Mothers' Knowledge and Reported Practice Regarding Inhalation Therapy for their Children Suffering from Croup

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Abstract

Background: Croup is one of the most common causes of upper airway obstruction in young children. It is characterized by sudden onset of barky cough, hoarse voice, inspiratory stridor and respiratory distress caused by upper airway inflammation secondary to a viral infection. Mothers' Knowledge and Reporting Practice constitute a major factor in helping to achieve successful control of croup in children. **Aim:** assess mothers' knowledge and reported practice regarding inhalation therapy for their children suffering from croup. **Design:** A descriptive analytic design was used to accomplish this study. **Settings:** The study was carried out in inpatient units at pediatric department and outpatient pediatric clinic affiliated to Benha University Hospital and Benha Specialized Pediatric Hospital. **Subjects: A convenient** sample of 100 mothers accompanying their children with croup at previously mentioned settings. **Tools of data collection:** Two tools were used: Tool (1) Arabic Structured Interviewing Questionnaire Sheet including two parts: a) Mothers and children characteristics. b) Mother's knowledge about croup and inhalation therapy. Tool (2) Observational check lists, to assess mother's reported practice regarding inhalation therapy, physiotherapy and care of fever. **Conclusion:** More than half of the studied mothers had inadequate knowledge and unsatisfactory level of practice about croup and inhalation therapy .The low knowledge and incorrect practice of mothers mostly affected by residence (rural), low educational level of mother, age (less than 30 years and more than 40 years), occupational status (housewives) and dis attending training courses. **The study recommended and emphasized the importance of:** Improve the knowledge and practice of mothers' by provide adequate education to mothers' about croup cause, signs , symptoms, risk factors, complications and treatment with focus on inhalation therapy by encourage the role of media, nongovernmental organization and health workers .

Keywords: Croup, Mother's knowledge, Reported Practice, Inhalation therapy.

Introduction

Croup is known as laryngotracheobronchitis, it is a common childhood respiratory illness caused by a range of viruses .The term croup is used to describe a variety of respiratory illnesses in children. It mostly occurs in infants and young children between six months and three years of age and is less commonly seen in children older than six years. It is usually seen in the fall and early winter months. It is slightly more common in boys compared with girls. Viral infection causes inflammation of the upper airway, which is characterized by barking cough, inspiratory stridor, hoarseness and respiratory distress. Most cases of croup are

relatively mild and self-limiting. However, croup can occasionally cause severe respiratory obstruction and rarely, death ***(Tyler et al., 2017).***

The most common cause of croup is a viral infection such as Para influenza or influenza that leads to swelling of the larynx (voice box) and trachea (windpipe). However, infection with these viruses is common and most children with these infections do not develop croup. The viruses infect the nose and throat initially and then spread along the upper respiratory tract (back of the throat) to the larynx and trachea. As the infection progresses, the bottom part of the larynx and top part of the trachea become swollen, this narrows the space available for air to enter the lung. Bacterial infection of the same areas can occur during the viral infection, but this does not happen very often. Bacterial infection is usually more severe and requires a different treatment than a viral infection ***(Banga et al., 2017).***

Inhalation therapies are a group of respiratory, or breathing, treatments designed to help restore or improve breathing function in infants with a variety of diseases, conditions, or injuries. There are two main ways inhaled medicine is used: with an inhaler, and with a nebulizer. Inhalers and nebulizers have the same purpose: to get the medicine into your lungs. Both deliver the same type of medicine, and they work equally well when you use them properly ***(Ackley et al., 2019).***

Treatments at home of mild croup include; allowing the child to breathe cool air during the night by opening a window or door. Fever can be treated with an over-the-counter medication such as acetaminophen or ibuprofen. Coughing can be treated with warm, clear fluids to loosen mucus on the vocal cords. Warm water, apple juice, or lemonade is safe for children older than four months. Frozen juice popsicles also can be given. Smoking in the home should be avoided; smoke can worsen a child's cough. Keep the child's head elevated. A child may be propped up in bed with an extra pillow. Pillows should not be used with infants younger than 12 months of age. Parents may sleep in the same room with their child during an episode of croup so that they will be immediately available if the child begins to have difficulty breathing ***(Hockenberry & Wilson, 2018).***

