EVIDENCE BASED GUIDELINES FOR NURSES CARING FOR CHILDREN SUFFERING FROM BRONCHIAL ASTHMA

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Abstract:

Background;Asthma is a chronic inflammatory disorder of the airways Asthma has a genetic predisposition but it needs environment factors, it is one of themostcommom chronic diseases of the children.***The aim of the study;***was to assessthe nursing care provide for children suffering from bronchial asthma,developed implement and evaluate effect evidence -based guidelines for nurses caring for children suffering from bronchial asthma. ***Design;*** A quasi experimental design was used. ***Setting***; this study conducted atat the Inpatient Pediatric Medical Unit, Emergency Unit and Out Patient Clinic atBenha University Hospital and Benha specialized children hospital. ***Sample***; A purposive sample including 48 nurses hwo have working with children with asthma and their children were from both sexes ,their ages ranged from 3-6years.***Tools***; three tools were used for data collection**(1):** A structured interview questionnaire sheet which contain part one : the personal   characteristics of nurses   working   with   children   with   asthma,personal characteristics of children , medical history of children , part two: nurses'knowledge regarding to asthma asdefinition,causes, syptomes (mild,modrerd and sever)complication and medication **(2):** Observation checklist **(3):** Evidence based guidelines. ***Results;***There is a highly statisticallysignificant positive relation between total knowledge score level and total practice score in pre and post evidence - based guidelines of asthma**. *Conclusion;***The designed evidence - based guidelines lead to significant improvement of nurses' knowledge and practices after implementation of the evidence - based guidelines of asthma. ***Recommendations;***Updated guidelines and continuous in-service educational programs for nurses' performance in caring of children with asthma

Introduction:

A worldwide, increase in the prevalence of asthma has been reported in recent years. With an increase in prevalence comes an increase burden of disease in terms of morbidity, mortality and compromised quality health care resources and limitations of earning capacity of the individuals and family. An estimation of the burden of asthma is needed to raise awareness among public health and government officials, health care workers and general public towards the prevalence of asthma which increasing **(Global Initiative for Asthma, 2013 and Salama, 2010)**[1,2].

Asthma has a genetic predisposition but it needs environment factors to initiate the events leading to clinical development of allergy. Asthma effects children in many ways and can result in a significantly decreased quality of life, with reduced exercise tolerance and increased school absences [**Evidence-Based Care Guideline for Management of Acute Exacerbation of Asthma in children aged 0 to 18 years Guideline 4 2010)**[3]**.**

Management of asthma should be based on the best evidence based guidelines from the basis of direction to treat asthma today **(Evidence-Based Care Guideline for Management of Acute Exacerbation of Asthma in children aged 0 to 18 years Guideline 4 2010)** [4].

Nurses have an important role in managing children with asthma. Each child should have a management plan in place to determine when to step up or step down treatment. The recommendations for treatment based on severity of asthma. The written action plan should also be kept on file at the child's school, and relief medication should be available to the child at all times. To provide appropriate education to the child and family, need to determine the severity of the asthma.**(Paul SP., et al, 2014)**[5].

Aim of the study:

The aim of this study was to assess the nursing care provide for children suffering from bronchial asthma, developed and implement evidence based guidelines for nurses caring for children suffering from bronchial asthma, evaluate effect evidence based guidelines for nurses caring for children suffering from bronchial asthma.

Research hypothesis:

Developing and implementing an evidence based nursing guidelines will result in improving of nurses' knowledge and practices about bronchial asthma.

Subjects and Methods:

Research design:

A quasi experimental design was used in this study.

Setting:

The present study was conducted at the Inpatient Pediatric Medical Unit, Emergency Unit and Out Patient Clinic atBenha University Hospital. Medical department at Benha specialized children hospital.

Subjects:

A purposive sample of nurses was worked in previous setting above regardless their ages, years of experience and level of education (48).During six months duration from the beginning of April, 2015 to the end of stumper, 2015. All of them was evaluated two times before and after one month from the implementation of evidence based nursing care guidelines.

Toolsfor Data Collection:threetypes of tools were used for data collection:

The Tool I:Astructure Interview Questionnaire Sheet:

Part 1: Personal characteristics of studied nurses including age, level of education, attendance program, and years of experience.

Personal characteristics of children including age, sex, birth order, number of family and family history of asthma or other allergic diseases.

