

Effect of Educational Program on Mothers Knowledge about Prevention of Pneumonia for their Children under Five Years

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Abstract:

Background: Many of the children under five years die due to severe pneumonia .Mothers have main role regarding the prevention of pneumonia through an educational program

Aim: Investigate the influence of an educational program on preventing pneumonia for children under five years of age on mothers' knowledge

Design: We have selected one group and apply pre posttest design.

Setting: The study was conducted in pediatric department at Minia General Hospital.

Sample: 50 mothers have children less than five years.

Tools: Interview questionnaire sheet for mothers and educational program.

Results: 56% of mother's age ranged under 20 years, with mean age 27.3 ± 8.9 , 80% of mothers live in rural and 20% were living in urban. There have been significant improvements in mother knowledge in the post-test phase. It is evident that a highest strong positive statistical significant correlation was found between the total scores of knowledge in pre-posttest of mothers of children under five years about prevention of pneumonia.

Conclusion: after the implementation of the program there was remarkable improvement of mothers' knowledge.

Recommendations: an educational program should be applied and repeated again in the same study setting and adopted in other similar settings with required modifications, provision of continuing education programs for mother for care for their children.

Keywords: Educational program, Children, Mothers, Knowledge, Prevention, Pneumonia.

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I. Introduction

Pneumonia is the one bigger infectious cause of child deaths worldwide. In 2015, pneumonia kills 16% of children fewer than 5 years of age. (WHO, 2016).

The main reason that children are brought to hospitals and sanitation is pneumonia. Pneumonia is defined as an inflammation of the lung parenchyma in which the main symptoms are fever, cough, sore throat, running nose, fast & difficulty breathing, wheezing, irritability, chest pain, chill, tachycardia. Most children have 3 to 5 attacks of acute respiratory infection in each year. (Marilyn and David 2015). Severe pneumonia management require hospitalization for supportive treatment, including oxygen therapy, airway suctioning fluids and food management, antimicrobial, careful monitoring. (Scott et al., 2012) Prognosis of pneumonia is good if initiation of early diagnosis & early treatment, so prevention is better than cure, the rate of incidence can be reduced by giving adequate knowledge regarding the risk factors, etiology, clinical manifestations, prevention & when to seek medical help (Marilyn and David 2015). (Scott et al., 2012) mentioned that appropriate health care for the treatment of pneumonia in rural society was critical because of the inadequate number of health-care facilities. In addition, insufficient knowledge about the danger signs and symptoms of pneumonia among the primary caregivers is another cause of delayed seeking care for childhood pneumonia, which could even be life threatening Regarding causative agent of pneumonia in children under five years bacteria, viruses, or fungi which live in the nose, mouth, sinuses can enter the lungs and create infections, including pneumonia. Also they can get the bacteria or viruses from people who are infected with them, whether they show symptoms or not. (Parent of Kids with Infectious Disease PKIDS, 2017). Treatments of pneumonia include either antibiotics or antiviral medicines, according to its type, if it is diagnosed early enough, and antibiotics may be prescribed to prevent secondary infections or complications. Pneumonia can be prevented among children less than five years by providing mothers by information about practicing good hygiene thorough frequent hand cleaning, avoiding interaction with any children who are sick, receiving good nutrition, Avoiding passive smoking . It is also important to increase access to immunization, reduce indoor and outdoor air pollution. Breastfeeding during the

first six months is also very important in preventing pneumonia, because breast milk contains a nourishing supply of nutrients, antioxidants, hormones and antibodies a child needs for growth and development. (Parvez et al., 2010 and (Center for Disease Control and Prevention CDC, 2016).

Educational program will provide mothers' having children under five years knowledge regarding causes and prevention of pneumonia. Therefore this study aimed to identify the impact of the educational program on mothers' knowledge about prevention of pneumonia for children under 5 years of age.

