

## Mothers' Knowledge and Reported -Practice Regarding Care of their Children Having Bronchial Asthma

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### Abstract

**Background:** Bronchial asthma is a common chronic respiratory disease characterized by hyper responsiveness and obstruction of airways. It is one of the main causes of increased school absenteeism and hospital admission among children. **Aim:** The aim of the current study was to assess mothers' knowledge and reported-practice regarding care of their children having bronchial asthma. **Research design:** A descriptive exploratory research design was utilized to carry out the current study. **Setting:** The study was conducted in the bronchial asthma outpatient clinic at Cairo university Specialized Hospital (CUSPH). **Sample:** A convenient sample of 100 mothers of children diagnosed with bronchial asthma were included in the study. **Data Collection Tool:** Structured interview questionnaire, involving mothers and children demographic data, history of the child's disease, assessment of mothers' knowledge as well as reported-practice provided for their children with bronchial asthma. **Results:** The current study results revealed that, the majority of mothers had incomplete knowledge regarding symptoms, triggers and prevention of childhood asthma. The highest percentages of the mothers provide incomplete care for their children pertinent to asthma attacks, measures to prevent asthma as well as care of child's cough. **Conclusion:** It was concluded from the current study results that more than half of the mothers had unsatisfactory level of knowledge regarding care of their children having bronchial asthma. Near half of them had unsatisfactory level of reported-practice provided for their children having bronchial asthma. **Recommendations:** Public awareness as well as education programs should be encouraged and should be tailored to improve the knowledge and reported-practice of the parents whose children have bronchial asthma.

**Key Words:** Bronchial asthma – Mothers' Knowledge – Practice – Children.

Date of Submission: 09-12-2019

Date of Acceptance: 24-12-2019

### I. Introduction

Bronchial asthma is a chronic respiratory disease characterized by inflammation and obstruction of airways as a result of exacerbated response to different stimuli. It is one of the most common diseases responsible for high school absenteeism, emergency admission and mortality rates among young children. With a growing trend of globalization and urbanization, there is an exponential increase in the rate of asthma worldwide (Abutiheen, Al-Saadi, & Al-Quraini, 2019).

Childhood asthma is a common disease in children that forms a major comorbidity illness. It is prevalent worldwide, especially in developed countries where its prevalence is increasing to epidemic proportions (El-Mashad, Mahmoud, & Abdel Hafez, 2016). Recently, Perera, and Abeysena, (2019) documented that, the worldwide predominance of bronchial asthma is around 4.5%. There is an increment in the incidence of bronchial asthma, and it is expected to increase by 100 million people of different ages by 2025. Regionally, a survey, cross-sectional study in Saudi Arabia done by Albarraq (2019) concluded that childhood bronchial asthma is one among the top thirty diseases with the highest burden and ranked 19th and 26th in terms of death and disability in Kingdom of Saudi Arabia.

In an Egyptian study carried out by Sanousy, Fathy, Saleh, and Elsayed (2018) to detect the bronchial asthma among school students in Assuit governorate. The findings showed that the prevalence of bronchial asthma was 8.7%. The prevalence rate for males was 4.4% while, that for females was 11.4%. In a recent Egyptian study conducted by Bayomi, Taha, Zaton, and Elshora, (2018) to evaluate the effect of nursing intervention program on nurse's knowledge, practices and patients' outcomes with bronchial asthma documented that the prevalence of bronchial asthma among all respiratory diseases in Egypt is 6.9%; and it is increasing.

Asthma is a complex disorder involving biochemical, genetic, immunologic, environmental, infectious, endocrine, and psychologic factors (Hockenberry, & Wilson, 2015). As mentioned of Nouredin, Shaaban, Mohamed, Abdalla, Mahmoud and Salman, (2019), symptoms may vary according to severity of the disease

from coughing to tightness and dampness of breath along with chest wheezing. Treatment is influenced by many factors comprising: environmental factors, appropriate use of medications, severity and recurrence of the attacks. Bronchial asthma has no cure; however, the main goal of treatment is controlling asthmatic attacks besides preventing limitations during performing activities.

An emerging evidence from recent study by Hallit, Raheison, Malaeb, Hallit, Waked, Kheir, and Salameh, (2019) highlighted that, environment has a major influence on the progress of asthma in children. Knowledge about these factors makes asthmatic attacks preventable; thus, better control of the disease. One of the main factors that increase the burden for developing asthma, chest wheezing and tightness of breath is smoking. Other factors as: seasonal changes, pesticides, dust and use of domestic cleaning agents, etc. Increasing parents' awareness about the disease affects treatment effectiveness and efficacy.