Medical history of children including current medical history and past medical history. Current medical history it includes respiratory system manifestation, digestive system manifestation, history of allergy, type of allergy (food, drugs, insects and others and history of asthma triggering factors. Past medical history including history of first attack of asthma, duration of illness, repeated admission, and frequency of attacks.

Part 2: Nurse's knowledge regarding bronchial asthma such as definition, causes, clinical manifestations, risk factors,signs and symptoms, treatment, medication used, complication, prevention and measures for asthma control.

Scoring system for Nurse'sknowledge:was done as follows,eachcorrect, complete answer scored had two scored (2), the correct and incomplete answers had scored (1) and the wrong or incorrect answer and not answered question had score zero. The

total score will be 38 which result from multiplying total number of questions and then the result is divided by 100 to be converted into the percentage.

The total score system of nurses' knowledge had classified as follows:Less than 85% was considered unsatisfactory.More than 85% was satisfactory.

The Tool II:Observational Check List:Pre\ Postobservation check list to assess nurses reported practice regarding care of their children, including: nebulizer care and technique, inhaler technique, peak expiratory flow meter technique, and breathing & coughing exercise.

Scoring system for Nurse's Practices:was done as follows,eachcorrect, complete answer scored had two scored (2), the correct and incomplete answers had scored (1) and the wrong or incorrect answer and not answered question had score zero. The total score systems of nurses' practices had classified as follows:Less than 90% was considered not done. More than 90%was considering done.

The Tool III:Evidence - based guidelines: It was developed by the researcher in arabic language it will cover the theoretical knowledge and practical procedures of nurses. The developed tools were validated by five experts in pediatric nursing, four experts in pediatric nursing, and one expert in pediatric medicine filed to ascertain content clarity and application.

Ethical considerations:

All ethical considerations in this study were considered for ensuring the research approval was obtained from scientific committee in the Faculty of Nursing Benha University before starting the study. Nurses were informed about the privacy of the information obtained from them and clarify aim of the study. Nurses' consent to participate in this study was obtained after explanation the aim of the study. All the gathered data will be treated confidentially and will be used for research purpose only. No names on the forms to ensure anonymity and confidentiality and nurse can with drawl at any time.

Content validity:

The study tools were revised by a panel of five experts in the field of pediatric nursing ,community health from faculty of medicine, as a jury to test its content validity and feasibility, and necessary modification was done.

Pilot Study:

A pilot study was carried out during March, 2015. It was involved 10% of total sample of nurses of children with asthma to assess the applicability and reliability of the tools. After detection of difficulties that were arisen, addition for certain items was done. The necessary modifications on the tools were done or omission of some questions the pilot study subjects were excluded from the main study.

Field work:

The actual field work started from April, 2015 to the end of setumper, 2015. It started by interviewing the nurses at the previously mentioned settings. The researcher started by introducing herself to the nurses then informed them about the purpose of study. The nurses were met by the researcher at their available time. Each group of nurse was individually interviewed for about 30-45 minutes. The researcher was available 3 days weekly (Saturdays, Sundays and Tuesdays in Benha University Hospital during morning shaft. And Medical department at Benha specialized children hospital during evening shaft).All nurses were individually interviewed to fulfill the questionnaire sheet in their areas. All nurses were observed during their actual practices related to care of children with asthma.

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Phases of the study:

The study was conducted on three phases;assessment, planning implementation and evaluation.

Assessment phase:

It carried out by the researcher for all study subjects to collect baseline data to assess nurses' knowledge and practice of children with bronchial asthma by using tool (1. II).

The implementation phase:

Implementation of the evidence base guidelines was carried out at the previously setting.Preparation of suitable media such as lecture, booklet, data show, videotapes, group discussion, demonstration, re-demonstration, real objects which include metered-dose inhaler, and poster for teaching the nurse.

Session started according the nurse's suitable time usually at 9 Am. Nurses will be divided into seven groups and each group consists of 7 nurses.At the beginning of first session, an orientation to the Evidence based nursing care guidelines its purpose took place. After each session, a feed back about pervious session and the objective of new topic. Evidence based nursing care guidelines for children suffering from bronchial asthma will be presented as the five session.

The first session: it focused on:

Definition, classification of asthma, causes, clinical manifestations, triggering factors, and investigations needed for it diagnosis, treatment and its complications, and role of nurses for management of asthma.