II. Methodology

This Pre / post test research design was utilized to meet the aim of this study. It was conducted in pediatric department at Minia General Hospital. A total number of 50 mothers have children under five years suffering from pneumonia at Minia General Hospital during a period of six months were included in this study with included criteria, as mothers of fewer than five children admitted to pediatric ward at Minia General Hospital, mothers who are willing to participate in the study.

Tool for Data Collection: this tool was used in this study and developed by the researcher to collect the necessary data for this study which included **an interview questionnaire sheet for mothers to** assess the mothers' knowledge about prevention of pneumonia for children less than five years which covered **Personal data, mothers' knowledge about prevention of pneumonia:** for children under five years. through multiple – choice question. It included items about the meaning of pneumonia, signs and symptoms of pneumonia, treatment, uses of O₂ therapy, management of fever and prevention of pneumonia, **with** score of one was given for correct answer and a zero for incorrect answer.

A positive percent change means improvement; while a negative percent change means decrease of the level.

Educational program:

The researcher prepared educational and training booklet after assessment of knowledge to identify needs of mothers less than five years children to prevent pneumonia in a form of printed (Arabic booklet). Information based on review of relevant literature (nursing textbook, journals and internet resources) about prevention of pneumonia.

Validity and Reliability:

The tool was tested for content validity by a jury of three experts from Pediatric medical and nursing staff to test the content validity of tool and necessary modifications were done. Reliability of the tool was performed to confirm its consistency using Cronbach's alpha coefficient method.

Pilot study:

A pilot study on (10 %) 5 mothers was conducted at Minia General Hospital. A pilot study was conducted to test clarity & efficacy of the study tools and to determine the time required to fill each tool. According to the experimental results, the required modifications, deletions and / or additions were done. The jury accepted the final forms of work prior to the actual study and the reliability of the pilot study was evaluated by measuring the internal consistency using the Alpha-Cronbach coefficient method.

Ethical consideration:

The oral consent was obtained from all mothers to participate in the study and the nature and purpose of the study were explained to them. Then the researcher introduced herself to the subject to assured that the collected data would be absolutely confidential. Also all participations were informed them with voluntary and that they could withdraw at any time of the study in addition confidentiality of the mother's data was ascertained, confidentiality and anonymity were assured.

Field work:

The field work was carried out through a period of 6 months starting from October 2016 to March 2017; the time required for the program implementation was 6 months. One month for pre/post-test, 5 months for implementation of the program. With approximately 75 hours, the mothers were divided into 10 small groups each group with 5 mothers. There was total 5 sessions for each group; each session was variable and ranged between 30 - 45 minutes according to the response of each mother. Each participant gets a copy of the program booklet that included all the training materials. Each session usually started by a summary of what has been taught during the preceding sessions and the objectives of the new one. The actual work started by meeting the mothers in pediatric ward at Minia General Hospital, the researcher first introduced her to them and gave information about the aim of the study, after that the pre-test format, was distributed in order to collect the needed data. The researcher was available for more clarification whenever needed. Then, the content of the program was designed based on actual educational need assessment of the studied mothers. Consequently, the

subject content has been sequenced through five theoretical sessions which include: personal interviewing of the studied mothers, the aim, duration of the study explained by the researcher through direct personal communication, mother class and discussion and pre-test. Information about definition of pneumonia, causes, sign and symptoms. Information about instructions related to giving medication, guidelines for forgetfulness of any dose of medication and its side effects. Information about how to prevent pneumonia for children under five years. Revision about all information which was given to the mothers. Methods of teaching were through mother class, group discussion, and Video. Finally the post-test format was distributed in order to collect the required data.

Limitations of the study:

Difficult collect mothers to attend the program.