Children with uncontrolled asthma are prone to severe complications including severe damage of the airways and respiratory failure. Also, misuse of corticosteroids and inhalers cause further complications (Gajanan, Padbidri, & Chaudhury, 2016; Perera, & Abeysena, 2019). Consequently, mothers should be aware of nature of bronchial asthma, main factors triggering attacks and how to properly use inhalers and other medications. It's also essential for parents to teach the child about bronchial asthma, any probable pain they may suffer and how to manage it as this will help in controlling the disease (Albarraq, 2019).

The nursing care of the child with asthma begins with a review of the child's health history; the home, school, and play environment; the parents' and child's attitudes about the child's condition; and a comprehensive physical assessment with focus on the respiratory system. Nursing care involves both acute and long-term care. Nurses who are involved with children in the home, hospital, school, outpatient clinic, or practitioner's office play an important role in helping children and their families learn to live with the condition (Hockenberry, & Wilson, 2015).

#### **Significance of the study:**

Bronchial asthma constitutes a serious public health problem that impacts children's quality of life morbidity and mortality. Asthma is considered as the most common chronic disease of childhood, and is a disruptive disease that affects school and work attendance. It affects more than 22 million people in the United States and accounts for more than 497, 000 hospitalizations annually (Belleza, 2016). Mothers 'play an essential role in reducing severity and managing bronchial asthma. Although different treatment choices, but there is an increase in the hospital admission rate for young asthmatic children.

Through empirical observations, literature review and clinical experience in the pediatric care units, it is noticed that children having bronchial asthma, are exposed to varying of complications some of them are fatal. Caring for children having bronchial asthma requires knowledge about the disease and its complications and home care instructions and long-term follow-up. Mothers' information and knowledge is crucial in reduction of complications during the child's life. Hence, the current study is under taken to assess the knowledge and reported-practice of mothers regarding care of children having bronchial asthma. Eventually, the results of the current study might generate an attention and motivation for further researches in the field of childhood asthma. As well as providing guidance and recommendations that should be reflected in pediatric nursing education and practice.

#### **Aim of the study:**

The aim of the current study was to assess mothers' knowledge and reported-practice regarding care of their children having bronchial asthma.

#### **Research questions: -**

- What is the mothers' level of knowledge regarding care of their children having bronchial asthma?
- What is the mothers' level of reported-practice regarding care of their children having bronchial asthma?

## **II. Methods**

#### **Research design:**

A descriptive exploratory research design was utilized to carry out the current study. This design helps describe a situation or an event in exploring and knowing level of mother's knowledge and reported-practice regarding care of their children having bronchial asthma.

**Setting:** The study was conducted in the bronchial asthma outpatient clinic at Cairo university Specialized Hospital (CUSPH).

#### **Sample:**

A convenient sample of 100 mothers of children diagnosed with bronchial asthma were included in the study.

**Inclusion criteria:**

- Mothers have children their age ranged between 1-12 years.
- Mothers have children diagnosed with bronchial asthma.
- Mothers who accept to participate in the current study regardless their age or educational level.

**Ethical Considerations:**

Complete description of the purpose and the nature of the study was provided to the mothers to obtain their oral approval to participate in the current study. Children and their mothers were informed that participation in the study is voluntary. The researcher was informing the mothers about their rights to withdraw from the study at any time without giving any reason and without any effect on the care of their children. Confidentiality was assured to each child and their mothers.

**III. Data Collection Tool:**

**1-Structured interview questionnaire:** It was developed by the researcher after extensive reviewing the related literature which containing fifty (50) questions and consisted of four parts:

**Part I:** Demographic characteristics of the mothers and their children with bronchial asthma, it involves 14 questions about mothers' age, level of education, marital status, occupation, place of residence, type of family, number of children, and smoking among family. It also contains data relevant to children characteristics as age, gender, level of education, rank in the family.

**Part II:** History of the child's disease, which included 14 questions about age of onset of asthma, symptoms, duration of disease, family history, nighttime attacks, unattended school days, emergency admission, other chronic illness.

**Part III:** Mothers' knowledge about bronchial asthma, this part involved 10 questions related to source of knowledge, definition of bronchial asthma, signs and symptoms, asthma triggers, prevention of attack, asthma medications, and medication devices.

**Part IV:** Mothers' reported-practice regarding care provided for their children with bronchial asthma, which included 12 questions about care during asthma attack, asthma triggers, child's play and activity, medications, herbal remedies, preventive measures, inhaler use, ..... etc.

