

Mothers' Knowledge and Practices regarding Management of their Children with Acute Respiratory Infection

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Abstract: Acute respiratory infection (ARI) is major public health problem which is considered as one of the leading causes of morbidity and mortality in children under-five years. In this respect, the role of the family especially mothers is vital in health promotion, disease prevention and care of children with ARI.

Aim: The aim of this study was to assess mothers' knowledge and practices regarding management of their children with ARI.

Research Design: A descriptive design was used.

Setting: The study was carried out in inpatient department and outpatient clinics of El-Raml Children's Hospital at Winget in Alexandria.

Subjects: A convenience sampling of 200 mothers having under-five years children suffering from ARI.

Tools: one tool was used to collect data, namely; Mothers' knowledge and practices regarding management of their children with acute respiratory infection structured interview schedule.

Results: The main study findings showed that total percent score of knowledge regarding ARI was fair among 79.0% of mothers. Furthermore, total percent score of practices was satisfactory among 58.5% of them, while 32.0% got unsatisfactory score. There was significant positive correlation between mothers' total score of knowledge and their total score of practices where $p=0.000$.

Conclusion: It can be concluded that most of studied mothers got fair score of knowledge, as well as satisfactory score of practices regarding management of their children with ARI.

Recommendations: The main recommendation of the current study was conducting continuous and comprehensive health educational programs for mothers in inpatient departments and outpatient clinics about causes, manifestations, complications, preventive measures and care of their children with ARI.

Keywords: Acute respiratory infection; Under-five children; Knowledge; Practice.

I. INTRODUCTION

Acute respiratory infection (ARI) is major public health problem in developing countries⁽¹⁾. It is considered as one of the leading causes of morbidity and mortality in children⁽²⁾. On the average, under five years children suffer about 6-8 episodes of ARI per child per year, thus accounting for an estimated 238 million attacks and 4 millions deaths every year, globally⁽³⁾. The World Health Organization estimates that in 2015, over 8% of all deaths in the Eastern Mediterranean Region were attributable to ARIs⁽³⁾. In addition it is also the main source of febrile episodes and hospitalization in infants and children younger than three years of age^(1,2). In Egypt, ARI symbolize less than half of the deaths in under-five years

children and are in charge of 39 percent of consultations at primary health care facilities; in addition they are a frequent cause for hospital admissions. The ratio of children with ARI extends to less than 60 % in rural Upper Egypt to more than 80 % in urban Lower Egypt ⁽⁴⁾.

Acute respiratory infection 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 ⁽⁵⁾. It is categorized into upper and lower respiratory tract infections based on the anatomical site and the affected respiratory tract part ^(1,2). The upper respiratory tract consists of the airways from the nostrils to the vocal cords in the larynx, including the paranasal sinuses and the middle ear. The lower respiratory tract covers the continuation of the airways from the trachea and bronchi to the bronchioles and the alveoli ⁽⁶⁾. Upper respiratory tract infections are the most common infectious diseases ^(6,7). They include rhinitis (common cold), sinusitis, ear infections, acute pharyngitis or tonsillopharyngitis, epiglottitis, and laryngitis. On the other hand, the common lower respiratory tract infections in children are pneumonia and bronchiolitis ^(2,7). The respiratory rate is a valuable clinical sign for diagnosing acute lower respiratory infections in children who are coughing and breathing rapidly. The presence of lower chest wall indrawing identifies more severe disease ^(2,7). Lower respiratory tract infections are the third leading cause of death worldwide and nearly two million childhood deaths worldwide are attributable to lower respiratory tract infections, with the vast majority occurring in developing countries ⁽³⁾.

Acute respiratory infections are caused by a wide range of pathogens, predominantly viruses and bacteria ⁽⁸⁾. Most infections are caused by viruses, particularly respiratory syncytial virus, nonpolio enteroviruses (coxsackieviruses A and B), adenoviruses, parainfluenza viruses, and human metapneumoviruses. Other agents involved in primary or secondary invasion include group A β -hemolytic Streptococci, Staphylococci, Haemophilus influenzae, Chlamydia trachomatis, Mycoplasma organisms, and Pneumococci ^(8,9).