Nurses' role for children suffering from croup depends upon the type and severity of signs and symptoms but may include one or more of the following; humidified air or oxygen (if oxygen is necessary). IV fluids may be needed if the child is dehydrated as a result of fever or rapid breathing, both of which increase the body's loss of fluids. Difficulty breathing can discourage a child from drinking, which can increase the risk of dehydration. Monitoring of oxygen levels, breathing and heart rate, skin color, and level of alertness are used to measure the child's status and response to treatment. A child who fails to improve or who improves slowly may need further treatment ***(Al Otaibi & Al Ateeq, 2018).***

Significance of the study

Croup is the most common pediatric illness that causes severe breathing difficulties, stridor, atelectasis and swelling of epiglottis, croup accounting for approximately 15% of annual clinic and emergency department visits for pediatric respiratory tract infections. The number of cases of croup disease attributed to

clinics and emergency Benha University Hospital was 35 cases episode/200 child-week infected with respiratory infection **(Benha University Hospital Statistical Department 2019).** Moreover, the number of cases of croup disease attributed to clinics and emergency Benha Children Specialist Hospital was 40 cases per week out of 200 cases infected with respiratory infection **(Benha Specialized Pediatric Hospital Statistical Department 2019).**

It is important to understand more about care of children with croup to improve the care provided for these children. The child with croup is vulnerable to emotional and behavior problems leading to poor quality their lives. It also may affect social relation, child interaction, and self-esteem. So, a great attention should be taken especially by mothers during follow up and treatment.

Aim of the study

This study aimed to assess mothers' knowledge and reported practice regarding inhalation therapy for their children suffering from croup.

Research questions

- What were the levels of mothers' knowledge regarding inhalation therapy for their children suffering from croup?
- What were the levels of mothers' reported practice regarding inhalation therapy for their children suffering from croup?

Subject and Methods

Technical design:

The technical design included research design, setting, subjects as well as tools of data collection.

Research Design:

Descriptive design was used to accomplish this study.

Research Settings:

The current study was carried out in inpatient at pediatric department and outpatient pediatric clinic affiliated to Benha University Hospital and Benha Specialized Pediatric Hospital.

Research Subjects:

A convenient sample (100) mothers accompanying their children suffering from croup from the above mentioned settings were selected regardless of their characteristics and willing to participating in the study.

Data was collected; through the following two tools:

Tool (I): A structured Interviewing Questionnaire:

It was designed by the researcher after reviewing related literatures, web sites, journals and text books and it was reviewed by supervisors. It was written in an Arabic language for gathering data to suit the understanding level of the study subject. It entails two parts as the following:

Part (I):

A: Personal characteristics of mothers which include age, occupational , level of education, social status, the number of family members , number of rooms, are there windows in each room, Place of residence, training course on how to care for your child.

B: Personal characteristics of children which include age, gender, ranking, previous hospitalization, history of respiratory infection, Current Weight.

Part (II):

The questioner consisted of 36 questions and is divided into two parts:

A: First part knowledge of mother about respiratory system and croup disease: It includes (22) multiple choice question related to Components of the upper respiratory tract, Components of the lower respiratory tract, definition of croup, causes, symptoms, complication and care as well as source of information. It was adapted by the researcher based on **(Duderstadt, 2017**; **Hockenberry & Wilson, 2018).**

B: Second part knowledge of mother about respiratory system and croup disease: It includes (14) multiple choice questions related to inhalation therapy for children suffering from croup such as definition, causes, indication, complication and care. It was adapted by the researcher based on **(Wilson & Rodgers, 2016**; **Fuhrman & Zimmerman, 2016).**

Scoring system:

A scoring system was followed to assess Mothers' knowledge related to croup and inhalation therapy for children. The Questionnaire was contained of (36) questions, the total scores of the questionnaire were 68 grades, the right complete answer was scored (2), the right incomplete answer was scored (1) and the wrong answer or don't know answer was scored (0). These scores were summed and were converted into a percent score.

