

Effect of Educational Guidelines Program on Asthmatic Children and their Mothers

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Abstract: This study was conducted to evaluate the effect of educational guidelines program on asthmatic children and their mothers' through assessment for their knowledge and practices regarding bronchial asthma and its management; a quasi experimental research design was used. **Setting:** pediatric emergency department at children's Hospital affiliated to Ain Shams University Hospitals, **Sample:** Purposive sample that composed of eighty (80) of available mothers with their children at the previously mentioned setting. All available mothers with their children were selected over a 6 months period regardless their age, education level or residence. **Tools of data collection:** it includes a pre-designed interviewing questionnaire, **Observational check lists** that were used to assess the actual practices of mothers related to bronchial asthma and **Patients' admission records** to obtain data about the recurrence of admission of asthmatic children. **The results** of the study revealed that a statistical significant improvement of the mothers knowledge and practices regarding bronchial asthma and its management after the implementation, as well as there was an observed decline in the recurrence of attacks and emergency admission among the asthmatic children. Based on the results of the present study, **it can be concluded** that, a positive **effect** of the program on mothers' knowledge and practices regarding bronchial asthma as well as on the asthmatic children. In order to maintain the educational affects a periodical health educational program for asthmatic children and their mothers' to be conducted in inpatient, outpatient clinics also, availability of instructional pamphlet or guidelines for asthmatic children and their mothers about asthma.

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Key words: Asthma, Asthmatic children, educational guidelines, mothers, bronchial asthma.

1. Introduction:

Bronchial asthma is a chronic disease of respiratory tract; it constitutes a serious public health problem all over the world. However, it is considered a common cause of emergency room visits and hospital admissions [1]. The prevalence of asthma and allergies is increasing in both western and developing countries [2]. These increases may result from worsening air pollution, poor access to medical care, or under diagnosis and under treatment. In a population of children and adolescents, bronchial asthma occurs with frequency of 5-10% [1]. Although the onset of asthma may occur at any age, 80% to 90% of children have their first symptoms before 4 or 5 years of age, and boys are affected more frequently than girls until adolescence. The prevalence of asthma among Egyptian children aged 3 – 15 yrs was estimated to be 8.2% [3, 4].

Despite a large volume of clinical and epidemiological researches within affected populations, the etiology and risk factors of these conditions remains poorly understood [3]. This emphasized that, the burden of asthma is higher than generally recognized, particularly in children and their families. For example, in Egypt up to one in four children with asthma is unable to attend school regularly because of poor asthma control [5].

The number of asthmatic children in any population is far greater than what can be managed by trained persons. Therefore, a vast majority of these children all over the world are in great need for asthma education [6]. Asthma education is essential to the control asthma. The purpose of asthma education is, to help the patient and their caregivers to develop the knowledge and skills to know when asthma is worsening, to take appropriate action, and to be motivated to avoid triggers and adhere to the management regimen [7].

In pediatric patients, parents are typically the primary agents in promoting their children's health, giving direct care, providing access to health services, modeling attitudes and behaviors that influence their children's well-being, and instilling a lifelong orientation in health behaviors and future morbidity [9,10]. It was concluded that specific recommendations, based on asthma guidelines in a user-friendly format that can save the physician time in real-world primary care settings, where such information is often needed instantly. However, it helped clinicians in primary care settings to achieve better asthma outcomes and to reduce both emergency room visits and hospitalizations [8].

Significance of the Study:

Since asthma is such a common disease, it has received wide public health attention. Attention has been devoted not only to a search for the factors working together in the development of asthma, but also to psychological, social and financial aspects of the illness [11, 12]. How the asthma affects the child and family varies very much, as do the ways children and parents cope with the challenge of asthma and its consequences [13]. Therefore, this study will be conducted to evaluate effect of educational guidelines program on asthmatic children and their mothers'.

Aim of the study:

This study, aimed to evaluate the effect of educational guidelines program on asthmatic children and their mothers' through assessment for their knowledge and practices regarding bronchial asthma and it's management, construct, implement and evaluate the effect of educational guidelines program in improving the knowledge and practices of mothers as well as their asthmatic children, and disseminate an asthma educational guidelines booklet for mothers and their asthmatic children as a reference.