**Scoring system:**

Scoring system for mothers' knowledge about bronchial asthma, each complete answer was taking two scores, incomplete one took one score and the wrong answer or no response was taking zero. The total score was converted to 100% (20 score) and then categorized as following: the total score of mothers' knowledge less than 50% (< 10) was considered as unsatisfactory while score of 50% and more (10 and more) was considered as satisfactory level of knowledge. As regards mothers' reported care that provided for their children with bronchial asthma, each complete care was taken two scores, incomplete one took one score and the wrong care or no response was took zero. The total score was converted to 100% (24 score) and then categorized as following: the total score of mothers' reported care less than 50% (< 12) was considered as unsatisfactory while score of 50% and more (12 and more) was considered as satisfactory level of reported care.

**Validity and reliability:**

Data collection tool was reviewed by 3 experts in pediatric nursing to test the content validity of the tool. The tool was examined for content coverage, clarity, relevance, applicability, wording, length, format, and overall appearance. The experts agreed on the content of the tool, but recommended minor language changes that would make the information clearer and more precise. The suggested changes were made. Reliability of tools was performed to confirm its consistency using Cronbach's alpha and the results was reliability was 0.86.

**Pilot study:**

Pilot study was conducted on 10% (10 mothers) of the total sample of mothers of children having bronchial asthma to assess the feasibility, objectivity, applicability, clarity, adequacy, and content validity of the study tools and time required to fulfill it and to determine possible problems in the methodological approach or instrument. The results of the pilot study were used to test the proposed statistical and data analysis methods. The tool was completed without difficulty, adding support to the validity of the instrument. Mothers involved in the pilot study were included in the main study sample.

#### **Data collection procedure:**

An official permission had been taken from the director of outpatient clinic to provide official permission to the researcher to collect required data. Clear explanations about the aim and nature of the study were discussed by the researcher for each mother who fulfilled inclusion criteria. The purpose and the nature of study were explained to each mother on individual bases. An oral approval was obtained from each mother to get her acceptance as well as to gain her cooperation.

The interview was conducted for all mothers to fill their personal data and characteristics of their children and assessment of mothers' knowledge and reported-practice about care of their children with bronchial asthma was obtained by the researcher. Each mother was interviewed individually by the researcher in front of asthma clinic in waiting hall for children before or after enters the clinic to fill the tool. The tool filled by the researcher within 20-30 minutes. The researcher attends the clinic on every Saturday, Monday and Wednesday from 7am to 1pm. Data about onset and duration of bronchial asthma, follow-up schedule and medications was obtained from the child's medical file. Data collection was conducted over two months.

#### **Statistical analysis:**

The collected data was tabulated, and summarized. A statistical package for social studies (SPSS version 21) was used for statistical Analysis of data. Data was computerized and analyzed using appropriate descriptive and inferential statistical tests to test the research question. Qualitative data were expressed as frequency and percentage. Correlation among variables was done using correlation coefficient. Level of significance at  $p < 0.05$ ,  $0.001$  were used as the cut of value for statistical significance.

### **IV. Results**

Table (1) reveals that 64% of the mothers who participated in the current study their age ranged from 20 to less than 30 years with a mean  $28.68 \pm 6.02$  years. Half (50%) of the mothers had basic education; the majority (90%) of them were housewives, and three quarters (75%) of them lived in rural areas. As regards the type of family, it was found that 61% of the mothers lived in extended families. More than two thirds (68%) of them had 2-3 children. Figure (1) illustrates that the majority (81%) of the family were smoke. Table (2) demonstrates that children age ranged from 3 to less than 3 years old (38%) the mean of their age was  $4.23 \pm 3.09$  year. More than half (54%) of them were males and 48% of them were ranked as the second child. The majority (90%) of the children didn't have any other chronic diseases. The highest percentage (70%) of those children having other chronic diseases were suffering from congenital heart defects.

Figure (2) shows that half (50) of the children's families had previous history of bronchial asthma. Table (3) documents that, the highest percentage (61%) of the children had less than 3 years as duration of asthma. More than two thirds (67%) of the children were suffering from asthma attacks during winter season followed by fall season (21%). The main triggers of bronchial asthma attacks were pollution and weather changes (41% & 33% respectively). Forty eight percent of the children had bronchial asthma attacks one per week and 67% of them had nighttime attacks. Figure (3) evident that, the vast majority (92%) of mothers were provided with knowledge about care of their children with bronchial asthma. The highest percentage (64.1%) of the mothers were received the knowledge from the physician as illustrated in figure (4).

