

The Impact of an Educational Program on Mothers' Knowledge Of Preventing Bronchiolitis For Their Children Under Two Years

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Abstract: The study aimed to assess the impact of the educational program on the knowledge of mothers to prevent bronchiolitis of their children under the age of two years.

Design: A Quasi-Experimental research was utilized as design.

Material and Methods: These study settings were the inward pediatric department at Qena university hospital and Qena general hospital. A Convenient sample was utilized, that composed of eighty (80) from mothers of children with bronchiolitis from the previously mentioned settings. Two tools were used to collect the data, an interview questionnaire sheet composed and the educational program according to mothers' knowledge needs about how to prevent bronchiolitis. The booklet guideline for mothers of children with bronchiolitis and bronchiolitis prevention were designed.

Results: The present study reported that a statistical significant improvement of the mothers' knowledge level regarding bronchiolitis and prevention of bronchiolitis after the implementation of an educational program.

Conclusions: Based on the findings of the current study, the knowledge of mothers of children less than two years on how to prevent bronchitis in the pediatric ward at the university hospital Qena lacked the basic knowledge necessary for the prevention of bronchiolitis

Recommendations: The implementation of an educational program promoting the knowledge level of mothers' of children with bronchiolitis and bronchiolitis prevention.

Key Words: Knowledge, Educational Program, Prevention, Bronchiolitis.

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I Introduction

Acute respiratory infections are various diseases with different causative micro-organisms and factors which can affect various parts of respiratory tract system. The classification of infection may be according to the anatomic site of infection. Upper respiratory tract infection includes pharyngitis, common cold and tonsillitis, while lower respiratory tract infection includes bronchitis, bronchiolitis and pneumonia (Johnson et Al., 2013)

Respiratory tract infections are considered as one of the largest health problems especially acute infections and it could be leading to increase the mortality and morbidity in different countries. The major problem for developing countries is the mortality from ARI in children less than five years of age (Bansal et Al., 2017). Moreover, lower respiratory tract infections (LRTI), can lead to the first cause of increased morbidity for children under-two years for an estimated just about two million childhood deaths globally. ARI contributes to one-fifth of all under-five deaths in developing countries which is around 12 million every year (Abu-Baker et Al., 2013). The ratio of children with acute respiratory tract infections spread to more than 80 % in urban and less than 60 % in rural Upper Egypt to Lower Egypt (Kumar et Al., 2016).

Upper and lower respiratory tract infection are most common in children. Major symptoms of URTI included fever, cough, sneezing, runny and sore throat, anorexia, vomiting, headache, body aches, and general weakness. The lower respiratory tract infections (LRTI) such as bronchiolitis, bronchitis, pneumonia (Bansal et Al., 2017).

Bronchiolitis is defined as blockage of the small airway in the lungs result from viral infection; the most common virus is respiratory syncytial virus. Respiratory syncytial virus were 72% while 26% were human Rhinovirus (Chisti, et Al., 2015). It usually only occurs in children less than two years of age. In bronchiolitis the main symptoms considered as high fever, dry cough, sore throat and difficulty of breathing, wheezing, irritability, tachycardia and episode of apnea. Most children have 3 to 5 attacks of acute respiratory infection in each year which can complicate by bronchiolitis (Hockenberry et Al., 2016)

Bronchiolitis is one from the biggest infectious cause of child deaths worldwide. In 2016, bronchiolitis kills 16% of children fewer than 2 years of age (Waheed et Al., 2016).

The main reasons for children are visited to hospitals are bronchiolitis (Scott Et Al., 2013). Bronchiolitis causes recurrent physician visits; consuming antibiotics and parental can work loss, and decreased quality of life. In addition, both children and their parents are suffering from many stressors (Ghimire et Al., 2017). Some Egypt mothers' perceived bronchiolitis incorrectly; it occurs due to cold air, wind, water, or foods (Jose, 2016).

Severe bronchiolitis management require child hospitalization for treatment which, including airway suctioning, oxygen therapy, replacement intravenous fluid, food management and careful observation. prognosis of bronchiolitis good if bronchiolitis early diagnosis and early management, so prevention is better than treatment, the ratio of incidence can be decreased by provided mothers adequate knowledge about the trigger factors, causes, clinical manifestations, prevention methods and when to request medical help (Hockenberry Et Al., 2016).