Children under five years are more subject to ARI due to anatomic differences of the respiratory tract from adults. The diameter of the airways is smaller in young children and subject to considerable narrowing from edematous mucous membranes and increased production of secretions ⁽⁹⁾. Organisms may move rapidly down the shorter respiratory tract of younger children, causing more extensive involvement. The relatively short and open Eustachian tube in infants and young children allows pathogens easy access to the middle ear ⁽⁹⁾.

Several risk factors have been associated with ARI among under five-years children; these risk factors include prematurity, low birth weight, lack of exclusive breastfeeding, malnutrition, indoor air pollution and lack of immunization against common childhood diseases. Other risk factors are socio-economic status, overcrowding, passive smoking, absence of ventilation, lack of basic health services, lack of awareness and overuse and misuse of antibiotics ^(8,9). Most children with ARI have mild to moderate manifestations and are treated as outpatients with full recovery. However, severe forms of the disease such as Pneumonia require hospitalization and prompt treatment ⁽⁸⁾.

Interventions to control ARIs can be divided into four basic categories: immunization against specific pathogens, improvements in nutrition, safer environments and early diagnosis and treatment of disease ⁽⁷⁾. Nursing care of ARI should involve organized actions that characterize the nursing process ⁽¹⁰⁾. Nursing care should start with taking focused history, conducting Physical examination to establish a diagnosis and performing assessment which includes respiratory rate, depth and rhythm, heart rate, temperature, oxygenation and hydration status ⁽⁹⁾. Some children will require admission to hospital for respiratory support and other therapies, such as intravenous antibiotics, oxygenation and maintaining fluid and electrolyte status. Pediatric nurses have a crucial role, not only in administering medications and supporting other medical interventions, but also in supporting the child and family over the period of illness by providing health education for mothers ^(9,10). Pediatric nurses should reassure mothers and provide education regarding the facts about ARI, fever, the appropriate use of antipyretic medication, how to avoid dehydration, and the beneficial role of immunization in preventing infection. It is also important to explain practical suggestions concerning comfort measures and administration of medication at home ⁽¹⁰⁾. Moreover, pediatric nurses should educate mothers about not giving their children any medications that are not approved by the health practitioner and to avoid giving antibiotics left over from a previous illness or prescribed for another child ^(7,9).

In general, knowledge and practices of mothers are the cornerstone in reduction of morbidity and mortality from ARI in under five years children ⁽¹⁾. Therefore, this study was carried out to assess knowledge and practices of mothers regarding management of their children with acute respiratory infection.

This study aimed to:

- Assess mothers' knowledge regarding acute respiratory infection.
- Assess mothers' practices regarding management of their children with acute respiratory infection.

Research Question:

- What is mothers' knowledge regarding acute respiratory infection?
- What are mothers' practices regarding management of their children with acute respiratory infection?

II. MATERIALS AND METHOD

Materials:**Research Design:**

A descriptive design was used.

Setting:

The study was carried out in inpatient department and outpatient clinics of El-Raml Children's Hospital at Winget in Alexandria.

Subjects:

A convenience sampling of 200 mothers having children suffering from acute respiratory tract infection constituted the study subject. Children's age ranged from one month to five years.

- The sample size was estimated according to Epi-Info statistical program based on the following parameters; total population approximately 400 and 95% confidence level with 5% maximum error. The minimum sample size estimated 196 mothers. The final sample size is 200 mothers for better results and statistical analysis

Tool: Mothers' Knowledge and Practices regarding Management of their Children with Acute Respiratory Tract Infection Structured Interview Schedule.

This tool was developed by the researchers after review of related literature to assess mothers' knowledge and practices regarding management of their children with ARI. It included 4 parts:

- **Part 1:** Mothers' socio-demographic characteristics such as age, education, residence and employment.
- **Part 2:** Children's characteristics and medical history such as age, gender, birth order, diagnosis, presence of other chronic disorders and previous hospitalization.
- **Part 3:** Mothers' knowledge regarding acute respiratory infection. It contained 6 statements about definition, causes, types, manifestations, seasonal occurrence and complications of ARI.
 - Responses to each statement were scored as follow: correct complete answer was scored as (2), correct incomplete answer was scored as (1), and the scoring of incorrect one or not knowing the answer was (0).
 - The total score was generated by summing up the scores from all statements. The resultant total score ranges from 0-12 where as those having a score of 0-5 were considered poor knowledge, and those with a score of 6-8 were considered fair knowledge while those with good knowledge have a score ranges from 9 to 12.
 - The knowledge was considered good if the percent score was $\geq 60\%$, fair if the percent score was $50\% < 60\%$ and poor if the percent score was $< 50\%$.
- **Part 4:** Mothers' practices regarding management of their children with acute respiratory infection. It contained 6 statements about management of ARI, fever management, follow up, feeding and drinking practice during ARI.