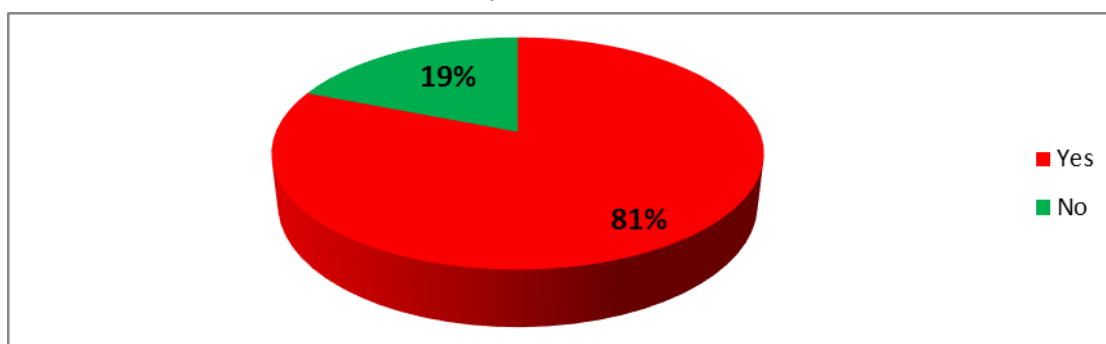
Table (4) shows that 63% of the mothers had complete knowledge about definition of childhood asthma. The highest percentage (82%, 77% & 79% in order) of the mothers had incomplete knowledge as regards symptoms, triggers and prevention of childhood asthma. The majority (89% & 95 correspondingly) of the mothers had incomplete knowledge about medications and devices used to manage asthma. The total mean score of mothers' knowledge was  $9.08 \pm 2.15$ . It is clear from table (5) that the highest percentages of the mothers provide incomplete care for their children pertinent to asthma attacks, measures to prevent asthma as well as care of child's cough (66%, 73% & 67% respectively). It is found that 47% of the mothers place the child in semi-setting position during asthma attack. The majority (92% & 82% in order) of mothers adhered to the follow-up schedule and monitors their child condition regularly.

Figure (5) demonstrates that more than half (54%) of the mothers had unsatisfactory level of knowledge and near half of them (49%) of them had unsatisfactory level of reported-practice as regards care of their children with bronchial asthma. Table (6) evident that there were no statistically significant correlations between the total mean score of mothers' knowledge and reported-practice and their age, level of education, occupation, place of residence and the number of children in the family ( $p > 0.05$ ). On the other hand, there was a highly statistically significant positive correlation between the total mean score of mothers' knowledge and reported-practice ( $p < 0.01$ ). A significant positive correlation was detected between the child's rank in the family and the total mean score of mothers' reported-practice ( $p < 0.05$ ) as shown in table (7). In contrary, there were no statistically significant correlations between the other characteristics of the children and their mothers total mean score of knowledge and reported-practice ( $p > 0.05$ ).

**Table (1): Percentage Distribution of Mothers' Demographic Data (n=100).**

Demographic Data	NO	%
<b>Age/year:</b>		
20-<30	64	64
30-<40	27	27
40 and more	9	9
Mean ± SD	28.68± 6.02 years	
<b>Level of education:</b>		
Not read or write	33	33
Basic education	50	50
Secondary school education	10	10
University education and above	7	7
<b>Occupation:</b>		
Housewife	90	90
Working outside home	10	10
<b>Place of residence:</b>		
Urban	24	24
Rural	75	75
Slums	1	1
<b>Type of family:</b>		
Nuclear	39	39
Extended	61	61
<b>Number of children:</b>		
1	24	24
2-3	68	68
>3	8	8
Mean ± SD	2.19±.91 child	

**Figure (1) Prevalence of Smoking in the Families of Children with Bronchial Asthma in the Current Study (n=100).**



**Table (2): Percentage Distribution of the Characteristics of Children with Bronchial Asthma in the Current Study (n=100).**

Children' Characteristics	NO	%
<b>Age/years:</b>		
<3	37	37
3-<6	38	38
6<9	13	13
9 and more	12	12
Mean ± SD	4.23±3.09 year	
<b>Gender:</b>		
Male	54	54
Female	46	46
<b>Rank with the family:</b>		
First	29	29
Second	48	48
Third	17	17
More than third	6	6
<b>The child has other chronic diseases:</b>		
Yes	90	90
No	10	10
<b>Type of chronic disease (n=10)</b>		
Congenital heart disease	7	70
Renal failure	1	10
Liver	1	10
Brain atrophy	1	10

Figure (2) Family History of Bronchial Asthma (n=100).