The second session it focused on:
Nebulizer care and technique.
The Third session it focused on:
Inhaler technique and cleaning.
The fourth session it focused on:
Peak expiratory flow meter technique.
The fifth session it focused on:
Breathing & coughing exercise.
Evaluation phase:

Evaluation of the effectiveness of the evidence based guidelines on nurse knowledge about asthma and evidence based nursing practices were donning through the following.

Pretest questionnaire to assess knowledge about asthma and evidence based practice procedures

Post –test (the same as pre-test)

The data: collection of data was carried out over period of 6 months starting from the beginning April, 2015 to up to October, 2015.

Statistical analysis

Data were analyzed and tabulated using the computer Statistical Package for Social Sciences (SPSS). The tests used in study were mean, standard deviation. Chi-Square test P- value was used to estimate the statistically significant differences between nurses' characteristics, their knowledge and practices, in addition to the association between their knowledge and practices. Also, personnel correlation coefficient r-test was used. The statistical significant difference was considered at $P<0.05$, and highly significant difference at $P<0.001$.

Results:

Table(1)Number and percentage distribution of personal characteristic of the studied nurses groupsdescribes characteristics of studied nurses, where the mean age of them is 24 .68± 3.83 year. Regarding to the nurses qualification, this table shows that half (50%) of them had diploma. As regarding mean years experience of nurses is 7.44±2.76 years.

Table (2): Number and percentage distribution of sociodemographic characteristic of the studied children groupsshows that more than two thirds (62.5%) of children are males. Regarding to mean age of them is 4.3 ± .7373 years. As regarding birth order, more than one third (41.7%) of children are the first child in the family.

Figure (1): Number and percentage distribution of the studied child groups regarding to season of their asthma attack occurrence. This figure shows that the majorities (81.3%) of children have their attacks during winter, meanwhile the minority (2.1%) of them had their attack during summer.

Table (3)Number and percentage distribution of knowledge score, pre and post one month of application of evidence based guidelines about asthma of studied nurses groupsclarifies the distribution of studies nurses knowledge regarding definition of asthma, risk factors of asthma, investigations of asthma , complication of asthma, and causes of complications .Reveals that 79.2%, 77.1%, 81.2% , 72.9 % and,83.3% of the studied nurses had unsatisfactory pre total knowledge score levels in evidence -based guidelines respectively. Meanwhile, 95.8%, 89.6%, 85.4%, 85.4%, and 85.4% of them had satisfactory post total knowledge score levels in evidence - based guidelines respectively. There was a highly statistically significant difference between the pre and total knowledge score levels in evidence - based guidelines, where $X2=0.3$ at $P< 0.001$, $X2=21.8$ at $P< 0.001$, $X2=2.2$ at $P< 0.001$, $X2=24.3$ at $P< 0.001$, and $X2=32.02$ at $P< 0.001$.

Table (4)Number and percentage distribution of Practices score, pre and post one month of application of evidence based guidelines about asthma of studied nurses groups reveals that the distribution of studies nurses practices regarding peak expiratory flow rate, breathing exercise, meter dose inhalation, nebulizer care, nebulizer cleaning after use, nebulizer weekly clean. It is shows that 100%, 91.7%, 68.8%, 72.9%, 85.4% and, 95.8% of the studied nurses had not done practices score levels in pre evidence -based guidelines respectively. Meanwhile, 91.7%, 47.9%, 97.9%, 91.7%

and, 70.8% of them had done post total practices score levels evidence - based guidelines respectively. There is a highly statistically significant difference between the pre and post total practices score levels evidence - based guidelines, where $X2= 36.02$ at $P< 0.001$, $X2= 39.02$ at $P< 0.001$, $X2= 29.03$ at $P< 0.001$, $X2= 40.2$ at $P< 0.001$, $X2= 35.02$ at $P< 0.001$ and, $X2= 28.2$ at $P< 0.001$.

Figure (2)Number and percentage distribution of total knowledge score, pre and post one month of application of evidence based guidelines about asthma of studied nurses groupsclarifies that the studied subject had satisfactory post total knowledge and post total practices evidence -based guide lines implementation, while of them are unsatisfactory pre total knowledge and pre total practices evidence- based guidelines implementation. It indicates that there is improvement in their post total knowledge and post total practices evidence based guidelines implementation.