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- Responses to each statement were incorrect, somewhat correct/complete or correct/complete. A correct complete practice was scored as (2), somewhat correct/complete was scored as (1), but the scoring of incorrect was (0).
- The total score was generated by summing up the scores from all statements. The resultant total score ranges from 0-12 where as those having a score of 0-5 were considered unsatisfactory practice and those with a score of 6-8 were considered satisfactory practice while those with good practice have a score ranges from 9 to 12.
- The practice was considered good if the percent score was $\geq 60\%$, satisfactory if the percent score was $50\% < 60\%$ and unsatisfactory if the percent score was $< 50\%$

Method

1. An official letter was directed from the faculty of nursing in Alexandria University to responsible administrative personnel in the previously mentioned setting to collect the necessary data, after explaining the aim and nature of the study.
2. The tool was developed by the researchers after review of literature and were tested for their content validity by five experts in the field of pediatric nursing and necessary modifications were done. The validity was 98%.
3. Reliability of the tool was asserted by measuring the internal consistency of its items using Cronbach's Coefficient Alpha and it was 0.862.
4. A pilot study was carried out on 20 mothers to test the feasibility, applicability and clarity of the tools. Those mothers were excluded from the study subjects.
5. Every mother was interviewed individually to collect the necessary data during the hospitalization of their children either in inpatient department or when attending to the outpatient clinics with their children.
6. The duration of each interview lasted from 10 to 15 minutes.
7. Data were collected over three months period extending from September 2018 to November 2018.

Ethical Considerations:

- Written informed consents were obtained from mothers of children with ARI after explaining the aim and nature of the study.
- The researchers ensured confidentiality of the information given. Data collected was only used for the intended research purpose.
- Privacy was considered
- Mothers had the right to withdraw from the study at any time.

Statistical Analysis:

The collected data were coded, tabulated, and statistically analyzed using IBM SPSS statistics software version 20.0, IBM Corp.

- **Descriptive statistics:** were done for quantitative data as minimum & maximum of the range as well as mean \pm SD (standard deviation) for quantitative parametric data, while it was done for qualitative data as number and percentage.
- **Inferential analyses:** for independent variables were done using one way Anova for differences between proportions for three groups, also differences between proportions for two groups Post Hoc test (Tukey) was used, also differences between proportions for two independent groups T independent samples T test was used, otherwise Pearson correlation was used for relation between knowledge score & practice score.
- The level of significance was taken at P value < 0.05 is statistically significant, otherwise is non-significant. The p-value is a statistical measure for the probability that the results observed in a study could have occurred by chance.

III. RESULTS

Table (I) shows socio-demographic characteristics of mothers having children with acute respiratory infection. It clarifies that more than one-third of the mothers (35.5%) were in the age group from 30 to less than 35 years and older mothers who were 40 years old or more constituted only 10% of the studied subjects. Their mean age was 31.01 ± 6.19 years. Regarding mothers' education, the same table illustrates that 39.5% and 33.0% of the mothers completed their preparatory and university education respectively. According to their occupation, it is obvious from the table that nearly three quarters of the mothers (74.5%) were housewives. It is also apparent from the table, that family income among 69.5% of the mothers was not enough for living and 79.5% of families were of the nuclear type. The same table shows that 71.5% of the mothers have other children.

Table (I) Socio-demographic characteristics of mothers having children with acute respiratory infection

Mothers' Characteristics	No (n=200)	%
Age (years)		
▪ 20-	35	17.5
▪ 25-	51	25.5
▪ 30-	71	35.5
▪ 35-	23	11.5
▪ 40 and more	20	10
- Min-Max	21-45	
- Mean \pm SD	31.01 \pm 6.19	
Educational Level		
▪ Illiterate /Read and write	14	7.0
▪ Primary education	23	11.5
▪ Preparatory education	79	39.5
▪ Secondary education	7	3.5
▪ University education	66	33.0
▪ Postgraduate studies	11	5.5
Employment		
▪ Working	51	25.5
▪ Housewives	149	74.5
Family income		
▪ Enough	61	30.5
▪ Not enough	139	69.5
Residence		
▪ Rural	89	44.5
▪ Urban	111	55.5
Family type		
▪ Nuclear	159	79.5
▪ Extended	41	20.5
Marital status		
▪ Married	154	77.0
▪ Divorced	27	13.5
▪ Widow	19	9.5
Having other children		
▪ Yes	143	71.5
▪ No	57	28.5
No. of other children		
▪ One	58	29.0
▪ Two	43	21.5
▪ Three	42	21.0