Research Hypothesis:

The researchers proposed that the implementation of educational guidelines program in addition to dissemination of asthma educational guidelines booklet will improve the knowledge and practices of asthmatic children and their mothers. As well as there will be a decline in the recurrence of attacks, hospital admission and visits to the emergency department due to asthma attack.

The subjects and methods of the current study will be discussed under the following four designs:

- I. Research Design
- II. Operational Design
- III. Statistical Design
- IV. Administrative Design

I. Research Design (A quasi experimental study)

A. Setting:

This study was conducted at pediatric emergency department at children's Hospital affiliated to Ain Shams University Hospitals.

B. Subjects:

Purposive sample that composed of eighty (80) of available mothers with their children at the previously mentioned setting. All available mothers with their children were selected over a 6 months period regardless their age, education level or residence.

II. Technical Design

Tools of data collection

Data were collected through use of the following tools twice (Pre and post the educational intervention):

1- A pre-designed interviewing questionnaire that was designed by the researcher and was written in an Arabic language in form of open and closed ended questions which covered the following:

- Characteristics of mothers: age, level of education, occupation, marital status, housing condition and residence.
- Characteristics of children: age, sex, child's rank, family history, and the history of asthmatic.
- c) Knowledge and reported practices of mothers having children suffering from bronchial asthma (meaning, causes and predisposing factors, symptoms...etc). Mothers answers' were compared with a model key answer and accordingly their knowledge were categorized into either:
 - Less than 50% were considered unsatisfactory.
 - 50 % and more were considered satisfactory.

2- Observational check lists that were adopted from (APLS, 2003 and Wong, 2003)^(31,32), used to assess the actual practices of mothers related to bronchial asthma (Nebulizer, drug administration, breathing and coughing exercise, and chest physiotherapy).

As regards the scoring system for observational check list during re-demonstration, a score of one was given to the mother for the task done correctly and a score of zero was given to the mothers for the task done incorrectly or not done, and accordingly the mothers practice were categorized into either.

- Less than 50% were considered incorrect practice.
- 50% and more were considered incorrect practice.

3- Patients' admission records to obtain data about the recurrence of admission throughout the period of data collection.

4- Construction of educational guidelines program

Actual needs assessment was done and accordingly the program was designed after reviewing the related literature and implemented. A variety of teaching strategies were used in implementation of the program such as lecture, discussion, feedback, demonstration and redemonstration. In addition to the program intervention an asthma guiding booklet was designed by the researcher; it was designed in an Arabic language .It serves as a referral guidelines for asthmatic children and their mothers. The guiding booklet was evaluated for its content validity and clarity by a panel of experts' professions in field of

the study including the researchers of this work. In the light of their comments, the necessary modifications were carried out and the final form of the guiding booklet was administered.

The booklet included: meaning of asthma, causes, environmental factors that could trigger or exacerbate an attack, warning signs and symptoms, preventive strategies and home management (using inhaler, breathing and coughing exercise...).

III. Operation Design

1- Preparatory phase

A review of the past, current related literature covering various aspects of bronchial asthma was done by using available books, articles, periodicals and magazines to get acquainted with the research problem develop the study tools and content of the guiding booklet and the program.

2- Exploratory phase

A pilot study was carried out, involving ten mothers and their asthmatic children to test the feasibility of the study in terms of its setting, tools, time needed...etc. The necessary modification was done as revealed from the pilot study by adding or omitting some items, others involved in the pilot study were excluded later from the study.