Table (5)Relationship between the nurse's total knowledge score, pre and post one month of application of evidence based guidelines and their personal characteristicsreveals that 57.1% of the studied nurses' age had satisfactory pre total knowledge evidence -based guidelines age from 25-<30years. There is no statistical significant difference between the study nurses age and pre total knowledge evidence -based guidelines, where $X2= 3.8$ at p 0.27. Meanwhile, the percentage of studied nurses that 31.1% of them satisfactory post total knowledge evidence -based guidelines age from 25-<30years and 20-<25years .There is no statistical significant difference between the studied nurses' age and post total knowledge evidence -based guidelines , where $X2= 0.92$ at p 0.82. As regard, qualification of studied nurses this results shows that

42.9% of the studied nurses had Diploma satisfactory pre total knowledge evidence -based guidelines.There is statistical significant difference between the study nurses age and pre total knowledge evidence -based guidelines, where X2= .9 at p 0.2. Also , 48.9% of them diploma satisfactory post total knowledge evidence -based guidelines .There is statistical significant difference between qualification post knowledge evidence - based guidelines, where X2= 0.95at p 0.62.Concerning, experience years of studied nurses this results clarifies that 100.0% of them had satisfactory pre total knowledge evidence -based guidelines experience years from 5-<10years. There is statistical significant difference between the study nurses' experience years and pre total knowledge evidence - based guidelines, where X2=4.9 at p 0.12. Also, the experience years of studied nurses that 68.9% of them satisfactory post total knowledge evidence -based guidelines from 5-<10years .There is statistical significant difference between experience years of studied nurses and post total knowledge evidence -based guidelines, where X2= 6.69 at p 0.035.

Table (6)Relationship between the nurse's total practices score, pre and post one month of application of evidence based guidelines and personal characteristicsshows that 50.0% of the studied nurses' age had done pre total practices evidence -based guidelines age from 20-<25 and 25-<30years. There is no statistical significant difference between the studied nurses' age and pre total practices evidence -based guidelines, where X2= 0.83 at p 0.84. Meanwhile, the percentage studied nurses of age that 43.2 % of them done post total practices evidence -based guidelines age from 25-<30years and ≥ 30 years .There is no statistical significant difference between the study nurses age and post total practices evidence -based guidelines ,

where X2= 2.4 at p 0.49. As regard, qualification of studied nurses this results shows that 50.0% of the studied nurses had diploma and technical done pre total practices evidence -based guidelines .There is no statistical significant difference between the study nurses' age and pre total practices evidence -based guidelines, where X2= 0.88at p 0.64. Also , 50.0% of them diploma don post total practices evidence -based guidelines .There is statistical significant difference between qualification and post total practices evidence -based guidelines, where X2= 6.78at p 0.03. Regarding, experience years of studied nurses this results indicates that 50.0% of them had done pre total practices evidence -based guidelines experience years from < 5years and 5-<10 years. There is statistical significant difference between the study nurses experience years and pre total practices evidence -based guidelines, where X2=6.69 at p0.035. Also, the experience years of studied nurses that 67.4% of them done post total practices evidence -based guidelines from 5-<10years .There is statistical significant difference between experience years of studied nurses and post total practices evidence -based guidelines, where X2= 7.8 at p 0.02.

Table (7)Correlationbetween the nurse's total knowledge score, and total practices pre and post one month of application of evidence based guidelinesreveals that there is highly statistically significant positive coefficient between nurses pre total knowledge and pre total practices evidence -based guide lines total (X² =0.619 at p0.001) of the study nurses compared to of the post total knowledge and post total practices evidence -based guide lines implementation(X² = 0.534 at p 0.001).

Discussion

Pediatric asthma is a major global health problem, Evidence based guidelines allows nurses to enrich their clinical training and experience with up to date research. With the large amount of research and information that exists in nursing, learning the skills of evidence based practice allows nurses to search for, assessing, and applying the literature to their clinical situations **(Fineout et al, 2010. And Evidence-Based Care Guideline for Management of Acute Exacerbation of Asthma in children aged 0 to 18 years Guideline 4., September 16, 2010)**(1,4).The present study aims to- assess nursing care provide for children suffering from bronchial asthma. Developed and implement evidence based guidelines for nurses caring for children suffering from bronchial asthma. And evaluate effect evidence based guidelines for nurses caring for children suffering from bronchial asthma. Regarding to characteristics of the studied nurses, the present study showed that, the mean age of nurses 24.68± 3.83 years **(table 1)**this study simeral with**El- Ashery et al (2014)**(6).who suited effect of implementation bronchial asthma guidelines on nurses performance at mansoura university hospitals,who mentioned that the seventy precent of nurses aged more than 25 years . as regarding the qualification the half of nurses had a nursing diploma. This result agreement with **salem (2009)**(8), who preformed care of patients with respiratory distress on mechanical ventilator, who found that the majority of nurses had a nursing diploma .As regards years of experience of nurses, the present study finding that, near to half of the nurses had more than ten years of experiences and the mean age of experiences is 7.44± 2.76 years. In the same line**El- Ashery et al (2014)**(7)**,** who

showed that, nearly one third of nurses had more than six years of experiences.