III. Statistical Analysis

Data was entered into the Statistical Package for Social Science (SPSS) software (version 17). Both descriptive statistics were used to describe data into categories., Chi-square were used to find differences. The quantitative studied variables were compared using Chi-square test. Statistical significance was used at P. value <0.05

IV. Results:

Table (1): Distribution of mothers characteristics about prevention of pneumonia under five years children (n= 50):

Items	No	%
1. Age in years of mothers:		
- Under 20 years	28	56
- From 21 : 30 years	8	16
- From 31:40 years	9	18
- More than 41 years	5	10
Mean ± SD	27.3 ± 8.9	
2. Sex of children under five years:		
- Mal	33	66
- Female	17	34
3. Formal education		
- Cannot read and write	10	20
- Primary	17	34
- Secondary	23	46
- Higher secondary or more	0	0
4. Residence:		
- Rural	40	80
- Urban	10	20
5. Number of children :		
- From 1- 3children	16	32
- From 4-6 children	23	46
- More than 6 children	11	22
6. Monthly income		
- Adequate	0	0
- In-adequate	50	100

Table (1): shows that, 56% of mother's age was under 20 years, with mean age 27.3±8.9. Their formal education revealed that, 46% of mothers have secondary school. Regarding residence, 80% of mothers live in rural and 20% were living in urban. In addition 46% of mothers have from 4-6 children. Regarding monthly income; 100% of mothers get inadequate income.

Table 2: Distribution of mothers of children under the age of five according to their knowledge of pneumonia prevention (N = 50).

Items	Pretest		Posttest		P. value
	N	%	N	%	
1. Definition of pneumonia:					X ² =0.64 0.02*
- Accumulation of muco-purulent exudates within the alveolar	10	20	6	12	
- inflammation of the lung parenchyma	6	12	4	8	
- Don't know	27	54	4	8	
- All of the above	7	14	36	72	X ² =0.45 0.01*
2. Signs and symptoms of pneumonia:					
- Cough is unproductive to productive with whitish sputum, tachypnea.	21	42	1	2	
- Fever usually quit high. Temperature increases rapidly to F (39.4C–40.6C).	9	18	3	6	
- anorexia , vomiting , diarrhea , abdominal pain	9	18	1	2	
- Irritable, restless, lethargic.	2	4	0	0	
- Don't know	6	12	2	4	
- All of the above	3	6	43	86	

*= Significant

Table (2): illustrates that 54% of mothers of children under five years didn't know the meaning of pneumonia in pre-test but 72% of mothers of children under five years know that pneumonia inflammation of the lung parenchyma and accumulation of muco-purulent exudates within the alveolai in post-test. Regarding signs and symptoms of pneumonia, 42% know the signs and symptoms of pneumonia which were cough that is unproductive to productive with whitish sputum, tachypnea in pre-test but 86% know all the signs and symptoms of pneumonia in post-test. However, this increase reached statistically significant difference between the mothers of children under five years regarding definition, signs and symptoms of pneumonia (P. 0.02, and 0.01); respectively.

Table 3: Distribution of mothers of children under 5 years according to their knowledge of prevention of pneumonia (N = 50).

Items	Pretest		Posttest		P. value
	No	%	No	%	
1. Treatment of pneumonia:					X ² =0.75 0.05*
- Oral antibiotic	8	16	4	8	
- Intravenous fluid and antibiotic	24	48	2	4	
- Don't know	11	22	3	6	
- All of the above	7	14	41	82	
2. Use of o2 therapy:					X ² =0.55 0.03*
- Nasal cannula for o2	7	14	2	4	
- O2 by mask	2	4	3	6	
- Don't know	30	60	7	14	
- All of the above	11	22	38	76	
3. Management of fever:					X ² =0.71 0.02*
- Tap water for cold compress	22	44	2	4	
- Change wait clothes of children with dry one	8	16	2	4	
- Give antipyretic according doctor order	9	18	2	4	
- Don't know	5	10	0	0	
- All of the above	6	12	44	88	
4. Prevention of pneumonia:					X ² =0.62 0.000*
- Immunization against Hib, pneumococcus	0	0	0	0	
- Adequate nutrition	5	10	2	4	
- Good hygiene	5	10	0	0	
- Don't know	33	66	2	4	
- All of the above	7	14	46	92	