3- Field Work

The actual field work was carried out at the first week of **September (2011)** up to the end of **February (2012)** for data collection and program implementation. The researchers were available 2 days/week from 8 Am to 1 pm. The aim of the study and the expected outcome was explained for the mothers of asthmatic children, for adolescent patients they were cooperatively to participate in the study as an adult person. The researchers distributed the questionnaire sheet on the study subjects to obtain their responses, for illiterate mothers the researcher fulfills the sheet according to their replies, time required was ranged from 30-45 minutes. As regards to the required practices for asthma management, the researcher assessed it by using the observation checklist. The implementation and evaluation of the program regarding bronchial asthma was carried out at the previously mentioned setting in a separate room and equipped with the required facilities for the study. The total number of sessions was 4 sessions; one session for theory and 3 sessions for practice, each session took about 1 hour. Study subjects were classified into groups not more than ten and at the end of each session the researchers plan for the date of next session according to their suitable time. Different teaching strategies were used such as modified small group discussion, role play, demonstration and re-

demonstration using real objects. Suitable teaching aids prepared especially for the program were booklet, and colored posters.

Evaluation:

Upon the completion of the program, the post test was done using the same tools to evaluate the outcomes.

The guiding booklet distributed to the study subjects after the program implementation, where the researchers explained the content of the booklet and how to use it as a personal reference. The children were assessed for the recurrence of attacks or admission to the hospital or emergency unit three and six months after the intervention by using admission sheets or contact by phone call if possible.

Ethical considerations

- Confidentiality of information was guaranteed.
- Anonymous questionnaire.
- Verbal consent was obtained from each candidate before each questionnaire.
- The research subjects have the right to be withdrawn from the study at any time.

IV. Statistical Design

- Data entry and analysis were done using Epi-info (version 6.4) and state graphics statistical soft ware packages. Data were presented using descriptive statistical in the form of frequencies and percentages.
- Quantitative data were presented in the form of mean \pm SD. Qualitative variables were compared using chi-square test (X^2) to compare between 2 qualitative variables.
- Person relation was used. Statistical significance was considered at P-value <0.05 .

V. Administrative Design

An official permission to conduct the study was obtained from the directors of the previously mentioned setting to conduct the study.

Limitations of the study:

- Some equipments used for the practical skills were not available in enough amounts to facilitate the training in the emergency department, therefore the researchers buy it by their own money which is considered a financial burden issue for them.
- The researchers found some difficulty to follow the asthmatic children progress due to escape of study subjects after six months or changing for their phone number.
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3. Results

Profile of the studied sample: the results of the present study clarified that more than half of the

asthmatic children (60%) aged less than five years; almost three quarters of them are male. As regards to socio-demographic characteristics of the mothers, it was found that less than half of them (46.25%) aged less than 30 years, 30% of them were highly educated and working mothers while, the great majority of them (90%) were live in urban area. Concerning the housing condition, the results of the present study revealed that near to three quarters of the asthmatic children (70%) live in separate houses, the great majority of these houses (90%) have a source of ventilation and floors are covered while, also 90% of them have animals in home.

Figure 1 In relation to the family history of asthma, it was clear from this figure that, half of the studied samples have family history of asthma from their fathers, mothers and uncles as reported by 20%, 10% and 20% of them respectively.

Table 1 It was observed from table (1), that there was an observed improvement regarding the knowledge of the study sample after the program intervention. Meanwhile, after the intervention the meaning of asthma was known by a great majority of them (92.5%), as well as the trigger factors was stated correctly stated by almost all of them (96.25%). In relation to the recurrence of asthma was known by 75% of the study sample after the program implementation compared to 25% before the implementation. The warning signs were identified by the majority (92.5%) compared to only 17.5% of them before the intervention, Also it was found that the complications and management of asthma were known by 82.5% of them compared to 15% before the intervention moreover all of the studied sample (100%) stated how to prevent asthma correctly compared to 20% of them before the intervention. This table shows a statistical difference for the total level of mothers' knowledge $X^2=65.035$ $p<0.000$.