Treatments of bronchiolitis include both antibiotics and antiviral medications, according to the type of causative micro-organism, if it is diagnosed early by adequate time, and antibiotics may be prescribed to prevent secondary infections or complications and bronchodilators, or nebulizer hypertonic saline or epinephrine is consider as supportive care (Parvez Et Al., 2015).

Bronchiolitis can be prevented in between children less than two years by providing mothers by adequate knowledge about proper practices for good hygiene by frequent hand washing, avoiding direct interaction with any children who are ill, provided good and proper nutrition and avoiding passive smoking (Pitthayapong Et Al., 2017). It is also necessary to increase mothers' awareness regarding immunization, reduce indoor and outdoor air pollution (Parvez Et Al., 2015). Breast feeding during first six months is also very necessary in reducing incidence of bronchiolitis, because breast milk has a proper nourishing supply, antioxidants and antibodies, which increased the child immunity and needed for adequate growth and development (Klevens Et Al., 2016).

Educational program for mothers of children with bronchiolitis is the basic role of nurses because this is the most direct contact persons with ill children and parents. An educational program should contain main clarification about bronchiolitis and the etiology, clinical manifestations bronchiolitis, complications, prevention methods and the importance medication lines for bronchiolitis (Tilson, 2013).

Prevention and treatment of bronchiolitis in children require the accurate information about knowledge of mothers. There were many studies in our county which evaluate lower respiratory tract infection as pneumonia and bronchial asthma, but there was not any studies related to bronchiolitis. Therefore, the present study aims to evaluate knowledge of mothers regarding bronchiolitis in children.

The Study Aim

The study aimed to assess the impact of the educational program on the knowledge of mothers to prevent bronchiolitis of their children under the age of two years.

Hypothesis

- The knowledge level of mothers of children with bronchiolitis and its prevention will increase.
- Implementation of educational program about to bronchiolitis and dissemination bronchiolitis educational booklet, will improve the knowledge of mothers about the prevention of bronchiolitis for their children less than two years.

II Material And Methods

Design and Settings

A Quasi-Experimental design was conducted to the study. The study was conducted at the inward pediatric department at Qena university hospital and Qena general hospital, which have large numbers of mothers were admitted with their children suffering from bronchiolitis.

Sample

A convenient sample was recruited. a total of 80 of mothers and their children who were diagnosed with bronchiolitis within six months and their age were less than two years old, as one group studied. The participation of the sample was voluntary in the present study.

Data Collection

Two tools were used for collecting data

Tool (I): An Interview Questionnaire Sheet for mother that was designed by the researchers and was written in simple Arabic language in form to cover the following:

A- Mothers Characteristics: Age, educational level, type of occupation, marital status, residence, number of children and child gender.

B- Mothers' Knowledge Regarding Bronchiolitis: This part was used to assess mothers' knowledge about bronchiolitis pre and post educational program for the studied group. it was included sixth closed ended questions included definition, clinical manifestations of bronchiolitis, etiology, complications, lines of

medication, management of fever regarding bronchiolitis and preventive methods of bronchiolitis. The correct answer was take score one and for the incorrect answer take zero score. Comparison between mothers' answers and model key answer were done. Reliability of mothers knowledge was measured using Cronbach's alpha test and the values of Cronbach's alpha were ($r = 0.82$). The validity was ensured from five experts in the field of pediatric health nursing.

Tool (II): Educational program: The researchers done educational and booklet after assessment for mothers' knowledge needs for mothers' had children less than two years about how to prevent bronchiolitis was designed in simple Arabic language. The booklet will include definition of bronchiolitis, causes, clinical manifestations, and complications, treatment of bronchiolitis, medication lines of bronchiolitis, management of fever and prevention of bronchiolitis.

The booklet was assessed its content validity face by a panel from three professional experts' in the field of pediatric health nursing. According to their comments, the necessary adjustments were done and the finalized booklet form was administered.