*= Significant

Table (3): reveals that 48% of mothers of children under five years says that treatment of pneumonia by intravenous fluid and antibiotic in pre-test, but 82% knew treatment of pneumonia in post-test. 60% of mothers of children under five years don't know the use of O2 therapy in pre-test, but in post-test 76% knew the form of use O2 therapy. 44% of mothers of children under five years says they use tap water in management fever in pre-test, but 88% in post-test of the mothers knew who to manage fever. As regard for prevention of the pneumonia in children under five years, 66% didn't know in pre-test, but 92% knew in post-test. However, this increase reached statistically significant difference between the mothers of children under five years regarding treatment, use of O2 therapy, management of fever and prevention of pneumonia in children under five years (P. 0.05, 0.03, 0.02 and 0.000); respectively.

Table (4): Relationship between pre-test and pre-test sample study on prevention of pneumonia in children under five years of age and their characteristics (n = 50).

Items	Pre-test Knowledge				Post-test knowledge				P. value
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		
	N	%	N	%	N	%	N	%	
1. Age of mothers:									X ² =0.63 0.000*
- Under 20 years	5	10	23	46	25	50	3	6	
- From 21 : 30 years	3	6	5	10	6	12	2	4	
- From 31:40 years	4	8	5	10	8	16	1	2	
- More than 41 years	2	4	3	6	3	6	2	4	
2. Level of education:									X ² =0.72 0.004*
- Cannot read and write	2	4	8	16	10	20	0	0	
- Primary	5	10	12	24	14	28	3	6	
- Secondary	6	12	17	34	19	38	4	8	
- Higher secondary or more	0	0	0	0	0	0	0	0	
3. Residence:									X ² =0.55 0.002*
- Rural	7	14	33	66	37	74	3	6	
- Urban	3	6	7	14	10	20	0	0	
4. Monthly income									X ² =0.65 0.000*
- Adequate	0	0	0	0	0	0	0	0	
- In-adequate	12	24	28	56	35	70	5	10	

*= Significant

Table (4): this table revealed that, the relation between the studied sample knowledge pre-test, post-test about prevention of pneumonia in children under five years and their characteristics. It indicates an increase in knowledge scores in all knowledge areas at the post-test phase. However, this increase reached statistically significant difference between the mothers formal education, residence and monthly income and their knowledge .It was evident that higher percentages of satisfactory knowledge in post-test) was observed among mothers in the age under 20 years old (50%), mothers having secondary education (38%),living in the rural area (74%) and mothers monthly income were in-adequate in post-test (70%).