It was classified into 3 categories:

- **Good** knowledge if score ≥ 75%.
- **Average** knowledge if score from 50 - 75%.
- **Poor** knowledge if score <50%.

Tool II. Mothers' Reported Practice (MRP):

It was adapted from **James, Nelson, & Ashwill, (2014); Wilmott et al., (2018); Fonceca, Ditcham, Everard, & Devadason, (2019)** and it revised by supervisors. It was used to assess mothers' reported practice regarding inhalation therapy for children suffering from croup. It included 65 steps which the following observation checklists related to care of nebulizer apparatus (8), inhalation drug administration (18), care of fever (7), bulb suction (4), Nebulizer inhalation technique(9), Chest physiotherapy (9).

Scoring system:

A scoring system was used to assess a mothers' reported practice; each checklist was assigned a score according to sub-items. The total score of reported practice were 65 grades, each item was evaluated as "yes" was taken (1) score and "No" was taken (0) score. These scores were summed up and were converted into a percentage score. It was classified into 2 categories:

- Satisfactory reported practice if score ≥ 60%.
- Unsatisfactory reported practice if score < 60%.

Reliability

Reliability of the tools was applied by measuring of internal consistency of the tool through Cronbach's alpha coefficient test.

Tool	Cronbach's Alpha
A structured Interviewing Questionnaire	.798
Mothers' reported practice	.763

IV. Statistical design:

The data collected were revised, coded, tabulated and statistically analyzed using statistical package for the social science (SPSS) version 20 for windows and running on IBM compatible computer. Results were presented by tables and graphs. Descriptive statistics were applied (e.g. frequency, percentages, mean with standard deviation) and chi-square (X^2) was used to examine the significance between qualitative variables. Reliability of the study tools was done using Cronbach's Alpha coefficient. A significant level value was considered when $p < 0.05$ and a highly significant level value was considered when $p < 0.001$. No statistical significance difference was considered when $p > 0.05$.

Results

Figure (1) demonstrates that 58% of the studied mothers had poor level of total knowledge about croup and inhalation therapy. Also, 24% of them had average level of total knowledge. In addition 18% of them had good level of total knowledge.

Figure (2) illustrates that 75% of the studied mothers had unsatisfactory level of total practice regarding croup and inhalation therapy. In addition 25% of them had satisfactory level of total practice.

Table (1) reveals that there were highly statistically significant relation between total knowledge about croup and inhalation therapy of the studied mothers and their level of education, job and mother class at (P= < 0.01). Also, there were statistically significant relation with their age and residence at (P= < 0.05). While, there were no significant relation with marital status at (P= >0.05).

Table (2) shows that there were highly statistically significant relation between total practice regarding croup and inhalation therapy of the studied mothers and their level of education and mothers class at (P= < 0.01). Also, there were statistically significant relation with their age, job and residence at (P= < 0.05). While, there were no significant relation with marital status at (P= >0.05).

Table (3) illustrates that there was highly statistically positive correlation between total knowledge of the studied mothers and their total practice regarding croup and inhalation therapy.

