–	–	–

p-value > 0.05

In the present study, the majority of Group A mothers (92%) preferred treatment by medical personnel for ARI, while only 6% opted for home treatment and 2% gave no treatment. In Group B, more than half of the mothers (55%) used home treatment as the first option, whereas 37% sought medical care and 8% gave no treatment. Among mothers practicing self-medication (15.6%), the most common reason was the use of a previous doctor's

prescription (51%), followed by mass media (31%). Advice by elders (10%) and self-decision (8%) were less frequent.

Regarding the seriousness of pneumonia, 86% of mothers were aware that pneumonia can cause death, while 14% believed otherwise. Significantly more urban mothers (91%) than rural mothers (80%) recognized the fatal nature of pneumonia ($p = 0.011$) (Table 4).

Table 4: Mothers' practices regarding initial treatment, self-medication and knowledge about seriousness of pneumonia

Category	Rural	Urban	Total
Initial treatment preferred – Group A (n=166)			
No treatment	2 (4%)	2 (2%)	4 (2%)
Home treatment	4 (8%)	6 (5%)	10 (6%)
Treatment by medical personnel	46 (88%)	106 (93%)	152 (92%)
p-value	<0.00007		
Initial treatment preferred – Group B (n=84)			
No treatment	4 (9%)	3 (8%)	7 (8%)
Home treatment	26 (56%)	20 (53%)	46 (55%)
Treatment by medical personnel	16 (35%)	15 (39%)	31 (37%)
p-value	<0.905		
Reasons for using self-medication (n=39; 15.6%)			
Advice from elders	3 (12%)	1 (7%)	4 (10%)
Of their own	1 (4%)	2 (13%)	3 (8%)
Previous prescription by doctor	15 (63%)	5 (33%)	20 (51%)
Mass media	5 (21%)	7 (47%)	12 (31%)
p-value	<0.005		
Knowledge about seriousness of pneumonia (n=250)			
Yes	78 (80%)	138 (91%)	216 (86%)
No	20 (20%)	14 (9%)	34 (14%)
p-value	<0.011		

In present study, 71% of urban and 77% of rural mothers believed that breastfeeding did not offer protection against ARI, Similarly in relation to immunization, 80% of urban and 88% of rural mothers believed that no protective role of vaccination/immunization in ARI (Table

5). Although the difference between urban and rural was statistically insignificant but overall inadequate knowledge, inappropriate and faulty practices & beliefs about vaccination/immunization and breastfeeding impair the growth and development of children.

Table 5: Distribution of mothers (group A & group B) according to knowledge regarding protective role of breastfeeding and immunization in ARI

Protects against ARI	Rural (n=98)	Urban (n=152)	Total= 250
Breastfeeding			
Yes	21 (21%)	44 (29%)	65 (26%)
No	77 (79%)	108 (71%)	185(74%)
Immunization			
Yes	12 (12%)	30 (20%)	42 (17%)
No	86 (88%)	122 (80%)	208 (83%)

p-value for breastfeeding practices = 0.18; p-value for immunization practices = 0.12

DISCUSSION

The ability to distinguish between AURI and ALRI is more in urban mothers, and it was statistically significant; this may be because urban mothers were more educated and relatively more exposed to the mass and print media

than their rural counterparts. In the present study the most children having a and ALRI belonged to rural groups, and it was statistically significant; it is possibly because rural people come to the hospital late in the course of the disease, while urban people are more

aware of the disease in children due to the better educational status of the urban mothers. Also, the availability and accessibility of health facilities are more in urban areas. This study highlights the need for equitable distribution of health services in both rural and urban areas.

A study by Challa *et al.* observed that fever was the commonest presentation (63%), followed by cold and cough (61%), and a very few had fast breathing (8%), wheezing (6%) or chest indrawing (2%) [10]. A Cross-Sectional Study conducted in Imphal by Soubam *et al.* revealed the knowledge among mother about ARI as fever 97(31.8%), cough & cold 198(64.9%), sore throat 110 (36.1%), running nose 152 (49.8%), chest indrawing 28 (9.2%), fast breathing 50 (16.4%) [11]. Almost similar symptoms of ARI found to be known by mothers in Bangladesh by Akteruzzaman *et al.* were cough (84%), followed by fever 60%, breathing difficulty (25%) a sneezing (20%), and wheezing 16% [12]. Bham *et al.* in their study conducted in Pakistan revealed that cough (74%), fever (64%), wheeze (19%), and sneezing (12%) were the signs and symptoms of acute respiratory infection known by the mothers visiting the OPD [13].

In a study by Gyawali *et al.* where more than 40% respondents gave home remedies like ginger and honey to eat as initial treatment of ARI [14]. Kapoor *et al.* also observed that mild ARI is managed using home remedies by 51.9% of mothers, 44.3% preferred to take advice from a doctor, and 8.5% responded that no treatment was given [15].

Whereas in Aligarh, Khan *et al.* observed that 71.4% of mothers sought early treatment for ARI, 74.3% of mothers visited non non-allopathic medical practitioner, and only 25.7% visited a qualified doctor [16]. Another study by Bham *et al.* revealed that 89% of the study population consulted a qualified doctor, 58% practiced self-medication, and 6% took home remedies for ARI [13]. A study by Challa *et al.* found that around 12% of mothers went to a local RMP/pharmacist for initial treatment [10]. A similar picture was shown in Bangladesh, where it was 22% and 5% preferred home remedies [12].

Mass media was 2nd most common reason behind self-medication. Advertisements of various cough syrups and antibiotics should be abandoned from mass media, as most people use these injudiciously. Instead, mass media should be properly utilized for educating the masses

about ARI. Kumar *et al.* [17] and Donn *et al.* [18] found in their study that Early recognition of pneumonia and anticipating its fatality by mothers is essential to prevent mortality due to it, and it is possible only by educating them about it.