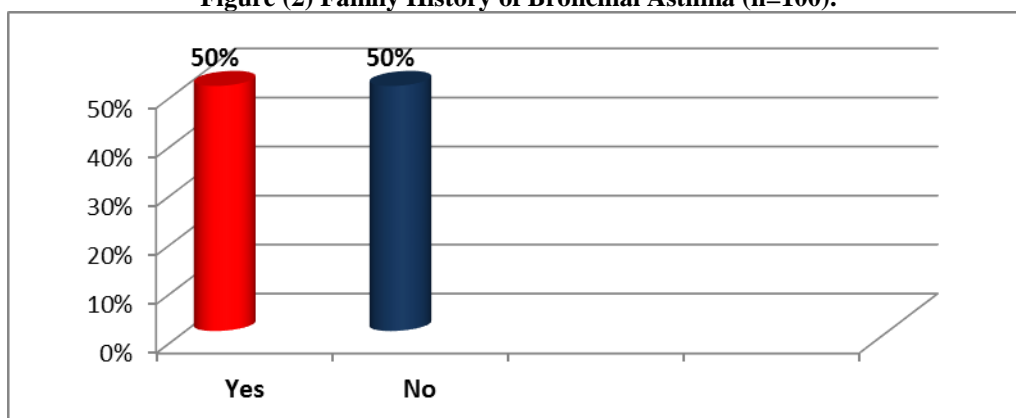


Table (3): Percentage Distribution of Disease Characteristics among Children with Bronchial Asthma (n=100).

Disease Characteristics	NO	%
<b>Duration/years:</b>		
<3	61	61
3<6	26	26
6<9	8	8
9 and more	5	5
Mean ± SD	2.92±2.46 year	
<b>Season that asthma become a problem:</b>		
Spring	5	5
Summer	7	7
Fall	21	21
Winter	67	67
<b>Main triggers of bronchial asthma attacks:</b>		
Weather changes	33	33
Allergies (food and drugs)	6	6
Strong emotions	12	12
Vigorous exercises	4	4
Pollution (dust, smoking and pesticides)	41	41
Home animals	4	4
<b>Frequency of bronchial asthma attacks:</b>		
Once per month or less	27	27
Once per week	48	48
Twice per week	11	11
More often	14	14
<b>Nighttime attacks:</b>		
Yes	67	67
No	33	33

Figure (3): Mothers Provided Knowledge about Care of their Children with Bronchial Asthma (n=100)

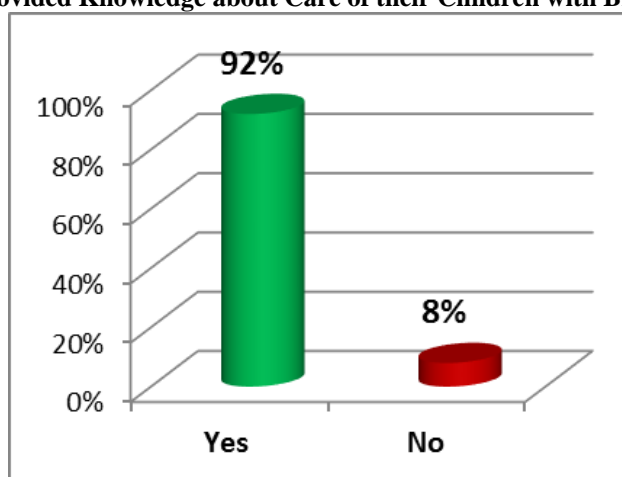


Figure (4): Source of Mothers' Knowledge (n=92)