Characteristics and medical history of children with acute respiratory infection are presented in **Table (II)**. It is clear from the table that, nearly one-third (31.5%) of children were in the age group from 4 to 5 years old with mean age 2.56 ± 1.45 years. The same table clarifies that 63.5% of children were males, while 36.5% of them were females. Concerning infant's birth order, it is apparent from the table that 35.5% of the studied children were in the first or second order. About one-half of children (51.0%) suffered from 4 to less than 6 attacks of ARI per year. Only 13.5% of the studied children had chronic disorder as 44.4% of them had patent foramen oval. Moreover, 43.0% of children were hospitalized before as one-half of them (50.0%) were hospitalized by pneumonia. Regarding current diagnosis, 29.5% and 27.0% of children had pneumonia and bronchial asthma respectively.

Table (II): Characteristics and medical history of children with acute respiratory infection

Characteristics and medical history of children	No. (n=200)	%
Age (years)		
▪ <1	26	13.0
▪ 1-	41	20.5
▪ 2-	26	13.0
▪ 3-	44	22.0
▪ 4-5	63	31.5
- Min-Max	0.5- 5	
- Mean±SD	2.56±1.45	
Gender		
▪ Male	127	63.5
▪ Female	73	36.5
Birth order		
▪ First	71	35.5
▪ Second	71	35.5
▪ Third	38	19.0
▪ Fourth	20	10.0
Frequency of occurrence of ARI / year		
▪ 2-	70	35.0
▪ 4-	102	51.0
▪ 6-8	28	14.0
- Min-Max	2-8	
- Mean±SD	4.11±1.57	
Presence of other chronic disorders		
▪ Yes	27	13.5
▪ No	173	86.5
Types of chronic disorders	(n=27)	
▪ Ventricular septal defect	8	29.6
▪ Patent foramen oval	12	44.4
▪ Thalassemia	3	11.1
▪ Metabolic disorder	4	14.8
Previous hospitalization		
▪ Yes	86	43.0
▪ No	114	57.0
Reasons of previous hospitalization*	(n=86)	
▪ Tonsillectomy	27	31.4
▪ Pneumonia	43	50.0
▪ Thalassemia	6	7.0
▪ Gastro-enteritis	15	17.4
Current diagnosis		
▪ Pneumonia	59	29.5
▪ Bronchitis	19	9.5
▪ Bronchial asthma	54	27.0
▪ Bronchiolitis	22	11.0
▪ Tonsillitis	46	23.0

*Multiple responses were given.

Table (III) illustrates mothers' knowledge about acute respiratory infection of their children. Regarding definition of ARI, the table reveals that only 12.0% of the mothers gave correct complete definition namely having illnesses caused by an acute infection which involves the upper respiratory tract including the nose, sinuses, pharynx or larynx; and lower respiratory tract that covers the continuation of the airways from the trachea and bronchi to the bronchioles and the alveoli. On the other hand, 66.0% of them answered with correct but incomplete definition. Moreover, 65.0% of mothers gave correct but incomplete answer about types of ARI. It is also obvious from the table that common cold and cross infection from another individual having respiratory diseases were the most common causes of ARI as stated by nearly one-third of mothers (30.0% and 36.5% respectively). Concerning manifestations, 69.5% of mothers reported that difficulty of breathing and fever as the main symptoms of ARI. Whereas, wheezing was also mentioned as a symptom by more than one-half of mothers (51.5%). Regarding seasonal occurrence of ARI, winter was mentioned by most of mothers (93.5%). Ninety four percent of mothers stated that acute pneumonia is the most common complication of ARI.