CONCLUSIONS

Mothers play an important role in preventing and managing ARI's through correct knowledge and cultural practices. Adopting good practices by the mother has a direct effect on the health and well-being of her child. So, it is need that policies and health programmes related to MCH like RMNCAH+N and other health programmes emphasise more on health education and specific protection (Primary prevention). On the other hand, secondary prevention (Early diagnosis and treatment) is equally important. In the long term Government should look and work on modifiable risk factors like demographic, environmental, socio-economic, nutritional, etc. If the associated modifiable risk factors could be modified through the implementation of various intervention strategies, then the disease burden in the community could be reduced. (Primordial and Primary Prevention).

CONTRIBUTION OF AUTHORS

Research concept- Neeraj Sehgal, Rupam Pasricha

Research design- Neeraj Sehgal, Rupam Pasricha

Supervision- Neeraj Sehgal, Rupam Pasricha

Materials- Neeraj Sehgal, Rupam Pasricha

Data collection- Neeraj Sehgal

Data analysis and interpretation- Neeraj Sehgal, Jasmeet Singh

Literature search- Jasmeet Singh, Ruchika, Arushi Arora

Writing article- Jasmeet Singh, Ruchika, Arushi Arora

Critical review- Jasmeet Singh, Ruchika, Arushi Arora

Article editing- Jasmeet Singh, Ruchika, Arushi Arora

Final approval- Neeraj Sehgal, Rupam Pasricha, Jasmeet Singh, Ruchika, Arushi Arora

REFERENCES

- [1] National child survival and safe motherhood programme. MCH Division, Department of Family Welfare, Govt of India; 1992. Available at: <https://archives.sochara.org/s/communityhealth/item/474>.
- [2] Gahlot A, Kumar S, Som Nath M, Mahajan P. ARI in underfive children with associated risk factors. Rama Univ J Med Sci., 2015; 1(1): 1-5.

- [3] Tazinya AA, Halle-Ekane GE, Mbuagbaw LT, Abanda M, Atashili J, et al. Risk factors for acute respiratory infections in children under five years attending the Bamenda Regional Hospital in Cameroon. *BMC Pulm Med.*, 2018; 18(1): 7.
- [4] Hug L, Sharrow D, Zhong K, You D. Levels and trends in child mortality: Report 2018. UN Inter-agency Group for Child Mortality Estimation. UNICEF, WHO, World Bank Group; 2018.
- [5] Jain N, Lodha R, Kabra S. Upper respiratory tract infections. *Indian J Pediatr.*, 2001; 68(12): 1135-38.
- [6] Vashishtha VM. Current status of tuberculosis and acute respiratory infections in India: much more needs to be done. *Indian Pediatr.*, 2010; 47(1): 86-89.
- [7] International Institute for Population Sciences (IIPS) and ICF. National Family Health Survey (NFHS-5), 2019-21: Maharashtra fact sheet. Mumbai: IIPS; 2021. Available from: http://rchiips.org/nfhs/NFHS-5_FCTS/FactSheet_MH.pdf.
- [8] Ramani VK, Pattankar J. Acute respiratory infections among under-five age group children at urban slums of Gulbarga city: a longitudinal study. *J Clin Diagn Res.*, 2016; 10(5): LC08-13.
- [9] Worldometer. Coronavirus cases. 2021. Available from: <https://www.worldometers.info/coronavirus/>.
- [10] Chella S, Krosuri V. Danger signs of acute respiratory tract infections in under-five children: awareness among mothers in the urban slums of Hyderabad, its relation to treatment seeking behavior. *Int J Community Med Public Health*, 2019; 6(1): 190-96.
- [11] Soubam A. Knowledge on acute respiratory tract infection among mothers in an urban community of Imphal West district: a community based cross-sectional study. *IOSR J Dent Med Sci.*, 2017; 16(7): 39-44.
- [12] Akteruzzaman M, Habib RB, Praveen S, Ahmed S, Khalil I, et al. Knowledge, attitude and practice of mothers about acute respiratory tract infections in under-five children. *J Family Med Prim Care*, 2017; 6(1): 16-20.
- [13] Bham SQ, Saeed F, Shah MA. Knowledge, attitude and practice of mothers on acute respiratory infection in children under five years. *Pak J Med Sci.*, 2016; 32(6): 1557-61.
- [14] Gyawali M, Pahari R, Maharjan S, Khadka R. Knowledge on acute respiratory infection among mothers of under-five year children of Bhaktapur District, Nepal. *Int J Sci Res Publ.*, 2016; 6(6): 529-34.
- [15] Kapoor SK, Reddaiah VP, Murthy GV. Knowledge, attitude and practices regarding acute respiratory infections. *Indian J Pediatr.*, 1990; 57(4): 533-35.
- [16] Khan AZ, Tickoo R, Arif T, Zaheer M. Mothers' attitudes to children's chest infections in India. *J Trop Pediatr.*, 1992; 38(2): 95-100.
- [17] Kumar V, Awasthi S, Kapoor SK. Care-seeking behaviour in childhood acute respiratory infections. *Indian Pediatr.*, 1994; 31(11): 1379-83.
- [18] Donn M, Mumba D, Asamoah A. Maternal knowledge, attitude and practices regarding childhood acute respiratory infections in Kumasi, Ghana. *Ann Trop Paediatr.*, 1994; 14(3): 293-98.

Open Access Policy:

Authors/Contributors are responsible for originality, contents, correct references, and ethical issues. SSR-IJLS publishes all articles under Creative Commons Attribution- Non-Commercial 4.0 International License (CC BY-NC). <https://creativecommons.org/licenses/by-nc/4.0/legalcode>