Fieldwork

The present study was carried out at the first week of June (2017) up to the first week of December (2017) for data collection and program implementation. The researchers were visited the pervious mentioned study sittings, three days/week (Saturday, Monday and Wednesday) from 9.00 am to 2.00 pm. The researchers were introduced themselves and gave explanation regarding the aim of the study and the expecting outcomes were explained for the studied sample, they enhance cooperatively to participate in the study. All participants served as single studied group, constituted 80 mothers. The questionnaire sheet was filled by the participants within 3-5 minutes to obtain their responses, to assess the mothers' knowledge regarding to bronchiolitis and to assess mother's needs. According the mothers needs the researchers were designed the educational program. After that the implementation and evaluation of the educational program, regarding bronchiolitis prevention were carried out at the previously mentioned settings in a separate room. The total number of educational program sessions was 4 sessions; each session was taken about 30-60 minute in duration. Recruited sample was classified into groups, each group not more than ten and at the end of each session the researchers were planned for the date of next session according to their suitable time. The researchers were used the different teaching methods as group discussion, mother class and flipchart regarding bronchiolitis. Suitable teaching aids were prepared especially for the intervention based on booklet, which comprised of colored, images and posters. Upon the accomplishment for the educational program and for the assessed the impact of the educational program, researchers were used the posttest which done by using the same tools to assessed the pretest, that for evaluated the outcomes immediately after the educational program was implemented. Also formal booklet was distributed to the recruited sample, where the researchers were explained for the content of the booklet and how to use it as a personal reference.

Ethical Considerations

Before the pilot study as well as the study proposal was approved from dean faculty of nursing, south valley university and directors of inward pediatric department at Qena university hospital and Qena general hospital. A written consent informs was obtained from the mothers of children with bronchiolitis, that participation in the study was voluntary. Researchers were given complete clarification of the study and the study aim, the researchers were assured that the data was collected and information was confidential and was used only for the aim of the present study. No health hazards were presented. Participants were assured that all their data were highly confidential: anonymity was also assured through assigning a number for each child instead of names to protect their privacy.

Pilot Study

The study were pilot- carried out on 8 mothers whose children with bronchiolitis, from the recruited sample for clarity, feasibility & relevance and times needed for applied the tools. Mothers were involved in the pilot study, excluded from the study sample.

Data Analysis

Data was collected coded and analyzed by using statistical package for social sciences (SPSS) version 21. Continuous data were expressed as frequency and percentage, mean and standard deviation was calculated. Comparison between two periods and more had done by using chi-square test (χ^2). Level of significance $p < 0.05$, 0.01, 0.001 was used as the cut of value for statistical significance.

III Results

Table (1): Socio-demographic characteristics of mothers of children with bronchiolitis

Variables	Items	No	%
Age	< 30	60	75.0
	30 < 40	20	25.0
Occupation	Working	45	56.2
	Not Working	35	43.8
Residence	Rural	68	85.0
	Urban Area	12	15.0
Educational Level	Bachelor	31	39.2
	High Educate	34	43.0
	Less	14	17.7
Marital Status	Married	40	50.0
	Divorced	27	33.8
	Widow	13	16.2
Source Of Mother Knowledge About Prevention Of Bronchiolitis	Physician	19	23.8
	Nurses	11	13.75
	From Websites Or Others	50	62.5
Child Gender	Male	43	53.8
	Female	37	46.2

Table (1): Illustrated three quarters of the mothers were aged < 30 and 25% of them were 30 < 40. More than half of them 56.2% were working and the rest of them were not working. For mothers residence were 85% living in rural area and the rest of them were from urban area. Regarding the educational level of mothers recruited in the studied sample were 43% had high educate, while 17.7% were less than high educate. In addition mothers' knowledge sources regarding prevention of bronchiolitis were 62.5% from websites or others and the rest of them were from professional persons. Finally more than half of the studied sample of children with bronchiolitis were male than female children.

Table (2): Distribution of mothers of children less than two years in relation to their knowledge of bronchiolitis

Items	Pre-Program (N = 80)		Post-Program (N = 80)		Chi-Square	P-Value
	No	%	No	%		
1- Definition Of Bronchiolitis - Blockage Of The Small Airway In The Lungs	10	12.5	9	11.25	**88.682	0.00
- Lower Respiratory Tract That Usually Affects Infants	11	13.75	3	3.75		
-All Of The Above	9	11.25	65	81.25		
-Don't Know	50	62.5	3	3.75		
2- Clinical Pictures Of Bronchiolitis - Dry Cough& Tachypnea	15	18.75	7	8.75	**74.455	0.00
- Fever 39.4C-40.6C	1	2.5	2	2.5		
-Anorexia , Vomiting & Diarrhea	9	12.25	1	1.25		
-All Of The Above	15	18.75	67	83.75		
-Don't Know	40	50.0	3	3.75		
3- Causes Of Bronchiolitis - Previous Common Cold	7	8.75	3	3.75	**99.015	0.00
- Viral Infection	3	3.75	5	6.25		
- Bacterial Infection	7	8.75	2	2.5		
- All Of The Above	10	12.25	69	86.25		
-Don't Know	53	66.25	1	1.25		
4- Complications Of Bronchiolitis - Pneumonia	7	8.75	4	5.0	**90.435	0.00
- Apnea	3	3.75	6	7.5		
- All Of The Above	13	16.25	68	85.00		
-Don't Know	57	71.25	2	2.5		