Table (2) it was observed from table, that there was an observed improvement regarding the practices of the study sample before and during the attacks either actual or reported after the program intervention. Meanwhile, after the intervention all of them were knew how to prepare and administer the medication correctly, in relation how to avoid the predisposing factors, it was reported by 82.5% after the intervention compared to only 7.5% of them. Also, 20% of the mothers stated that asthmatic children need to be isolated after the intervention compared to 50% of them. 77.5% of the mothers knew when to refer to the emergency and how to administer the medication during the attack after the intervention compared to 55% and 17.5 % of them respectively. In relation breathing & coughing exercise, chest physiotherapy, Nebulizer and child

poisoning the results clarified that there was a significant improvement in their actual practices in relation to these aspects after the intervention This table shows a statistical difference for the total level of mothers' practices $X^2=65.035$ $p<0.000$.

Figure (2) Concerning the level of mothers' knowledge and practices, this figure clarified that, 81.25% of mothers had satisfactory knowledge regarding bronchial asthma and its management after the intervention compared to 13.75% of them with statistical significant difference ($X^2=39.2$ $p<0.001$). Also, it was clear that, 20% of mothers had satisfactory practices before the intervention compared to 87.5% after the intervention them with statistical significant difference ($X^2=18.7$ $p<0.001$).

Table (3) Concerning the relation between socio-demographic characteristics of the mothers and their total knowledge and practices about bronchial asthma and its management before and after the intervention the table illustrated that there was a statistical significant difference between their knowledge and their educational level and their occupation $X^2=6.65$ $X^2=8.80$ $p<0.001$ respectively. In relation to the mothers practices and their socio-demographic characteristics there was no statistical significant difference.

Table (4) illustrated the relation between mothers' knowledge and their practices related to bronchial asthma and its management. It was found that, before the intervention only 11.2 % of mothers have satisfactory levels of knowledge and practices compared to three quarters of them after the intervention which reflects an observed improvement in their knowledge and practices.

Figure (3) this figure clarified that there was an observed decline in the recurrence of attacks and emergency admission among the asthmatic children after the implementation by 3 months, while this decline rate was decreased after six months.

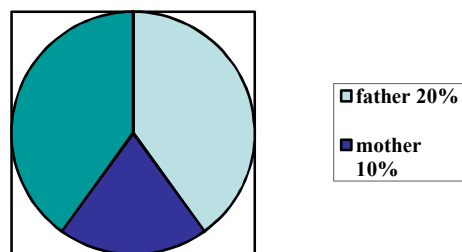


Figure (1): Number and percentage distribution of asthmatic children according to their positive family history (n=40).

Table (1): Distribution of mothers according to their Knowledge as regards Bronchial Asthma (pre and post guidelines implementation) (n=80).

| Items | Pre Program | | Post Program | | X ² | P-Value |
|------------------------------------|-------------|-------|--------------|-------|----------------|---------|
| | No | % | No | % | | |
| Meaning | | | | | | |
| Yes | 22 | 27.5 | 74 | 92.5 | 70.417 | 0.000* |
| No | 58 | 72.5 | 6 | 7.5 | | |
| Trigger factors | | | | | | |
| Don't know | 49 | 61.25 | 3 | 3.75 | 60.285 | 0.000* |
| Know | 31 | 38.75 | 77 | 96.25 | | |
| Dietary factors | | | | | | |
| Don't know | 49 | 61.25 | 3 | 3.75 | 60.285 | 0.000* |
| Know | 31 | 38.75 | 77 | 96.25 | | |
| Recurrence (day/season) | | | | | | |
| Don't know | 60 | 75 | 20 | 25 | 36.123 | 0.000* |
| Know | 20 | 25 | 60 | 75 | | |
| Warning signs | | | | | | |
| Don't know | 66 | 82.5 | 6 | 7.5 | 90.909 | 0.000* |
| Know | 14 | 17.5 | 74 | 92.5 | | |
| Prevention | | | | | | |
| Yes | 16 | 20 | 80 | 100 | 60.285 | 0.000* |
| No | 64 | 80 | 0 | 0 | | |
| Complications of the asthma | | | | | | |
| Know | 12 | 15 | 66 | 82.5 | 72.964 | 0.000* |
| Un-Know | 68 | 85 | 14 | 17.5 | | |
| Management | | | | | | |
| Know | 12 | 15 | 66 | 82.5 | 72.964 | 0.000* |
| Un-Know | 68 | 85 | 14 | 17.5 | | |
| Total knowledge | 15 | 18.75 | 66 | 82.5 | 65.035 | 0.000* |