Table (III): Mothers' knowledge about acute respiratory infection of their children

Mothers` Knowledge	No (n=200)	%
Definition of ARI		
▪ Correct complete answer	24	12.0
▪ Correct incomplete answer	132	66.0
▪ Wrong answer/ do not know	44	22.0
Types of ARI		
▪ Correct complete answer	37	18.5
▪ Correct incomplete answer	130	65.0
▪ Wrong answer/ do not know	33	16.5
Causes of ARI*		
▪ Common cold	60	30.0
▪ Low immunity of the child	35	17.5
▪ Infection from another individual having respiratory diseases	73	36.5
▪ Changing of weather	42	21.0
▪ Smoking	26	13.0
▪ Do not know	24	12.0
Manifestations of ARI*		
▪ Chest Indrawing	55	27.5
▪ Cough	70	35.0
▪ Vomiting	34	17.0
▪ Tachypnea	30	15.0
▪ Anorexia/loss of appetite	15	7.5
▪ Difficulty in breathing.	139	69.5
▪ Wheezing	103	51.5
▪ Fever	139	69.5
▪ Grunting	53	26.5
Seasonal occurrence of ARI *		
▪ Summer	12	6.0
▪ Winter	187	93.5
▪ Spring	14	7.0
▪ Autumn	29	14.5
Complications of ARI*		
• Acute pneumonia	188	94.0
▪ Otitis media/ Ear discharge	51	25.5
▪ Convulsion	45	22.5

*Multiple responses were given.

Table (IV) portrays mothers' percent score of knowledge about acute respiratory infection of their children. It is obvious from the table that total percent score of knowledge was fair among 79.0% of mothers. Furthermore, 9.0% and 12.0% of them got poor and good scores respectively.

Table (IV): Mothers' percent score of knowledge about acute respiratory infection of their children

Knowledge items	Levels of knowledge					
	Good		Fair		Poor	
	No	%	No	%	No	%
- Definition	24	12.0	132	66.0	44	22.0
- Causes	0	0.0	176	88.0	24	12.0
- Types	37	18.5	130	65.0	33	16.5
- Signs and symptoms	0	0.0	200	100.0	0	0.0
- Common seasons	29	14.5	158	79.0	13	6.5
- Complications	39	19.5	0	0.0	161	80.0
Total percent score of Knowledge	24	12.0	158	79.0	18	9.0

Table (V) shows the relationships between mothers' mean score of knowledge and their socio-demographic characteristics. It is clear from the table that there were high statistical significant differences between mothers' mean score of knowledge and their age, educational level, employment, family income, family type and marital status where $P = 0.000$ for each.

Table (V): The relationships between mothers' mean score of knowledge and their socio-demographic characteristics.

Mothers' characteristics	Mean score of knowledge		F	P
	Mean	SD		
Age (years)				
▪ 20-	56.5	20.7	9.94	0.000*
▪ 25-	56.2	4.8		
▪ 30-	49.5	25.9		
▪ 35-	41.3	9.6		
▪ 40 and more	30.0	0.0		
Educational level				
▪ Illiterate/ Read and write	20.0	0.0	48.81	0.000*
▪ Primary education	30.0	0.0		
▪ Preparatory education	44.6	10.3		
▪ Secondary education	50.0	0.0		
▪ University education	65.1	20.0		
▪ Postgraduate studies	70.0	0.0		
Employment				
▪ Working	70.0	19.8	t= 9.06	0.000*
▪ Housewives	42.6	14.2		
Family income				
▪ Enough	66.2	18.6	t= 9.44	0.000*
▪ Not enough	42.3	15.4		
Residence				
▪ Rural	51.0	18.2	t= 0.90	0.369
▪ Urban	48.4	20.9		
Family type				
▪ Nuclear	53.2	20.2	t= 8.15	0.000*
▪ Extended	35.6	9.2		
Marital status				
▪ Married	54.8	19.6	31.01	0.000*
▪ Divorced	33.3	4.8		
▪ Widow	30.0	0.0		
Having other children				
▪ Yes	48.1	20.4	t= -1.69	0.093
▪ No	53.3	17.7		

F: One Way ANOVA

t: independent samples t-test

* $P < 0.05$ (significant)

Table (VI) represents mothers' practices regarding management of their children with acute respiratory infection. It is clear from the table that 79.5% of the mothers gave medications for their children with ARI without any prescription. Paracetamol was the first choice medication that was administered by 81.8% of mothers to their children with ARI.