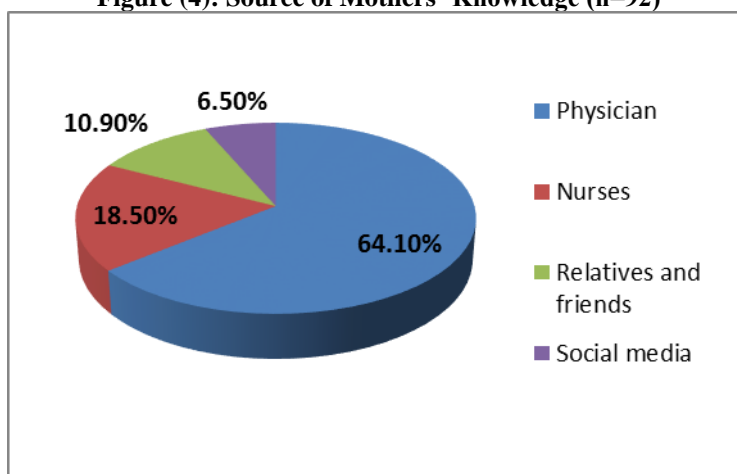


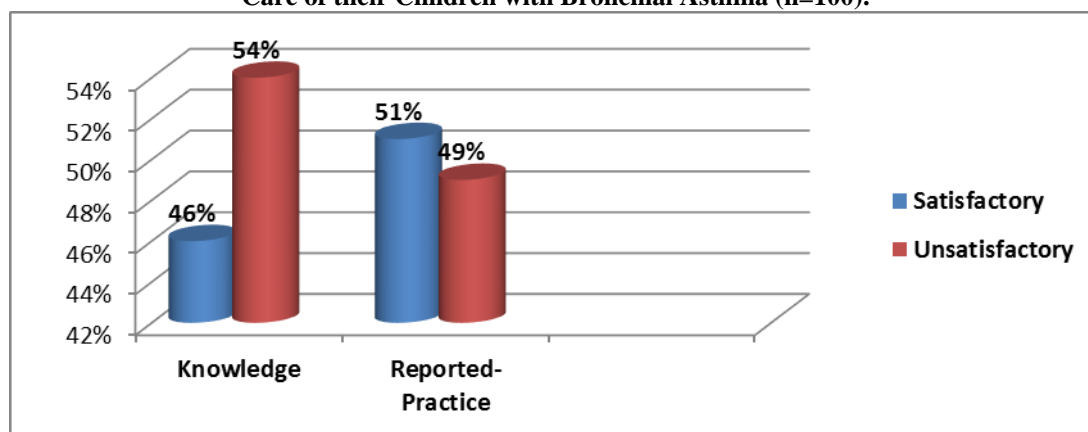
Table (4): Percentage Distribution of Mothers' Knowledge about Bronchial Asthma (n=100).

Mothers' Knowledge	Complete		Incomplete		Wrong/Did not know	
	NO	%	NO	%	NO	%
Definition	63	63	19	19	18	18
Symptoms of bronchial asthma	14	14	82	82	4	4
Triggers of childhood bronchial asthma	16	16	77	77	7	7
Medications used to manage bronchial asthma	10	10	89	89	1	1
Device used to relive the symptoms of bronchial asthma	5	5	95	95	0	0
Prevention and control of bronchial asthma	21	21	79	79	0	0
Total mean score of mothers' knowledge	9.08±2.15					

Table (5): Percentage Distribution of Mothers' Reported-Practice Regarding Care of their Children having Bronchial Asthma (n=100).

Mothers' Reported-Practice	NO	%
<b>Actions provided when the child has asthma attack:</b>		
Complete	19	19
Incomplete	66	66
Wrong	15	15
<b>Play is permitted for the child:</b>		
Yes	67	67
No	33	33
<b>Child's position during asthma attack:</b>		
Standing	8	8
Lying down	6	6
On abdomen	39	39
Semi-setting	47	47
<b>Give asthma medications regularly for the child:</b>		
Yes	93	93
No	7	7
<b>Give the child herbal remedies:</b>		
Yes	85	85
No	15	15
<b>Remove the asthma triggers from house:</b>		
Yes	89	89
No	11	11
<b>Adhered to the follow-up schedule:</b>		
Yes	92	92
No	8	8
<b>Monitor the child condition regularly:</b>		
Yes	82	82
No	18	18
<b>Measures taken to prevent and control asthma:</b>		
Complete	27	27
Incomplete	73	73
<b>Care provided for child's cough:</b>		
Complete	33	33
Incomplete	67	67
Total mean score of mothers' reported-practice	13.27±4.2	

**Figure (5): Percentage Distribution of Mothers' Level of Knowledge and Reported-Practice Regarding Care of their Children with Bronchial Asthma (n=100).**



**Table (6): Correlation between the mean of Total Score of Mothers' Knowledge and Reported-Practice and their Selected Demographic Data (n=100).**

Demographic Data	Total Mean Score of Mothers' Knowledge		Total Mean Score of Mothers' Reported-Practice	
	r	p	r	p
Age	.037	.715	.132	.901
Level of education	.064	.528	.163	.106
Occupation	.003	.975	.006	.956
Place of residence	.044	.666	.082	.418
Number of children	.084	.0405	.193	.054
Total mean score of mothers' knowledge			.527**	.000
Total mean score of mothers' reported-practice	.527**	.000		