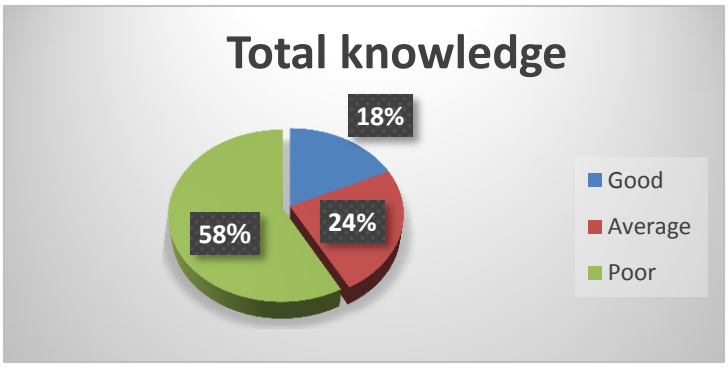

Figure (1): Percentage distribution of the studied mothers according to their total knowledge (n=100).

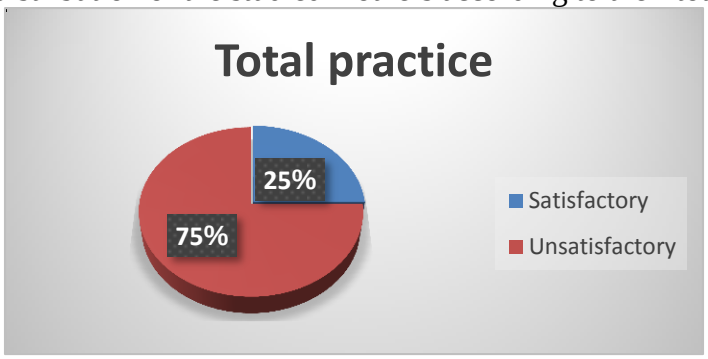

Figure (2): Percentage distribution of the studied mothers according to their total practice (n=100).

Table (1): Relation between demographic characteristics of the studied mothers and their total knowledge about croup and inhalation therapy.

Items		Total Knowledge						X2	P-Value
		Good (n=18)		Average (n=24)		Poor (n=58)			
		No	%	No	%	No	%		
Age (year)	<20	0	0.0	3	12.5	7	12.1	15.17	.022*
	20-<30	3	16.7	8	33.3	39	67.2		
	30-< 40	13	72.2	10	41.7	9	15.5		
	≥ 40	2	11.1	3	12.5	3	5.2		
Marital Status	Married	13	72.2	20	83.3	54	93.1	6.310	.128
	Divorced	3	16.7	3	12.5	3	5.2		
	Widow	2	11.1	1	4.2	1	1.7		
Level of education	Illiteracy	0	0.0	0	0.0	12	20.7	22.91	.000**
	Read and write	0	0.0	4	16.7	11	19		
	Intermediate education	3	16.7	17	70.8	35	60.3		
	High education	15	83.3	3	12.5	0	0.0		
Job	Working	16	88.9	15	62.5	3	5.2	21.17	.001**
	Not Working	2	11.1	9	37.5	55	94.8		
Residence	Urban	14	77.8	18	75	10	17.2	16.87	0.01*
	Rural	4	22.2	6	25	48	82.8		
Mothers class	Yes	10	55.6	0	0.0	0	0.0	19.25	.004**
	No	8	44.4	24	100	58	100		

***significant at p ‹ 0.05. **highly significant at p ‹ 0.01.**

Table (2): Relation between demographic characteristics of the studied mothers and their total practice about croup and inhalation therapy.

Items		Total practice				X2	P-Value
		Satisfactory (n=25)		Unsatisfactory (n=75)			
		No	%	No	%		
Age (year)	<20	3	12	7	9.3	14.12	0.031*
	20-<30	5	20	45	60		
	30-< 40	15	60	17	22.7		
	≥ 40	2	8	6	8		
Marital Status	Married	20	80	67	89.3	7.692	0.112
	Divorced	3	12	6	8		
	Widow	2	8	2	2.7		
Level of education	Illiteracy	0	0.0	12	16	24.54	.000**
	Read and write	0	0.0	15	20		
	Intermediate education	7	28	48	64		
	High education	18	72	0	0.0		
Job	Working	21	84	13	17.3	13.21	0.036*
	Not Working	4	16	62	82.7		
Residence	Urban	22	88	20	26.7	12.98	0.04*
	Rural	3	12	55	73.3		
Mothers class	Yes	10	40	0	0.0	21.25	.001**
	No	15	60	75	100		

***significant at p ‹ 0.05. **highly significant at p ‹ 0.01.**

Table (3): Correlation between total knowledge of the studied mothers and their total practice regarding croup and inhalation therapy.