The same table portrays that 83.5% of the mothers applied compresses for their children to relieve fever. Tapped compresses were applied by more than one-half of them (56.9%), whereas about one-quarter of them (25.7%) applied cold compresses. Sixty-five percent of mothers did not return for follow-up after administration of medication due to disappearance of symptoms as mentioned by 74.3% of them. Regarding feeding and drinking practices of children during ARI, the table illustrates that nearly one-half of children (48.0%) received warm fluids only by their mothers during ARI attack, while only 4.5% of them received fresh fruits and juice. Furthermore, 64.0% of mothers gave fluid for their children same as usual during the attack of ARI, whereas 6.5% of them gave less than usual fluids for their children.

Table (VI): Mothers' Practices regarding management of their children with acute respiratory infection

Mothers' practices for their children with ARI	No (n=200)	%
Actions taken by mothers during ARI*		
▪ Practicing self- medication	159	79.5
▪ Seeking health care services.	99	49.5
▪ Traditional home remedies	84	42.0
▪ Talking to pharmacist	78	39.0
Types of self-medication *	(n=159)	
▪ Paracetamol	130	81.8
▪ Cough medication	41	25.8
▪ Anti-allergy/ Anti-histaminic	26	16.4
▪ Ibuprofen	36	22.6
▪ Antibiotics	43	27.0
Mothers' care during fever*		
▪ Compresses.	167	83.5
▪ Environmental ventilation.	10	5.0
▪ Cold Bathing	49	24.5
▪ Giving Fluids	31	15.5
▪ Antipyretics administration	40	20.0
▪ Warm bathing with gradual decrease in the temperature	9	4.5
Types of compresses applied	(n=167)	
▪ Tapped compresses	95	56.9
▪ Cold compresses	43	25.7
▪ Ice compresses	12	7.2
▪ Compresses with vinegar	17	10.2
Follow up visit after Administration of Medication		
▪ Yes	130	65.0
▪ No	70	35.0
Reasons	(n=70)	
▪ Symptoms disappeared	52	74.3
▪ Lack of financial resources	18	25.7
Feeding practices during ARI*		
▪ Good cooking/ easily chewable food	60	30.0
▪ Warm fluids only	96	48.0
▪ Food rich in protein	37	18.5

▪ low fat food	64	32.0
▪ Ordinary family food	30	15.0
▪ Fresh fruits and juice	9	4.5
Drinking practices during ARI		
▪ More than usual	59	29.5
▪ Same as usual	128	64.0
▪ Less than usual	13	6.5

*Multiple responses were given.

Table (VII) points out mothers' percent score of practices regarding management of their children with acute respiratory infection. It is revealed from the table that total percent score of practices regarding ARI was satisfactory among 58.5% of mothers, while 32.0% of them got unsatisfactory score. Only 9.5% of mothers got good score.

Table (VII): Mothers' percent score of practices regarding management of their children with acute respiratory infection

Practice Items	Percent Score of practice					
	Good		Satisfactory		Unsatisfactory	
	No	%	No	%	No	%
- Actions taken in case of ARI	13	6.5	161	80.5	26	13.0
- Actions taken in case of fever	0	0.0	200	100.0	0	0.0
-Types of compresses and its technique	60	30.0	60	30.0	80	40.0
- Follow up	30	15.0	100	50.0	70	35.0
- Feeding practice	9	4.5	177	88.5	14	7.0
- Drinking practice	59	29.5	141	70.5	0	0.0
Total Percent Score of Practice	19	9.5	117	58.5	64	32

Table (VIII) portrays the relationships between mothers' mean score of practices and their socio-demographic characteristics. It is shown from the table that high statistical significant differences were found between mothers' mean score of practices and their age, educational level, employment and family income where $P= 0.000$. There were also statistical significant differences between mothers' mean score of practices and their residence and marital status where $P= 0.011$ and 0.013 respectively.

Table (VIII): The relationships between mothers' mean score of practices and their socio-demographic characteristics.