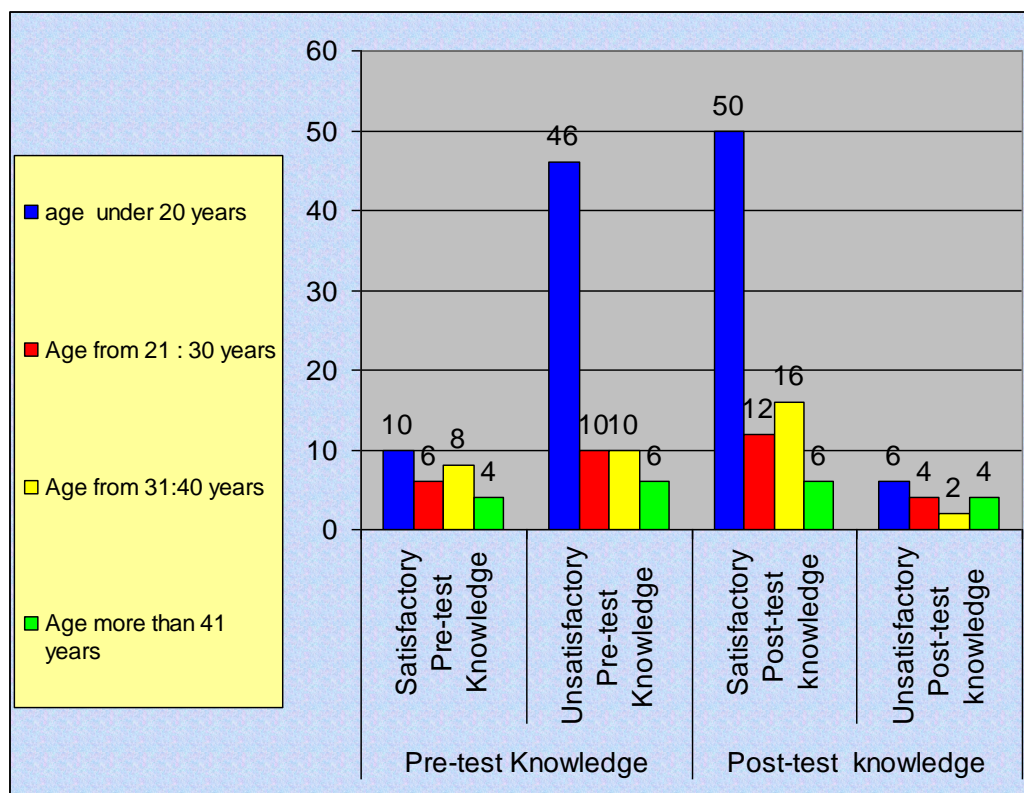


Fig (1): The relation between the studied sample knowledge pre-test, post-test about prevention of pneumonia and age of the mother

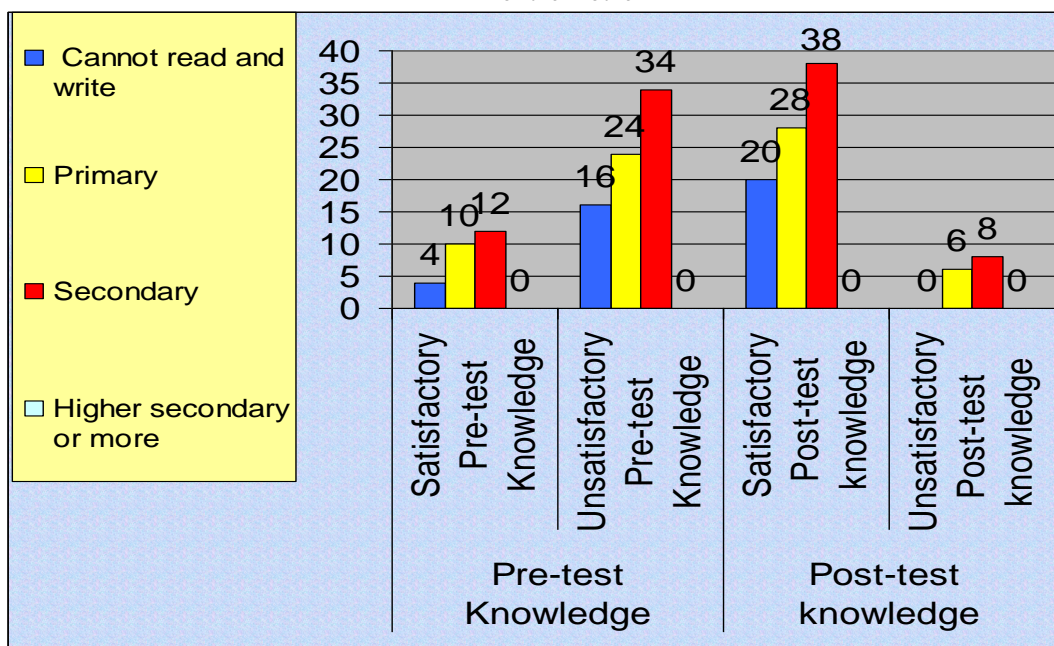


Fig (2): The relation between the studied sample knowledge pre-test, post-test about prevention of pneumonia and level of education.