In relation to characteristics of the studied children suffering from asthma, the present study showed that, about more than two thirds of children are males. **(table 2).** This supported by **Morshidy et al (2013)**,who studied quality of life for children suffering from bronchial asthma, who reported who reported that, almost three quarters of the studied children were males. Another study done by **Salama et al (2010)**(2), who stated that, the prevalence of asthma in childhood is higher in boy than in girls in the first decade of life.This result might be due to that, males' hyperactivity as well as their exposure to the aggravating factors of asthma

Regarding to the studied children's age, the finding of the present study showed that, near half of them age from one year to less than two years and mean age of children4.3 ± .7373 years. This could be due to that, play actives and may be due to add the new food and exposure to many triggering stimulants. This result dissimilar with **Morshidy et al (2013)**(9)**,** who reported that, the majority of the studied children's age was between 6< 12 years. Another study done by **Mohamed et al (2011)**(10)**.**whopreformed the study of mycoplasma pneumonia infection in childhood bronchial asthma ,who reported that, the mean age of the studied children suffering from asthma was (7.5±3.4) years.This result disagreement with **Hassan et al (2009)(11),**who studied discharge guide program for mothers of children with bronchial asthma, who found that, mean age of children 7.35 ± 1.69 years.

According to present medical history of studies children, the present study showed that, the majority of children have their attacks during night also in winter**Figure (1).** This study supported by **Hassan et al (2009)**(9)**,** who found that,

the majority of children have their attacks during winter. This result disagreement by **Ibrahim et al (2009)**(10).who mentioned that, asthma was commoner in spring. This may be due to the wide spread of pollen grains in air during this season.

The finding illustrated that, the studied nurses' knowledge regarding definition, signs & symptoms, and complications of asthma, in pre and post one month of application of evidence based guidelines about asthma of studied nurses groups there were high statistical significant**(Table 3).**The present study revealed that, the studied nurses' knowledge regarding to triggers factors of asthma , there were high statistical significant. This similarly by **El- Ashery et al (2014)**(6) **,** who founded that, hereditary factor , environmental factors of asthma, and respiratory tract infection were commonest predisposing factors of asthma .This supported **by Salama et al (2010)**(2), who stated that, respiratory infections are more common in childhood and perhaps more severe when associated with pollution-mediated mucosal inflammation or injury. Because endotoxin influences the development of airway inflammation and airway hyperresponsiveness. On the other hand, **lubs (2013)** (11),who preformed empiric risk for genetic counseling in family with allergy ,who reported that, in their study on twins strongly, suggest a hereditary component to asthma. The empirical risk of asthma increase progressively with history of an affected sibling and one or both parent affected.The researcher attributed that may be due to lack of providing continuous educational programs for nurses about the definition, signs & symptoms, important in reducing complications of asthma .

On investigating nurses' total knowledge regarding to care of their children with asthma , in pre and post one month of application of evidence based guidelines about asthma of studied nurses groups there were high statistical significant**(Table 4).**As well **Salem (2009)**(8)**,** who mentioned that, all nurses had inadequate total knowledge pre program implementation.

Figure (2) On investigating nurses' total knowledge andtotal practice regarding to care of their children with asthma , in pre and post one month of application of evidence based guidelines about asthma of studied nurses groups there were high statistical significant..As well **Salem (2009)**(8), who mentioned that, all nurses had inadequate total knowledge pre program implementation.

On investigating nurses' total practice regarding to care of their children with asthma , in pre and post one month of application of evidence based guidelines about asthma **(Table 5)**.The researcher observed that regarding peak expiratory flow rate. The studied nurses' illustrates that there were high statistical significant in peak expiratory flow rate. This may be attributed to lack of nurses' knowledge to important of peak expiratory flow rate. This finding is similarly with **El- Ashery et al (2014)**(6), who stated d that, all nurses didn't use peak flow meter.