Item	Total practice	
	R	P –value
Total knowledge	0.391	.000**

(**) Statistically significant at p<0.05.

Discussion

Concerning **total knowledge about croup and inhalation therapy**, the finding of the current study revealed that more than half of the studied mothers had poor level of total knowledge about croup and inhalation therapy. Also, slightly less than one quarter of them had average level of total knowledge. While, slightly less than one fifth of them had good level of total knowledge. This bad level of knowledge could be explained by the high rate of false beliefs that are spread around the disorder, likewise the misinterpretation and misconceptions of the signs and symptoms of illness. Another explanation might be due to the lack of right and specific information about the disease on media such as television, newspapers, magazines, and etc. Furthermore, there is shortage in the health services that introduce health education for family and parents; the health services predominantly interested in giving medical care.

These results similar with the results of **Nadhem, R., Mohammed, N., & Hundhal, (2018)** who study was about "Assessment of Mother's Knowledge Concerning Recurrent Wheezy Chest among Children under Age five years old" and indicated that about half of the mothers had poor level of knowledge.

But the present study is inconsistent with **Enggar, & Pont, (2018)** who study was about The Relationship of Knowledge and Attitudes of the Mother Have a Children of Incidence Acute Respiratory Infection, and stated that three quarters of the studied sample were well knowledgeable.

Concerning **women's total practice regarding croup and inhalation therapy**, the finding of the current study revealed that three quarters of the studied mothers had unsatisfactory level of total practice regarding croup and inhalation therapy. While, one quarter of them had satisfactory level of total practice. These results mean that the mothers' knowledge had an effect on their practices, as when the mothers have unsatisfactory knowledge level regarding their children conditions; this will affect their practices regarding care of their children with croup and inhalation therapy. These results similar with the results of **Farhad et al., (2014)** and **Abdalla, (2017)** who studies were about Knowledge, Attitude and Practices of Parents of Asthmatic Children about Asthma and stated that two thirds of the studied sample had unsatisfactory level of total practice. But the present study is inconsistent with the study of **Al-Ali et al., (2019)** who reported that less than two thirds of the studied women had good level of total practice.

Regarding to **correlation between total knowledge of the studied mothers and their total practice regarding croup and inhalation therapy,** the present study revealed that there was highly statistically positive correlation between total knowledge of the studied mothers and their total practice. This could be explained as good level of knowledge among women was more encountered among those women with satisfactory level of practice. This result agreed with the result of **Joshy et al., (2018)** who study was about Effectiveness of Information Booklet on Knowledge of Mothers Regarding Home Management of Respiratory Tract Infection among Under Five Children and stated that total knowledge of the

studied mothers had a significant effect on their total practice.

According to **relation between demographic characteristics of the studied mothers and their total knowledge about croup and inhalation therapy**, the present study revealed that there were highly statistically significant relation between total knowledge of the studied mothers and their level of education, occupation and training course. Also, there were statistically significant relation with their age and residence. This could be explained as, poor level of knowledge were higher among women with age group between 20-<30 year and residing in rural areas. Also, it seems that, whenever the women had high education, working and attending training courses, the total knowledge score increased. This result agreed with the result of **AboElkheir, Hafez, & Mohamed, (2016)** who study was about Environmental and Personal Factors Related to Asthma Severity among Children and found that there was high statistically significant relation between total knowledge score of the studied sample and their age, educational level and place of resident.