Table (2): Clarifying 50% of mothers of children less than two years were didn't know the meaning of bronchiolitis pre- program, where 81.25% of mothers of children less than two years were knew the correct meaning of bronchiolitis post- program. More ever 50% of mothers were don't know the clinical manifestations of bronchiolitis pre- program, while 83.75% of mothers post-program were know the right clinical manifestations of bronchiolitis. Furthermore, pre- program 66.25% mothers were didn't know the right causes

The Impact Of An Educational Program On Mothers' Knowledge Of Preventing Bronchiolitis For ..

for the bronchiolitis, while 86.25% of mothers were knew the right causes of bronchiolitis post- program. Finally the complications of bronchiolitis were not clear for mothers where 71.25% were didn't know the complications pre- program, while 85% of mothers were knew the complications of bronchiolitis post- program.

Table (3):Distribution ofmothers of children less than two years in relation to their knowledge to prevent bronchiolitis

Items	Pre- program (N = 80)		Post- program (N = 80)		Chi-Square	P-Value
	No	%	No	%		
1- Treatment of bronchiolitis					126.076**	0.00
- Antibiotics	10	12.5	1	1.25		
- Intravenous fluid	3	3.75	3	3.75		
- All of the above	3	3.75	69	86.25		
- Don't know	64	80.0	2	2.5		
2- Medication lines of bronchiolitis					107.423**	0.00
- O2 therapy	17	21.25	5	6.25		
- Antibiotics	3	3.75	2	2.5		
- Antipyretics	5	6.25	1	1.25		
- All of the above	5	6.25	70	87.5		
- Don't know	50	62.5	3	3.75		
3- Management of fever					96.772**	0.00
- Cold compress	11	13.75	4	5.0		
-Give antipyretic	4	5.0	2	2.5		
- Change clothes	5	6.25	4	5.0		
- All of the above	5	6.25	67	83.75		
- Don't know	55	68.75	6	7.5		
4- Prevention of bronchiolitis					80.469**	0.00
-Adequate nutrition	9	11.25	4	5.0		
- Good hygiene	10	12.25	3	3.75		
-All of the above	11	13.75	67	83.75		
- Don't know	50	62.5	6	7.5		

As Show This Table (3): Reveals80% from mothers of children less than two years according to their knowledge of prevention regards bronchiolitisdidn't know the treatments of bronchiolitis pre- program, where 86.25% of mothers were knew the right treatment of bronchiolitis post-program.In addition to 62.5% of mothers weredidn't know medication lines of bronchiolitis pre-program, while 87.5% of mothers were knew the rightmedication lines of bronchiolitis post-program. For management of fever more than half of mothers don't had knowledge about that pre- program, while more than three quarters of mothers had right knowledge related to management of fever for their children with bronchiolitis post- program. While about the different methods of prevention of bronchiolitis, half of mothers didn't know the methods of prevention regarding bronchiolitis pre-program. But post- program, more than three quarters of mothers knew the preventive methods of bronchiolitis as adequate nutrition and good hygiene for their children post-program.

Table (4): The correlation between pre-program and post-program scores for mothers of children less than two years for bronchiolitis prevention

Post- Program Knowledge	Pre - Program	
	R	P-Value
	0.662	0.000 HS

Table (4): Explain the correlation between pre-program and post-program scores for mothers of children less than two years for bronchiolitis prevention. It is obvious that had positive statistical significance between the total pre-program and post-program knowledge of mothers of children less than two years regarding prevention of bronchiolitis (r=0.662).

IV Discussion

Mothers must be needed to be aware of the preventive methods of bronchiolitis because the mother that is the primary caregiver for the child. Although they have some information related to management of coughing at home, but they had not practiced by good methods. If mothers would form the adequate knowledge, they could take benefits of these in a proper manner and enhance their practices on cough treatment and prevention of bronchiolitis, which reduces the incidence of disease in community and helps in social reconstruction. Printing many materials such as knowledge at booklet or flipchart with adequate and the basic concepts on bronchiolitis preventive methods can be given to expectant mothers and keep positive results with them certainly getting benefits from it (**Bansal Et Al., 2017**).