*Statistically significant

Table (2): Distribution of mothers according to their practices (Actual & Reported) about Bronchial Asthma (pre and post guidelines implementation) (n=80).

| Items | Pre Program | | Post Program | | X ² | P-Value | | |
|--|-------------|-------|--------------|-------|----------------|---------|--------|--------|
| | No | % | No | % | | | | |
| Pre attack | | | | | | | | |
| Preparation of medication | 45 | 56.2 | 80 | 100 | 40.285 | 0.000* | | |
| Administration of right medication | 22 | 27.5 | 80 | 100 | | | | |
| Avoid predisposing factors | 6 | 7.5 | 66 | 82.5 | | | | |
| Isolation | 40 | 50 | 16 | 20 | | | | |
| Change the wet clothes | 16 | 20 | 77 | 96.25 | | | | |
| Bathing | 56 | 70 | 80 | 100 | | | | |
| During attacks | | | | | | | | |
| Administer of medication | 14 | 17.5 | 62 | 77.5 | 57.600 | 0.000* | | |
| Ventilation | 16 | 20 | 64 | 80 | | | | |
| Give worm fluids | 22 | 27.5 | 62 | 77.5 | | | | |
| Referral to emergency | 44 | 55 | 62 | 77.5 | | | | |
| Child's absence from school | 45 | 56.2 | 16 | 20 | | | | |
| Give the traditional methods for the child | 56 | 70 | 14 | 17.5 | | | | |
| Breathing and coughing exercise | 14 | 17.5 | 56 | 70 | | | | |
| Chest physiotherapy | 16 | 20 | 77 | 96.25 | | | | |
| Nebulizer | 30 | 37.7 | 65 | 81.25 | | | | |
| Child positioning | 33 | 41.2 | 60 | 75 | | | | |
| Total knowledge | 15 | 18.75 | 66 | 82.5 | | | 65.035 | 0.000* |

*Statistically significant

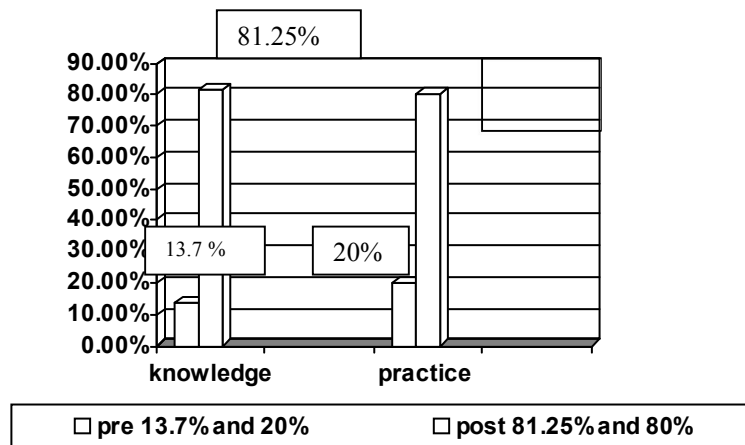


Figure (2): Number and percentage distribution of the studied sample in relation to their total satisfactory knowledge and practice (pre and post guidelines implementation)

Table (3): Relation between Socio-demographic characteristics of the mothers and their total knowledge and practices about bronchial asthma and its management (pre and post guidelines implementation) (n=80)

