What do mothers know about Acute Respiratory Infection: a case from eastern Nepal

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Abstract: A descriptive study was conducted in Eastern Nepal with an objective to assess the knowledge of mothers about acute respiratory infection (ARI). Two hundred mothers, who had currently at least a child under five, from randomly selected households were interviewed. 50.5% of the mothers correctly knew the signs and symptoms of ARI without pneumonia; 45% had mixed responses. Only 2.5% of the responding mothers reported to have knowledge about danger signs of ARI, 39.5% had wrong answers and 12% did not know about the danger signs of ARI. Regarding knowledge about home care management, 50.5% had correct responses. Both the correct and wrong responses about knowledge of ARI were more or less equally distributed across the educational level, ethnicity and age group of responding mothers. It is concluded that knowledge of mothers about ARI in general is low, particularly very low on danger signs of ARI. This might have led to delayed specific treatment of children with ARI, which could have resulted in various complications including death.

Keywords: ARI; danger signs; maternal knowledge.

Introduction

Acute Respiratory Infection (ARI) is defined as acute infective inflammatory changes in any part of respiratory tract, from the nasal mucosa to the alveoli, with an alteration in the respiratory physiology.[1] The definition excludes the chronic diseases like pulmonary tuberculosis, bronchial asthma and others. ARI is considered to be one of the major killers of children worldwide, particularly in developing countries. According to the World Health Organization Report in 1997, about four million deaths were attributable to ARI worldwide with 395 million new cases.[2] In the South East Asia alone every year 1.4 million children die of ARI.[2] In Nepal, ARI is one of the major causes of childhood morbidity and mortality with an episode of 4-6 times per year per child.[1] The prevalence of ARI is estimated to about 38% among the children below two years of age and 26% among the children from two to five years of age. The problem magnitude of ARI in Nepal differs by sub-region. The highest prevalence of ARI (47%) falls in Far-western terai and the lowest (27%) – in the eastern mountain sub-region.[3] The mortality due to ARI contributes to about 17-25% of all deaths in children. A hospital-based case fatality rate of ARI showed 9 percent.[4] It is estimated that the annual deaths of children less than five years of age due to pneumonia in Nepal is approximately 40,000.[5]

The Ministry of Health (MoH) has recognized ARI in children as a major public health problem in the country. The MoH has given a high priority to combat the problems of ARI through National ARI Control Programme which was established in 1987 with the aim of reducing ARI related morbidity and mortality by 1/3 by the year 2000 AD.[6] The National ARI Control Programme is highly expected to contribute to reduce the child mortality rate from the current 118 per 1000 livebirths to 102 per 1000 livebirths during the ninth five year plan (1997-2002).[7] The National ARI Control Programme focuses both on home care management of ARI and referral services to the health service facilities.[5] Recognizing the role of mothers as the main caretakers of children for the effective implementation of these services, the programme has special focus on training of mothers by the community-based health workers. The mothers receive advice and information about ARI and home care management of ARI children through the Female Community Health Volunteers (FCHVs) during the mothers' group meetings and through the Village Health Workers (VHWs) during their regular home visits. As the delayed referral might threat the life of children, it is extremely important for the mothers to know about the danger signs of ARI as defined by the World Health Organization.[8] With this view, the present study aims to assess the knowledge of mothers about the ARI in terms of recognizing them and home management.

Methodology

The present study was designed as cross sectional, descriptive and non-experimental.

Study setting and population

The study was conducted in Dulari Village Development Committee (VDC) of Morang District. The VDC lies in the

North-west of the District headquarter. It has about 7000 population with about 1550 households. The major ethnic groups inhabiting the VDC are Tharu, Brahmin/Chhetri, Limbu/Rai, Magar, Newar, Saha, Kami/Damai/Sarki and others. Although information related to the problem magnitude of ARI in the VDC itself is not available, the case of ARI is highest in this district in comparison to other 16 districts of the Eastern development region[6] and Morang is considered as high ARI prevalent district.[3] Women currently having under five children were the study population.

Sampling

Taking arbitrarily prevalence of pneumonia in Eastern Terai, the required sample size of 200 mothers for the statistical analysis was derived by using the formula $n = z^2 pq/d^2$ (Where n = required sample size, z = 1.96, p = 33%, d = 20% of p). Assuming that there might be at least one mother with under five children in each household, about 15% of total households would be needed. The list of households was obtained from the voter list of last local election. Thus, every seventh household was taken in sample to meet the requirement of 200 households. If the target mother was not in the selected household, the immediate next household was taken. In the households with more than one mother, the mother with the youngest child was chosen.

Data collection

Data collection was done using face to face interviews with a set of pre-tested questionnaire. The interviews were conducted simultaneously by three interviewers in different households. The interviewers were given a two-day orientation about the objectives of the study, technique of interviews and on the questionnaire of the present study. They were also provided with the set of instructions to be followed during data collection. Data collection took place from November 18, 1998 to December 4, 1998. Researcher supervised data collection throughout the period.

Data analysis was done in EPI Info version 6.