This study was aimed to examine the impact of educational program on mothers' knowledge regarding to prevention of bronchiolitis for children less than two years.

According the age of the studied mothers, results of the present study imply that their age was less than 30 years were 75% this finding agree with (**Parvez Et Al., 2015**) who shown that 13% were in age group of < 20 years.

The result of the present study reflect that after implementing education program together for the studied sample had a higher knowledge score than before implementing education program. The change in child care and knowledge level for mothers believed to be the result of educational program session. There may be several explanations, most important are:

Firstly, more than three quarters were living in rural area and the rest of them 15% were living in urban area. Whereas more than half of studied sample had knowledge regarding prevention of bronchiolitis gained websites or others and 37.5% of mothers gained knowledge from health professionals. Moreover, increased incidence of morbidity and mortality rate of bronchiolitis enhance mothers for receiving and accepting educational program, so that, they could provide management to their bronchiolitis children.

In the present study most of the mothers, pre-education didn't know the meaning of bronchiolitis, but more than three quarters of mothers had children less than two years knew that bronchiolitis is blockage of the small airway in the lungs and lower respiratory tract that usually affects infants in post-program.

Furthermore regarding the clinical manifestations of bronchiolitis, 18.75% of mothers knew that the clinical manifestations of bronchiolitis were dry cough, tachypnea in pre-program while after the program implementation about more than two thirds of the mothers knew all the clinical manifestations of bronchiolitis.

Moreover, a group of mothers confirm that if they have cough and cold, their child would also gave cough through breastfeeding during sucking breast milk. There is no enough information on spread of lower respiratory tract infection from the infectious cough of breastfed mothers. However, proper breastfeeding can prevent the severity of lower respiratory tract infection such as hypoxemia (**Chistiet et Al., 2015**).

This study reflected that more than three-quarters of mothers knew bronchiolitis treatment post implementation the educational program. As the prevention of bronchiolitis in children less than two year was not known in the pre- program, but 84.75% improved their knowledge regarding to how to prevent bronchiolitis. This result is correspondents with (**Ghimire et Al., 2017**) which clarify that mother had a lack of knowledge related to bronchiolitis and prevention. Childhood bronchiolitis is associated with low socio-economic status and results from decreased level of child care and poor practices that compound the lack of giving the appropriate health care.

Many studies reflect that good hygiene practices for hand washing were vital in decrease the spread of micro- organisms responsible for lower respiratory tract infection, which can minimize the incidence of acute respiratory infections and bronchiolitis by up to 55%. Maternal illiteracy, unfamiliarity with respiratory disease and air pollution are the risk factors for childhood lower respiratory tract infection as bronchiolitis and pneumonia which are agree with the current study results regarding to the knowledge gap and lack of adequate concept of mothers regarding to bronchiolitis.

Childhood lower respiratory tract infection is associated with low socio economic status and the process of lack of child care and advanced nursing research practices that increase awareness to health care. Previous studies had revealed that hand washing practices are vital in minimizing the spread of micro-organisms responsible for bronchiolitis, which can decrease the incidence of acute respiratory infections and bronchiolitis above 55%. Air pollution, maternal illiteracy and lack of awareness by respiratory health problems are risk factors for childhood bronchiolitis or lower respiratory tract infection that agree with this study on the gap and the lack of a suitable concept for mothers related to bronchiolitis.

Limitations

No limitations the researchers were recorded.

V Conclusions

Based on the findings of the current study, the knowledge of mothers of children less than two years on how to prevent bronchitis in the pediatric ward at the university hospital Qena lacked the basic knowledge necessary for the prevention of bronchiolitis. Therefore, educational program was based on mothers' needs of knowledge, and this based on the researchers assessment pre-program. After implementation of the program, researchers were assured that there was an improvement in mothers' knowledge; it was easily detected at post-test results.

Recommendations

- Regular educational program for mothers' of children with bronchiolitis to be proceed in inpatient.
- Advanced program should be applied in the same study settings and adopted in other similar settings with required modulations.
- Continuous education programs are suggested in order to update mothers' knowledge regarding how to prevent bronchiolitis for their children less than two years.

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