| Characteristic | Satisfactory level of Knowledge ($\geq 50\%$) | | | | Satisfactory level of Practice ($\geq 50\%$) | | | |
|------------------------|---|--------|----------------|---------|--|--------|----------------|---------|
| | Pre % | Post % | X ² | P-Value | Pre % | Post % | X ² | P-Value |
| Age (years): | | | | | | | | |
| < 30 | 13.7 | 43.7 | 1.89 | 0.17 | 10 | 42.5 | 0.02 | >0.88 |
| ≥ 30 | 5 | 42.5 | | | 10 | 45 | | |
| Education: | | | | | | | | |
| Bachelor | 11.2 | 26.2 | 6.65 | <0.001* | 12.5 | 12.5 | 0.04 | >0.85 |
| Less | 7.5 | 60 | | | 7.5 | 75.5 | | |
| Occupation: | | | | | | | | |
| Not working | 6.3 | 68.7 | 8.80 | <0.001* | 11.2 | 50 | 1.21 | >0.27 |
| Working | 12.5 | 17.5 | | | 8.7 | 37.5 | | |
| Marital status: | | | | | | | | |
| Married | 7.5 | 67.5 | 0.85 | 0.36 | 12.5 | 75.5 | 0.47 | >0.49 |
| Divorced | 11.2 | 18.8 | | | 7.5 | 12.5 | | |
| Residence: | | | | | | | | |
| Urban | 13.7 | 77.5 | 0.04 | 0.84 | 12.5 | 75.5 | 0.59 | >0.44 |
| Rural | 5 | 87.5 | | | 7.5 | 12.5 | | |

* Statistically significant

Table (4): Relation between mothers' knowledge and their practices regarding bronchial asthma and its management (pre and post guidelines implementation) (n=80)

| Practice | Knowledge | | | | | | | | r | P-Value |
|----------------|--------------|-------|----------------|-------|---------------|----|----------------|-----|----|---------|
| | Pre (n= 80) | | | | Post (n = 80) | | | | | |
| | Satisfactory | | Unsatisfactory | | Satisfactory | | Unsatisfactory | | | |
| | n=11 | n= 69 | n= 65 | n= 15 | | | | | | |
| No | % | No | % | No | % | No | % | | | |
| Satisfactory | 9 | 11.2 | 55 | 68.7 | 60 | 75 | 8 | 10 | 25 | <0.001* |
| Unsatisfactory | 2 | 2.5 | 14 | 17.5 | 20 | 5 | 7 | 8.7 | 20 | >0.05 |

* Statistically significant

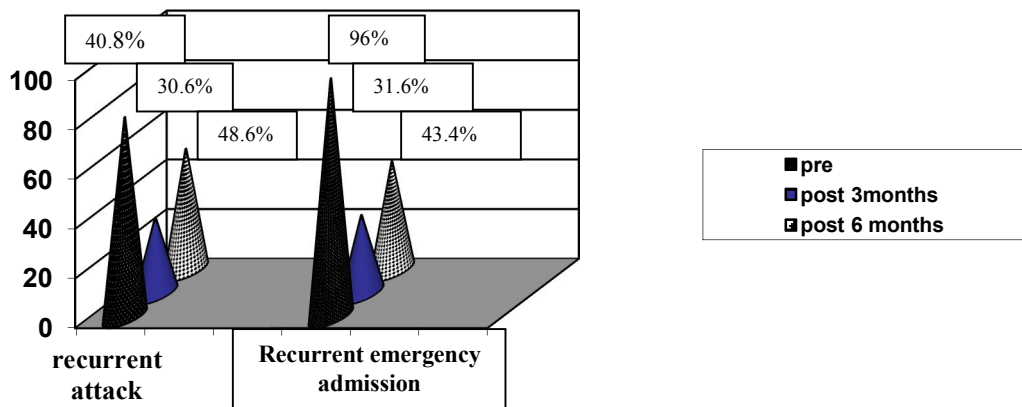


Figure (3): The effect of the study on the recurrence of asthma attacks and admission to hospital for asthmatic children before the intervention, 3 months (n=80) and 6 months (n=76) after the intervention.