\*\* Correlation is significant at the 0.01 level

**Table (7): Correlation between the mean of Total Score of Mothers' Knowledge and Reported-Practice and their Children Characteristics (n=100).**

Children Characteristics	Total Mean Score of Mothers' Knowledge		Total Mean Score of Mothers' Reported-Practice	
	r	p	r	p
Age	.006	.950	.127	.208
Gender	.047	.641	.011	.916
Rank in the family	.128	.203	.251*	.012
Duration of the disease	.031	.758	.179	.075

\* Correlation is significant at the 0.05 level

## V. Discussion

The current study results revealed that more than half of mothers' age ranged from 20 to less than 30 years and the majority of them were housewives. Similarly, Nouredin, et al. (2019) carried out to assess the knowledge and to identify the attitude and practice of 100 mothers of asthmatic children concerning their use of inhalers in Sudan. The study concluded that that 57% of the mothers aged from 30 to 40 years and 63% of them were housewives.

In relation to mothers' level of education, it was found that half of mothers had basic education. The result reflected that higher literacy rate among Egyptian mothers. On the same line, the Egypt Demographics Profile (2016) assured that, the literacy rate among females was 63.5% compared to 59.4% in 2015. So, efforts of governmental and non-governmental organizations should continue to focus on female' education because low levels of literacy, and education in general, can impede the economic development of a country in the current rapidly changing, technology-driven world, this of course will reflect positively on the health care system as a whole. On the same line, Nouredin, et al. (2019) found that 52% of the mothers had secondary school education. The higher the educational level, the better the practices of the mothers with their child's health in general and in case of asthma in particular.

This result contradicted with Bhagavatheeswaran, Kasav, Singh, Mohan, & Joshi, (2016) who assessed the asthma knowledge in the 100 parents of asthmatic children and to understand parents' attitude and practices in dealing with the exacerbation of their children's asthma in India. The study summarized that the of majority the participants were university graduates or above. Regarding place of residence, it was found that three quarters of the mothers lived in rural areas. This finding contradicted with El-Mashad, et al. (2016) who conduct



study to assess the prevalence of bronchial asthma among primary school children in Menoufiya Governorate, Egypt and found that the overall point prevalence of bronchial asthma was higher in urban areas than in rural areas (6.58 and 5.34%, respectively). In a systematic review by Rodriguez, Brickley, Rodrigues, Normanse, and Cooper (2019) documented that studies tend to show a greater prevalence of asthma in urban compared to rural populations.

In the current study, it was found that more than three quarters of the families were smokers. From the researcher point of view, passive smoking aggravates airway hypersensitivity; along with other predisposing factors as dust, outdoor triggering factors and allergens cause worsening of the case. This result was supported by Perera, and Abeysena, (2019) who reported that the identification of triggering factors was highly related to smoking in the house (88.4%). Recently, Fouda, et al. (2018) highlighted that the prevalence of smoking is increasing in many developing countries, including Egypt.

Regarding to characteristics of children, the current study evident that more than one third of children their age ranged from 3 to less than 3 years old. This result could be interpreted as, asthma was more prevalent in children less than 3 years old as they may have undeveloped immunity system. This led to higher risk for the development of infections in the respiratory tract. Also, the study results showed that more than half of children were male. From the researcher point of view, Egyptian males are exposed to more triggering factors than females, as they are being more open to outdoor factors and activities. These findings are consistent with Nouredin, et al. (2019), who found that 8% of the children with bronchial asthma aged less than 1 year, 44% aged from 1 to 5 years and 69% of them were males.

In the current study, it was found that half of the children's families had previous history of bronchial asthma. This finding was supported by Bhagavatheeswaran, et al. (2016) who stated that more than half of the participants reported a family history of asthma. The result was also supported by El-Mashad, et al. (2016) who stated that positive family history had highly significant effect as risk factor for asthma. The current study showed that, the main triggers of bronchial asthma were weather changes and pollution. This finding was supported by Perera, and Abeysena, (2019) who identified that asthma triggering factors were highly related to weather changes and smoking in the house (95.5% & 88.4% respectively).

Concerning mothers' knowledge about asthma, the result of the current study showed that the vast majority of mothers were provided with knowledge about care of their children with bronchial asthma. This result is contradicted with Abutiheen, Al-Saadi, and Al-Quraini, (2019) who stated that 48.8% of the participants not given knowledge about asthma.