But these results disagreed with the results of **Naz et al. (2015)** who study was about Educational interventions for cervical cancer screening behavior of women, who stated that level of education and attendance of training course had a significant effect on mothers knowledge. Also, **Abutiheen et al., (2019)** stated that there was statistically significant relation between total knowledge of the studied mothers and their age, job and residence.

Regarding **the relation demographic characteristics of the studied mothers and their total practice about croup and inhalation therapy**, the present study showed that there was highly statistically significant relation between total practice of the studied mothers and their level of education and training course. Also, there was statistically significant relation with their age, occupation and residence. This could be explained as, satisfactory level of practice were higher among women with high education and attending training courses. Also, satisfactory level of practice was higher among women with age group between 30-< 40 year and residing in urban areas. These results agreed with the results of **Fawcett, Porritt, Campbell, & Carson, (2017)** who studied Experiences of parents and careers in managing asthma in children and found that there was statistically significant relation between total practice of the studied mothers and their level of education and training course.

But these results disagreed with the results of **Silva, Reyna, Wakida, Limón, & Campos, (2018)** who study was about Wheezing Disorders in Childhood and stated that there was no statistically significant relation between total practice of the studied mothers and their age and residence.

In the present study, there was no statistically significant relation between total knowledge and reported practice score of the studied women and their marital status. It seems that, there was no difference between woman's` marital status to total knowledge and reported practice about croup and inhalation therapy. This result supported with the study performed by **Vogelberg, (2019)** about Preschool children with persistent asthmatic symptoms and mentioned that there was no statistically significant relation between total knowledge

score of the studied sample and their marital status. In the same field, **Bham et al., (2019)** revealed that there was no difference between woman's` marital status to total about inhalation therapy.

Regarding to **correlation between total knowledge of the studied mothers and their total practice regarding croup and inhalation therapy,** the present study revealed that, there was highly statistically positive correlation between total knowledge of the studied mothers and their total practice. This could be explained as good level of knowledge among women was more encountered among those women with satisfactory level of practice. This result supported with the result of **Joshy et al., (2018)** who study was about Effectiveness of Information Booklet on Knowledge of Mothers Regarding Home Management of Respiratory Tract Infection among fewer than five children and stated that total knowledge of the studied mothers had a significant effect on their total practice.

Conclusion

From our study we concluded that:

More than half of the studied mothers had poor level of knowledge and two third of them had unsatisfactory level regarding the total reported practice and there was a highly statistically positive correlation between total knowledge and total reported practice.

Recommendations

From this study we recommend that:

1. In service training program for mothers' to improve their knowledge and reported practice about croup at outpatient clinics and hospitals for mothers.
2. Simple educational pamphlets and posters about croup should be provided for all mothers in outpatient clinics.
3. Further studies should be conducted on large sample of mothers to confirm out results.

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معلومات وممارسات الأمهات عن العلاج بالإستنشاق لدى أطفالهن الذين يعانون من الخناق

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يعرف الخناق بأنه مرض تنفسي شائع بين الأطفال ناجم عن مجموعة من الفيروسات ويتميز بحدوث التهاب الحنجرة والقصبة الهوائية , لذلك هدفت هذه الدراسه إلي تقييم معلومات وممارسات الأمهات عن العلاج بالإستنشاق لدى أطفالهن الذين يعانون من الخناق. وقد أجريت الدراسه في الوحدات الداخلية والعيادة الخارجية التابعة لقسم الأطفال بمستشفى بنها الجامعي والاطفال التخصصي بنها حيث اشتملت عينة البحث على ١٠٠ ام لأطفال يعانون من الخناق. حيث لخصت الدراسة الي وجود علاقة ذات دلالة احصائية عالية بين مجموع درجات المعلومات ومجموع درجات الممارسا للأمهات مع مستوى تعليمهم واعمارهم . كما أوصت الدراسه بأهميه إعداد برامج تدريبية وتعليمية للأمهات عن التعامل مع مرض الخناق ورعاية الطفل المصاب والاستخدام الأمثل للعلاج الإستنشاقي.