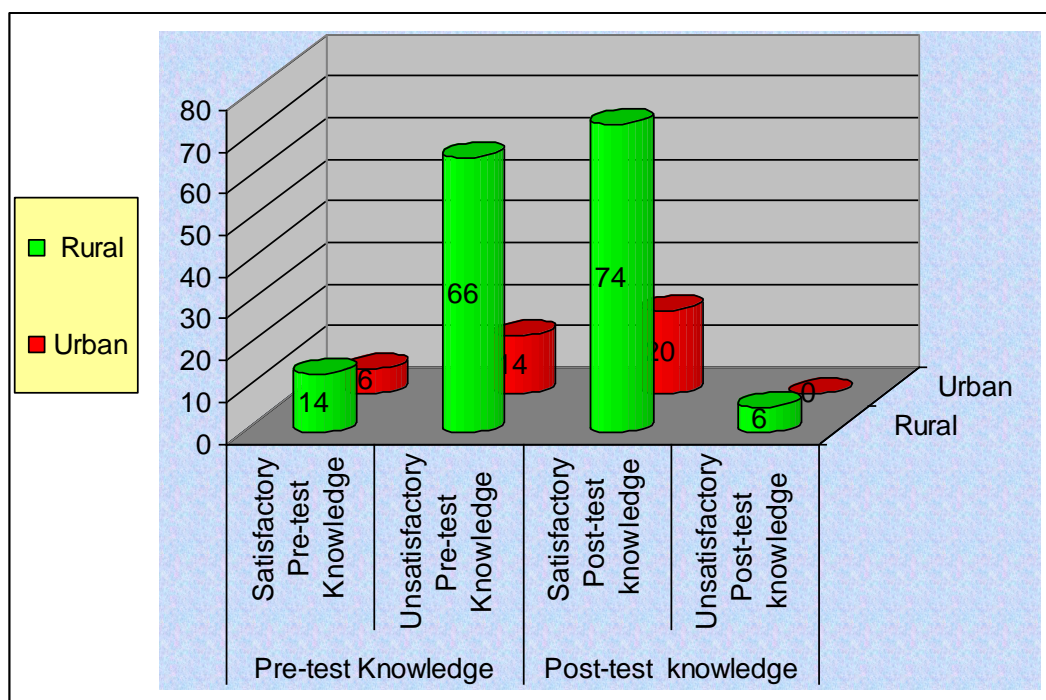


Fig (3): The relation between the studied sample knowledge pre-test, post-test about prevention of pneumonia and residence.

Table (5): The correlation between the total scores of mothers knowledge in pre-test and post-test about prevention of pneumonia under five years in the program n= 50

Pre-test	Post-test	
	Correlation Coefficient (r)	P. value
Knowledge	0.88	0.002*

*=Significant

Table (5): this table shows the correlation between the total scores of mothers knowledge in pre-test and post-test about prevention of pneumonia under five years. It is evident that a highest strong positive statistical correlation was found between the total scores of knowledge in pre-test of mothers of children under five years about prevention of pneumonia (r=0.88).

V. Discussion

Mothers are the primary caregivers of the child, so they need to be aware of the prevention of pneumonia. Although they have some knowledge regarding home management of coughing, they have not practiced properly. If mothers would form the appropriate knowledge, they could take advantage of these in a proper manner and improve their practices on cough management and prevention of pneumonia, which reduces the burden of disease in society and helps in social reconstruction. Printing materials such as an information booklet with sufficient basic concepts on pneumonia prevention can be given to expectant mothers and keep positive results with them certainly getting benefits from it (Bansal and Saha 2011).

The aim of this study was to identify the effect of educational program on mothers' knowledge about prevention of pneumonia for children under five years.

Regarding the studied mothers age, the findings of the present study showed that their age was less than 20 years with mean and stander deviation 27.3 ± 8.9 this finding not correspondent with (Mamata, 2014) who stated that 12% were in age group of < 20 years.

More than two third of studied sample was a family had one child, less than one third had two children and only less than quarter had three and above children. More than half of the mothers had no knowledge regarding prevention of pneumonia where as 24% of mothers gained knowledge from various mass media, less than quarter of mothers gained knowledge from health professionals and expressed that they had gained knowledge on prevention of pneumonia from their family.