Mothers' characteristics	Mean score of practices		F	P
	Mean	SD		
Age (years)				
▪ 20-	25.7	28.2	27.44	0.000*
▪ 25-	54.0	3.5		
▪ 30-	49.1	11.9		
▪ 35-	36.9	10.9		
▪ 40 and more	57.1	0.0		
Educational level				
▪ Illiterate/ Read and write	46.0	0.0	34.33	0.000*
▪ Primary education	47.1	0.0		
▪ Preparatory education	30.8	18.2		
▪ Secondary education	50.0	0.0		
▪ University education	56.1	10.6		
▪ Postgraduate studies	57.7	2.1		
Employment				
▪ Working	60.5	6.1	t= 11.78	0.000*
▪ Housewives	40.6	17.7		
Family income				
▪ Enough	58.1	6.2	t= 10.19	0.000*
▪ Not enough	40.2	18.5		

Residence				
▪ Rural	49.2	17.9	t= 2.55	0.011*
▪ Urban	42.8	17.2		
Family type				
▪ Nuclear	46.9	16.3	t= 1.67	0.100
▪ Extended	40.7	22.3		
Marital status				
▪ Married	44.6	19.1	4.48	0.013*
▪ Divorced	43.9	12.9		
▪ Widow	57.1	0.0		
Having other children				
▪ Yes	47.0	15.9	t= 1.48	0.14
▪ No	42.3	21.5		

F: One Way ANOVA t: independent samples t-test *P<0.05 (significant)

Table (IX) presents the correlation between mothers' total score of knowledge and their total score of practices regarding ARI. It is illustrated from the table that there was significant positive correlation between mothers' total score of knowledge and their total score of practices regarding ARI where p=0.000.

Table (IX): Correlation between mothers' total score of knowledge and their total score of practices regarding acute respiratory infection.

Statistical Test Pearson's r	Total Practice Score	
	Correlation Coefficient r	Significance P
Total knowledge Score	.351**	0.000

** . Correlation is significant at the 0.05 level (2-tailed)

Table (X) shows mothers' sources of information regarding knowledge and practices of acute respiratory infection in their children. It is obvious from the table that 43.5% of mothers got their information about ARI from the pediatricians. Relatives and neighbors were the second source of information as mentioned by 31% of mothers. Only 9.0% of the mothers got their information from mass media.

Table (X) Mothers' sources of information regarding knowledge and practices of acute respiratory infection in their children

Sources of Information *	No (n=200)	%
▪ Pediatrician	87	43.5
▪ Relatives and neighbors	62	31.0
▪ Pediatric nurse	46	23.0
▪ Social media	18	9.0
▪ By experience	59	29.5

*Multiple responses were given.

IV. DISCUSSION

Acute respiratory tract infection is considered as one of the major public health problems and is recognized as the leading cause of mortality and morbidity in many developing countries among children less than five year of age. In this respect, the role of the family especially mothers is vital in health promotion, disease prevention and care of children with ARI ⁽¹¹⁾. Unfortunately, lack of awareness and inadequate performance regarding management of children with ARI could lead to several undesired outcomes ^(11, 12). The results of the current study illustrated that total percent score of practices regarding management of children with ARI was satisfactory among more than one-half of mothers and nearly one-third of them obtained unsatisfactory score (Table VII). This may be related to effect of maternal knowledge on practice as the findings

of the current study also revealed that more than three quarters of mothers got fair score of knowledge and very small percentage of them got good score as illustrated in (Table IV). Additionally, more than one-half of mothers were either illiterate or in primary or preparatory education (Table I). Moreover, in the present study, significant positive correlation was found between mothers' total score of knowledge and their total score of practices (Table IX). This denotes that the increase in mothers' knowledge is accompanied by better performance. Unexpectedly, Farhad et al. (2014) reported that there was not any significant difference between knowledge and practice of mothers having children with ARI as subjects' knowledge was high and the practice level was relatively high⁽¹³⁾.

Concerning mothers' knowledge about ARI, the findings of the current study revealed that small percentage of mothers gave correct complete answer regarding definition and types. On the other hand, about two-thirds of them gave correct but incomplete answers (Table III). The results of the current study are supported by the findings of Minz et al. (2017) who highlighted poor knowledge of caregivers regarding ARI types, causes, mode of transmission, risk factors and danger signs⁽¹⁴⁾. As regards to manifestations, more than two-thirds of mothers in the present study findings reported that difficulty of breathing and fever are the most common manifestations of ARI followed by wheezing (Table III). This could be interpreted in light of the fact that those manifestations are unambiguous and can be easily detected through simple observation. The finding of the present study were consistent with a study conducted by Osarogiagbon and Isara (2017) who reported that major manifestations of ARI were breathing difficulty, fever, cough and inability to play⁽¹⁵⁾.