In the present study, ARI without pneumonia, also referred as cough and cold, is operationally defined as the condition with cough, running nose without fast breathing or indrawing chest. Similarly, danger signs are included as fast breathing, difficult breathing, noisy breathing and chest indrawing, refusal to eating, and child being sicker.[8] The knowledge is referred to ability of mother to mention above mentioned conditions of ARI with or without pneumonia. Correct knowledge is ability to mention at least one or all symptoms; wrong knowledge is said when mother mentioned other than above mentioned, whereas mixed knowledge of mother is considered when she mentioned one or all symptoms along with other non-related symptoms.

In the present study, home care management of ARI is keeping the child warm, frequent breastfeeding, giving safe remedies like hot drinks, honey, ginger, Tulasi leaf, avoiding smoke. The ability of mother to provide one or all of these actions is considered correct knowledge about home care management.

RESULTS

A total of 200 mothers were interviewed. Table I shows some of the basic characteristics of the responding mothers.

Characteristics	*Number*	*Percent*
Ethnicity		
Chhetri/Brahmin	74	37.0
Tharu	64	32.0
Tamang, Magar and others	62	31.0
Total	200	100.0
Educational status		
Illiterate	98	49.0
Informal education	39	19.5
Primary	9	4.5
Secondary	35	17.5
Higher	19	9.5
Total	200	100.0
Age of mothers		
15-19 years	11	5.5
20-24 years	60	30.0
25-29 years	83	10.0
35+ years	26	13.0
Total	200	100.0

Knowledge about ARI without pneumonia

About half of the total respondents demonstrated correct knowledge about ARI without pneumonia, 45% of them were reported to have mixed knowledge about the diseases. Only 2.5 % of the respondents were found to have wrong knowledge about ARI without pneumonia.

Tharu ethnic group is reported to have better knowledge about ARI without pneumonia than other ethnic groups. This group had the highest percent (59.4%) of correct knowledge in comparison to Chhetri/Brahmin (41.9%) and other groups (51.7 %).

The knowledge of mothers with higher education was not better than the knowledge of illiterate mothers, rather it was worse. The highest correct knowledge was reported by the mothers with secondary level of education (62.9%) followed by mothers with primary education (55.6%). Mothers of age 30-34 reported the highest percent (65.0%) of correct symptoms of common cold. The correct knowledge was found lowest among the age group of 20-24 years (Table II).

Table II: Knowledge of mother about ARI without pneumonia in relation to their ethnicity, age and education

Characteristics	Correct		Mixed		Wrong		Do not know		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Ethnicity										
Chhetri/Brahmin	31	41.9	40	54.1	1	1.3	2	2.7	74	100
Tharu	38	59.4	25	39.0	1	1.6	0	0	64	100
Others	32	51.7	25	40.3	3	4.8	2	3.2	62	100
Education										
Illiterate	54	55.1	38	38.8	4	4.1	2	2.0	98	100
Informal	13	33.3	25	64.1	0	0	1	2.6	39	100
Primary	5	55.6	4	44.4	0	0	0	0	9	100
Secondary	22	62.9	13	37.1	0	0	0	0	35	100
Higher	7	36.8	10	52.6	1	5.3	1	5.3	19	100
Age										
15-19 years	6	54.5	5	45.5	0	0	0	0	11	100
20-24 years	23	38.3	33	55.0	1	1.7	3	5.0	60	100
25-29 years	47	56.6	34	41.0	2	2.4	0	0	83	100
30-34 years	13	65.0	5	25.0	1	5.0	1	5.0	20	100
35+ years	12	46.2	13	50.0	1	3.8	0	0	26	100
Total	101	50.0	90	45.0	5	2.5	4	2.0	200	100

Knowledge of mothers about danger signs of ARI

Only 2.5% of the respondents reported to have correct knowledge about danger signs of ARI, 46% of them responded mixed symptoms of dangers signs and more than half of the mothers (51%) were found totally unknown about the danger signs of ARI; among them, about 40% had wrong knowledge of the disease. Mixed or wrong responses were more or less equally distributed across the ethnicity, education and age of respondents (Table III).

Table III: Knowledge of mothers about danger signs of ARI in relation to their ethnicity, age and education

Characteristics	*Correct*		*Mixed*		*Wrong*		*Do not know*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Ethnicity										
Chhetri/Brahmin	2	2.7	38	51.3	27	36.5	8	9.5	74	100
Tharu	1	1.6	27	42.2	24	35.9	13	20.3	64	100
Others	2	3.2	27	43.5	29	46.8	4	6.5	62	100
Education										
Illiterate	2	2.0	41	41.8	40	40.8	15	15.3	98	100
Informal	1	2.6	23	59.0	13	33.3	2	5.1	39	100
Primary	-	-	3	33.3	5	35.5	1	11.1	9	100
Secondary	1	2.9	13	37.1	16	45.7	5	14.3	35	100
Higher	1	5.3	12	63.1	5	26.3	1	5.3	19	100
Age										
15-19 years	0	0	4	36.4	6	54.6	1	9.0	11	100
20-24 years	3	5.0	30	50.0	21	35.0	6	10.0	60	100
25-29 years	0	0	37	44.6	34	41.0	12	14.4	83	100
30-34 years	1	5.0	5	25.0	11	55.0	3	15.0	20	100
[redacted]rs	1	3.8	6	23.0	7	27.0	2	7.7	26	100
[redacted]	5	2.5	92	46.0	79	39.5	24	12.0	200	100