Regarding mothers' source of knowledge, more than half of the mothers received their knowledge from the physician and only near one fifth from the nurse. This could be inferred that the nurses in the outpatient clinics need to be encouraged to provide health teaching to the mothers of children with bronchial asthma or any other health problem. This result was congruent with a cross-sectional study by Koshapor, Rostami, Renani, and Cheraghian, (2018) to determine knowledge, attitude, and practices of 118 parents of asthmatic children about physical activities in Iran. The results revealed that most of parents acquired their knowledge about asthma from their physician.

Concerning mothers' knowledge regarding symptoms, triggers and prevention of childhood asthma, highest percentage of the mothers had incomplete knowledge with total mean score of knowledge  $9.08 \pm 2.15$ . This result corresponded with Perera, and Abeysena, (2019) who found that among caregivers, only (36%) had good knowledge about asthma with mean score for knowledge on asthma 20.63 (SD=4.42) ranging from 7 to 30. Furthermore, study by Gajanan, Padbidri, and Chaudhury, (2016) found that large numbers of parents (68%) were unaware about the cause of the disease. In contrast to Nouredin, et al. (2019) who stated that 38% mothers did not know what caused asthma.

Regarding medications, majority of mothers had incomplete knowledge about medications and devices used correspondingly for the management of asthmatic attacks. The current study result is concurrent with Abutiheen, Al-Saadi, & Al-Quraini, (2019) who mentioned that 60% of parents were worried about addiction on inhaler, 44.9% believed medication affects normal growth, 65.4% believed medication affects the immunity. From the researcher point of view, the poor practices toward managing asthmatic attacks with medications increase the level of children's admission to emergency department with asthma attack. This might be caused by improper understanding of the disease as they focus on short term relief of the attack symptoms without looking forward to long term control of the case.

In relation to mothers' reported-practice provided for their children having asthma, it was found that the highest percentages of the mothers provide incomplete care for their children pertinent to asthma attacks, measures to prevent asthma as well as care of child's cough. This result needs to combine all the efforts of the health team members to equip mothers with instructions and guidelines to provide safe care for their children with asthma. The same result was found by Koshapor, et al. (2018) who reported that the overall level of parent is poor as regards care of their children with asthma.

Regarding level of knowledge and reported-practices, unfortunately more than half of the mothers had unsatisfactory level of knowledge and near half of them had unsatisfactory level of reported-practice as regards care of their children with bronchial asthma. This result may be due to the fact that mothers did not receive sufficient instructions to care for their children having asthma. This will have a negative impact on children and expose them to many risks. This result showed the incremental advantage of implementation of educational programs, guidelines and protocol of care for mothers of children with bronchial asthma. This result was supported by Albarraq, (2019) who found that there was significant insufficiency in caregivers' knowledge toward pediatric asthma.

There were no statistically significant correlations between the total mean score of mothers' knowledge and reported-practice with their place of residence, age and level of education. In contrast with Nouredin, et al. (2019) who mentioned that mothers' educational level was found to be associated with their level of knowledge significantly ( $p=0.013$ ). On the other hand, there was a highly statistically significant positive correlation between the total mean score of mothers' knowledge and reported-practice. This result could be rationalized as mothers' reported-practice is linked with their knowledge. Regarding child's rank in the family, a significant positive correlation was detected between the child's rank and reported-practice of mothers. This finding was supported by Abutiheen, Al-Saadi, and Al-Quraini, (2019) who stated that the sequence of child has an effect on parents' level of knowledge, as with increasing the number of children, parents will get more experience on medical condition.

## **VI. Conclusion**

It was concluded from the current study results that more than half of the mothers had unsatisfactory level of knowledge regarding care of their children having bronchial asthma. Near half of them had unsatisfactory level of reported-practice provided for their children having bronchial asthma.

## **VII. Recommendations**

The current study recommended that:

- Public awareness as well as education programs should be encouraged and should be tailored to improve the knowledge and reported-practice of the parents whose children have bronchial asthma so that it can effectively and efficiently be managed.
- Simple Arabic illustrative educational booklets and posters about asthma should be provided for all mothers in outpatient clinics.
- Multidisciplinary team including nurses should be involved in developing, implementation and evaluating educational sessions for mothers of children with bronchial asthma to achieve better outcomes for children.
- Future research studies should be done to investigate the factors affecting mothers' level of knowledge and reported-practice provided for their children with permanent pacemaker.

## **Acknowledgement**

The author is thankful for the great help, and cooperation received from mothers of children with bronchial asthma who participated in the current study.

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Dr. Hoda Wahid Abd El Hamid Hassan Amer. " Mothers' Knowledge and Reported -Practice Regarding Care of their Children Having Bronchial Asthma." *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*, vol. 8, no. 06, 2019, pp. 01-11.