4. Discussion

Asthma is a common disease in children that forms a major co-morbidity illness. The burden of this disease to governments, health care systems, families, and patients is increasing worldwide [14]. Families with supportive, involved parents with asthma education and guidelines are optimal for the effective treatment of their asthmatic children. Therefore, this study was conducted to evaluate the effect of educational guidelines program on asthmatic children and their mothers'. The results of the current study revealed that more than half of the asthmatic children aged less than five years old, this result similar to Hossny, et al., [14] who conducted a study to evaluate the profile and management outcome of asthmatic children at the Pediatric Allergy and Immunology Unit of Ain Shams University, Children's Hospital. They found that the mean age of onset among the studied group was one year. They added that, this may highlights the role of viral infections as inducers of wheezing in infancy. Also, in another study done by Anissa et al., [15] aimed to assess the prevalence of asthma among children 3-15 years old in Cairo, they found that Symptoms developed in 22.1% before the age of 1 year, in 44% before the age of 2 years, in 57.9% before the age of 5 years and in 42.1% after the age of 5 years. In the same study they found that the prevalence of asthma in males had a higher prevalence of asthma (1.2: 1) than females. In our study, asthma was common

among males than females this was emphasized by Arshad et al., [16] who study the primary prevention of asthma; they found that more prevalence of asthma was in males than females until puberty with ratio 2:1. This result comes in accordance with the data of Kalyoncu et al. [17] and Redline and Gold [18], who stated that male gender was a significant risk factor for asthma and wheezing.

In this study it was found that a great majority of asthmatic children were live in urban areas, which is contradicted with Zedan et al., [19] who study the prevalence of bronchial asthma among Egyptian school children, they found that there was, no great difference between prevalence of childhood asthma in urban and rural areas that may be explained by similarity in environmental conditions in both areas due to close proximity to each other in the crowded Nile Delta region. On the other hand it was observed by Hossny et al., [14] that allergic diseases were more prevalent in urban residents followed by suburban residents with few cases coming from rural areas. They added that, these differences can be partially explained by differences in environment exposures, such as air pollution, and exposure to allergens, such as pollens, cockroaches, and house dust mites. In relation to the family history of asthma, the current study illustrated that half of studied children have a familial positive history of asthma this result is similar to Anissa et al., [15], Zedan et al., [1], Elewa [20] they found that a positive family history of asthma or

other allergic illnesses in the family increased the likely hood that the child will have asthma. Moreover, their study showed, interestingly, that both family history of allergy and bad housing were significantly associated risk factor with asthma.

The parents who receive instruction about asthma are more comfortable treating asthma episodes in the home. One opportunity for nurses to educate patients and families occurs during acute care visits, and particularly during emergency department visits. These visits can be used to motivate the child and the family to learn more about asthma and appropriate self-management [21]. The results of the present study revealed that there was an observed improvement in mothers' knowledge and practices regarding asthma and its management. This was emphasized by Allison [22] who conducted a study to evaluate the improving pediatric asthma outcomes using self-management skills and found that educating families about asthma triggers, proper medication administration, and identification of early warning signs and symptoms is essential to asthma control. Also, as found by Salama [23] and Ibrahim, and Mahmoud [24] that all patients may benefit from formal asthma education programs. However, their study showed that most of their participants agree with the concept of patient education, patient education should include how to use medication (97%), how to recognize allergen triggers (95%), how to recognize and report asthma symptoms (91%) and lastly how to use the inhaler (50%). This observed improve in knowledge and practices regarding asthma may be attributed to the fact that such barriers can be prevented to reduce the burden such as poor disease education, and poor health services infrastructure as well as delay in obtaining help during the acute attack.

The reasons families fail to adhere to medical treatments are as numerous and varied as the families themselves. In most cases there are complex sociological and psychological factors which influence the family's behavior. Therefore, in order to best serve patients with asthma, it is appropriate for nurses to learn more about the families. Routine assessments of family health and cultural beliefs, knowledge of asthma, and beliefs regarding self-care, can be important strategies in enhancing adherence [28]. In our study the results revealed that there was a statistical significant difference between the mothers' knowledge and their level of education and their occupation after the intervention, this finding can be due to the fact that the educated mothers are more powerful and more oriented to take the right decision related to her child's health. As well as, the housewives mothers have a good chance and a good plenty of time to care for their children's' health by