Knowledge about home care of ARI

Among the mothers, 50.5% reported to have correct knowledge about home care management of ARI, 22% of them had mixed responses whereas 27.5% of the responding mothers did not know about home care management of ARI. Education level of mothers did not seem to have positively influenced the knowledge about home care management. However, Brahmin/Chhetri ethnic group demonstrated a higher percentage of correct knowledge about home care management compared to other ethnic groups. Mothers of age 30-34 years had the highest percent (65%) of correct responses in comparison to other age groups (Table IV).

Table IV: Knowledge of mothers about home care management of ARI in relation to their ethnicity, age and education

Characteristics	Correct		Mixed		Wrong		Do not know		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Ethnicity										
Chhetri/Brahmin	44	59.5	21	28.4	1	1.3	8	10.8	74	100
Tharu	28	43.8	7	10.9	2	3.1	27	42.2	64	100
Others	29	46.8	16	25.8	1	1.6	25.8		62	100
Education										
Illiterate	40	40.8	19	19.4	3	3.1	36	36.7	98	100
Informal	24	61.5	9	23.1	1	2.6	5	12.8	39	100
Primary	4	44.4	3	33.3	0	0	2	22.2	9	100
Secondary	22	62.9	5	14.3	0	0	8	22.8	35	100
Higher	11	57.9	8	42.1	0	0	0	0	19	100
Age										
15-19 years	7	63.6	1	9.1	0	0	3	27.3	11	100
20-24 years	28	46.7	17	28.3	2	3.3	13	21.7	60	100
25-29 years	37	44.6	18	21.7	2	2.4	26	31.3	83	100
30-34 years	13	65.0	4	20.0	0	0	3	15.0	20	100
35+ years	16	61.9	4	15.4	0	0	6	23.0	26	100
Total	101	50.5	44	22.0	4	2.0	51	25.5	200	100

Discussion and conclusion

Knowledge is both determinants of practice as well as reflection of what people practice. In the context that ARI is one of the major child killer diseases, the knowledge of the mothers, as care takers, about the ARI plays crucial role in the prevention and management of the disease. In view of this, the National ARI Control Programme in Nepal has given a special emphasis to educate mothers through FCHVs and VHWs.[9] The present study revealed that 50.5% of the mothers correctly reported the sign and symptoms of ARI without pneumonia. Although this level seems to be higher in comparison to rural mothers in Myanmar, where only 35% of them knew about ARI[10], the finding that half of the mothers did not have adequate knowledge about ARI indicates to the need for reinforcement of public education activities.

The findings that only 2.5% of the mothers could correctly mention the danger signs of ARI indicate an extremely low level of knowledge about ARI.

Although it is widely believed that maternal education may positively influence the knowledge about ARI[11], the findings of the present study did not show this relationship. The association between maternal education and knowledge about ARI in the present study was inconsistent. For example, among the illiterate mother, 55.1% knew about ARI without pneumonia whereas only 33.3% of the mothers with informal education reported to know about the disease. The mothers with secondary education level demonstrated better knowledge (62.9%) compared to lower educational levels. On the contrary, only 36.8% of the responding mothers with higher education correctly knew about the signs and symptoms of the disease. In addition, the same group of mothers with higher education had wrong responses. Similar inconsistent relationship between educational level of mothers and knowledge applies to danger signs and symptoms of ARI.

Different categories of the responses about ARI are more or less equally distributed across the different age groups and ethnic age groups. This observation in the present study explains that these factors do not have any visible influences in the knowledge of ARI.

Altogether, 39.5% of the mothers reported totally wrong responses about danger signs and symptoms of ARI. Such a low level of knowledge of mothers about ARI indicates that a large portion of children with ARI may not receive

proper treatment and could result in different complications including death.

As home care is considered as key to prevent the complication of ARI, training to the mothers on home care is particularly emphasized in ARI Control Programme in Nepal.[5] In the present study, the result that only half of the responding mothers reported to know correct home care of ARI reflected the need for more effective implementation of training. Further, health workers could be an important source of information for mothers. As there is not frequent contact of mothers with the health workers at the service facilities, female community health volunteers (FCHVs) are seen as potential source of information for mothers because of their accessibility to them. However, the study has shown that only 5.4% of households know that FCHV provide information about ARI.[12] It indicates that either there is very inadequate contact between mothers and FCHVs or mothers are not well informed about the role of FCHVs. In both cases, effectiveness of the ARI Control Programme may not be at the desired level.

Based on the findings of the study it can be concluded that mothers' knowledge about ARI, particularly about danger signs and symptoms, and its home care is not adequate. It important to reinforce education to the mothers, which possibly could result in better management of children with ARI.

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