Mothers' knowledge and practices about the proper use of medication have necessary impacts on the management of their children illnesses^(16, 17). Findings of the present study revealed that more than three-quarters of the mothers gave medications for their children without prescription. Paracetamol was the most common medication administered for children by mothers followed by antibiotics (Table VI). This could be attributed to the tendency of some pediatricians to prescribe paracetamol and antibiotics for treating ARI. Furthermore, some mothers prefer to ask the pharmacists for such drugs instead of going to pediatrician and paying extra costs. Additionally, mothers think that such drugs are over-the-counter class of drugs that are available in pharmacies without prescription and harmless and could safely be given. Findings of Bham et al. (2016) and Farhad et al. (2014) were in harmony with the findings of the current study as they pointed out in their studies that paracetamol was the first choice of mothers having children with acute respiratory infection followed by antibiotics^(2,13). On the other hand, the finding of the present study was contradicted to the finding of Bhanwra (2013) as they reported higher incidence of antibiotic use by mothers for their children with ARI rather than paracetamol⁽¹⁸⁾.

Regarding feeding and drinking practices given by mothers for their children during ARI, the findings of the present study portrayed that nearly one-half of mothers withheld food from their children and gave them warm fluids only during the attack of ARI while very small percentage of them gave fresh fruits and juice for their children (Table VI). This could be related to their limited knowledge about importance of feeding particularly during the episode of ARI. Moreover, some mothers may go with the concept of withholding food in order to avoid occurrence of vomiting.

The present study findings revealed that there were statistical significant relations between mothers' mean score of knowledge, practices and their socio-demographic characteristics (Tables V, VIII). Regarding mothers' age, the current study finding showed that although younger mothers from 20 to less than 30 years had high mean knowledge score compared to older mothers, but mothers whose age more than 40 years had mean practice score higher than other age groups. The high knowledge score by younger mothers can be explained by easy accessibility to internet resources to gain knowledge. While, older mothers had more experience as they may have more children who passed the same disease process before which enhances their practice. Concerning mothers' educational level, the current study finding illustrated that mean knowledge and practice scores among mothers who completed university or postgraduate education were higher than mothers in other educational levels. This may be attributed to the fact that educated mothers tend to be knowledgeable and updated regarding management of ARI as they can access more information about the disease through internet which results in satisfactory practice. A study carried out by Gyawali et al. (2016) showed similar findings, where they concluded that mothers of children with ARI had significantly better knowledge with their educational status⁽¹⁹⁾. Furthermore, Mutalik and Raje (2018) found that mother's education had a significant association with knowledge but was not associated with practice⁽²⁰⁾. The current study also showed that employment also affect mothers' knowledge and practice, as becoming in contact with educated colleagues in the work could also influence mothers' knowledge and practices as they get the chance to share experiences and advices. Furthermore, employed mothers may help in family

income which enables the family to seek medical help that influences on their practice. On the other hand, the findings of the present study were contradicted with Farhad et al. (2014) who demonstrated that the older and employed mothers had more knowledge about ARI but their practice scores were not higher than younger and non-employed mothers⁽¹³⁾.

It was obvious from the current study that more than one-half of mothers received their information about ARI from health care providers (pediatricians and pediatric nurses) (Table X). A study conducted by Alsaleem et al. (2013) about parental knowledge regarding acute respiratory infections among their children was in the same line as it revealed that primary health care providers as physicians and nurses constituted the main knowledge source for parents⁽²¹⁾.

V. CONCLUSION AND RECOMMENDATIONS

Conclusion:

Based on the findings of the current study, it is concluded that most of studied mothers got fair score of knowledge regarding ARI. Moreover, they had satisfactory score of practices regarding management of their children with ARI. Significant positive correlation was found between mothers' total score of knowledge and their total score of practices.

Recommendations:

Based on the findings of the current study, the following recommendations are suggested:

- Continuous and comprehensive health educational programs should be conducted for mothers in inpatient departments and outpatient clinics by health care providers about causes, signs and symptoms, possible complications, preventive measures and care of their children with ARI.
- Mothers attending health care settings should be provided with booklets about ARI.
- Mass media should convey correct information about ARI and its complications with emphasis directed towards prevention and early management at home.

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