The present study showed that more than half of mothers live in rural area have unsatisfactory knowledge in pre-test and about two third of mothers have improve their knowledge in rural area in post-test.

More than half of mothers had no knowledge about the prevention of pneumonia where 24% of mothers gained knowledge from different media, and less than a quarter of mothers gained the knowledge of health professionals and expressed that they had acquired knowledge about the prevention of pneumonia from their families.

The study showed that more than half of mothers living in rural areas have an unsatisfactory knowledge of the pre-test and about two-thirds of mothers have improved their knowledge in a rural post-test area.

It is very important that rural mothers should have appropriate knowledge about the clinical manifestations of pneumonia, because delays in detecting clinical signs represent dangerous obstacles to preventing deaths from childhood pneumonia. It was noted that mothers were unable to detect the severity of the disease from a child and brought it to senior family members or the head of household for permission to take the child from home to receive treatment. A recent study in western Kenya reported that associated diseases, spread from the upper respiratory tract and delayed treatment, were identified as common causes of acute pneumonia on supply to health facilities (**Onyango et al., 2012**).

In this study most of the mothers, before education didn't know the meaning of pneumonia, but more than two third of mothers had children under five years know that pneumonia is an inflammation of the lung parenchyma and accumulation of muco-purulent exudates within the alveolar in post-test.

In this study regarding the signs and symptoms of pneumonia, more than one third of mothers said that the signs and symptoms of pneumonia were cough unproductive to productive with whitish sputum, tachypnea in pre-test but after implementation of the program about two thirds of the mothers know all the signs and symptoms of pneumonia.

Moreover, a group of mothers believed that if they have cough and cold, their child would also develop cough through breastfeeding while sucking breast milk. There is no adequate data on spread of pneumonia from the infectious cough of breastfed mothers, although breastfed mothers with active tuberculosis are one of the risk factors for developing tuberculosis in children. However, proper breastfeeding can prevent the severity of pneumonia such as hypoxemia (**Chisti,et al., 2011**).

This study reveals that more than three-quarters of mothers know pneumonia treatment after program implementation. As the prevention of pneumonia in children less than five thirds of the year was not known in the pre-test, but 92% improved their knowledge about how to prevent pneumonia. This result is in the same line with (**Guimer et al., 2012**) which reported that mothers have a lack of appropriate knowledge about pneumonia and prevention. Childhood pneumonia is associated with poverty and results from under-optimal child care and seeking practices that compound the lack of access to health care.

Previous studies reported that hand hygiene practices are vital in minimizing the spread of most organisms responsible for pneumonia, which can reduce the incidence of acute respiratory infections and pneumonia by up to 50%. air pollution, maternal illiteracy, and unfamiliarity with respiratory illnesses are the risk factors for childhood pneumonia which are supportive to the present study findings about the knowledge gap and lack of appropriate perception of mothers about pneumonia

Childhood pneumonia is associated with poverty and the consequences of inadequate child care and research practices that increase access to health care. Previous studies have reported that hand hygiene practices are vital in reducing the spread of most organisms responsible for pneumonia, which can reduce the occurrence of acute respiratory infections and pneumonia above 50%. Air pollution, maternal illiteracy and lack of familiarity Respiratory diseases are risk factors for childhood pneumonia that support the results of the study on the cognitive gap and the lack of a suitable concept for mothers about pneumonia

VI. Conclusion

Based on the results of the present study the mothers of children under five years on how to prevent pneumonia in pediatric ward at Minia General Hospital. were lacking the necessary basic knowledge related to prevention pneumonia. So, educational program was based on mothers needs of knowledge, this came from pre-test results. By the implementation of the program there was remarkable improvement of mothers' knowledge, it was clear in post-test results. By the end of the program there was successful improvement in mothers' knowledge regardless to their age and residence.

VII. Recommendations

Based on the results of the present study the developed program should be applied in the same study setting and adopted in other similar settings with required modifications, provision of continuing education programs on regular basis is suggested in order to refresh and update mother's knowledge about how to prevent pneumonia in children under five years.

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