themselves and also, they are usually in need for any valuable instructions related to their child's health. These results are similar to Abd EL Azez [25] who study the mothers' care for their children having nephritic syndrome and found a strong relation between the level of mothers' knowledge and their level of education and their occupation. This was emphasized by Sulagna and Sushmita, [26] who mentioned that higher level of education is usually associated with good behavior towards child's health. The results also dedicated that, there was no statistical significant difference between the mothers' knowledge and their age, marital status and their residence while from the researchers point of view these characteristics cannot affect on the role of the mother as a care giver. As regards to the mothers practices the results revealed that there was no statistical significant difference between the mothers' practices and their Socio-demographic characteristics after the intervention, the results may be related to the practices that required for care of any health problem not required for certain population characteristics but it can be mastered by training. This result is supported with the study of Bateman, et al. [27] who study Global strategy for asthma management and prevention, and mentioned that there was no relation between Socio-demographic characteristic and the caregivers' knowledge related practices. Patients who receive education in asthma self-management programs have better compliance with inhaled medications. Also they added that, parents who receive instructions about asthma are more comfortable treating asthma episodes in the home, while it was clear in our study that the mothers' Knowledge and practices improved after the intervention.

Evaluation of a number of asthma education programs for children has shown improved self-management behaviors and decreased use of healthcare services. The results of a study conducted by Detwiler [29] aimed to evaluate the educational program for asthmatic children ages 4-8 and their parents revealed that statistically significant changes were observed in all categories of learning in those who completed the Program. Medical care utilization (including hospitalizations, days of hospitalization, emergency room visits and sick visits to the physician for "out-of-control" asthma) demonstrated statistically significant decreases. In our study, the results revealed that there was an observed decline in the recurrence of attacks and emergency admission among the asthmatic children after the implementation by three months while this decline rate decreased in the period from three to six months later despite the availability of asthma guidelines booklet with the asthmatic children and their mothers.

From the researchers' point of view this emphasizes the importance for conducting periodical health education programs for asthmatic children and their mothers. This finding is in agreement with Chiang et al.,^[30] who study the effects of a self-management asthma educational program model for parents with asthmatic children, they found that the experimental group was better than the control group in knowledge, children's cooperation, and self-management behaviors at the 3-month follow up, as well as in knowledge and children's cooperation at the 6-month follow-up. Also, in both the experimental and control groups, the educational program had a good impact on the health outcome while, the average degree of drug use was reduced from 2.7 to 2, the number of visits was reduced from 4.75 to 3.55 per half year in the experimental group, and from 5.8 to 3.48 in the control group, the severity of asthma was reduced from 2.7 to 2.1, the signs/symptoms of asthma decreased, school absenteeism was reduced, and exercise ability improved after education at the 6-month follow-up in both groups. They also concluded that the educational effects were sustained for at least 3 months, with some for 6 months. Accordingly, they recommended maintaining the educational effects; further specific series of educational programs can be designed based on the patterns of self-management behavior stages every 6 months. Meanwhile, the effects of health outcomes may show significant differences using longer follow-up times in future clinical trials.

Conclusion

Based on the results of the present study, it can be concluded that the research hypothesis was accepted while; the implementation of educational guidelines program improved the knowledge and practices of asthmatic children and their mothers. Also there was an observed decline in the recurrence of attacks, hospital admission and visits to the emergency department due to asthma attack in children after three months this means that the research hypothesis is accepted despite, this decline decreased after six months later.

Recommendations

Based on the findings of this study, the following recommendations were formulated:

- Periodical health educational program for asthmatic children and their mothers' to be conducted in inpatient, emergency department and outpatient clinics.
- Adopt nursing interventions that suit the individual educational needs of asthmatic children and their mothers to help them in coping positively with asthma and its management.
- Periodical follows up for the level of knowledge and practices of asthmatic children and their mothers'.
- Instructional pamphlet or guidelines should be made available at all inpatient, outpatient and health centers for asthmatic children and their mothers about asthma.
- Follow up for the recurrence of asthmatic attacks and hospital or emergency admission among the asthmatic children to predict the leading factors.

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