The researcher observed that regarding to breathing exercise the studied nurses' clarified that there were high statistical significant in breathing exercise. In the same line **El- Ashery et al (2014)**(6), who showed that, the majority of nurses were not done in relation to following delegation guidelines of deep breathing. Pressing firmly inward and upward on the abdomen while breathing out.

As regarding to meter dose inhaler the studied nurses' revealed that there were high statistical significant in meter dose inhaler. Also this finding is contrast with **Crane et al ., (2014)**(13), who preformed study on "inhaler device technique of

cane be improved in older adults through tailored " and reported that the majority of participants demonstrated poor technique. This may be due to lack of educational activities provide for people with bronchial asthma regarding using inhaler technique and poor device handling are some reason for this finding.

Regarding to nebulizer care the studied nurses' showed that there were high statistical significant in nebulizer care. It could be due to lack of nurses' knowledge to important of This supported by **El- Ashery et al (2014)**(6)**,** who founded that, the majority of nurses were not pay attention to observing care during receiving nebulizer .

On investigating nurses' total practice regarding to care of their children with asthma , in pre and post one month of application of evidence based guidelines about asthma of studied nurses groups there were high statistical significant. This may due to lack of continuous training program to nurses in order to improve their practice. This may reflected the importance of providing training program for upgrading nurses 'practice**(Table 6).** This result agrees with **Green wood&Fenwick (2012)**(14), found that relation between age and years experiences of the nurses with total practices there was statistical significant. This may due to lack of continuous training program to nurses in order to improve their practice. This may reflected the importance of providing training program for upgrading nurses 'practice.

The finding of the current study revealed that there were statistical significant between total knowledge and total practices and qualification and years exprences(**Table 7**). While there were no statistical significant between total knowledge and total practices and nurses' age. This supported by **Mohammed et al., (2015)**(15),who studied quality of life among elderly people with bronchial

asthma in Benha city, who showed that, significant statistical relations between nurses' age and their years of experience with total knowledge and practice. This may be due to that the older nurses have false beliefs but they have many years of experience which made them efficient and perfected in their nursing skills, they neglected to update their knowledge and were less active.

Finally statistical analysis of the study revealed that there was significant correlation between total knowledge and total practices score pre and post evidence - based guidelines implemention**(Table 8).** On the contrary **El- Ashery et al (2014)**(6), who founded that, positive statistical significant (14)relation between total knowledge and total practices.This might be due to lack of educational and training activities.

Conclusion

The designed evidence - based guidelines lead to significant improvement of nurses' knowledge and practices after implementation of the evidence - based guidelines of asthma.

Recommendations
- Provide nurses of children with asthma by updated pamphlets, posters and Arabic booklets about asthma which contain an action plan suitable for each child's asthma nature in order to facilitate improving their knowledge as they considered the main member in children's care team to facilitate improving their knowledge and practices.
- Nurses' knowledge and practice should be evaluated continuously.
- Further research is needed to updated guidelines, continuous in-service educational programs for nurses' performance in caring ofchildren with asthma

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Table (1): Number and percentage distribution of personal characteristic of the studied nurses groups **(n=48).**

Characteristics of nurses	No	%
Nurse age (years)		
▪ <20	5	10.4
▪ 20-<25	15	31.3
▪ 25-<30	20	41.6
▪ <20	8	16.7
Mean ± SD	24.68± 3.83 years	
Qualification		
▪ Diploma	24	50.0
▪ Technical	13	27.1
▪ Nursing bachelor	11	22.9
Experience years		
▪ 1- < 5	6	12.5
▪ 5- < 10	32	66.7
▪ ≥ 10	10	20.8
Mean ± SD	7.44± 2.76 years	
Had training for care of asthma		
▪ Yes	0	0.0
▪ No	48	100.0

Table (2): Number and percentage distribution of sociodemographic characteristic of the studied children groups (n=48).

Characteristics of children.	No	%
Gender		
▪ Male	30	62.5
▪ Female	18	37.5
Age (months)		
▪ < 12	7	14.6
▪ 12< 24	23	47.9
▪ 24≤ 36	18	37.5
Mean ± SD	4.3 ± .7373 years	
Birth order		
▪ The first	20	41.7
▪ The second	13	27.1
▪ The third	11	22.9
▪ The fourth & more	4	8.3

Figure (1): Number and percentage distribution of the studied child groups regarding to season of their asthma attack occurrence.
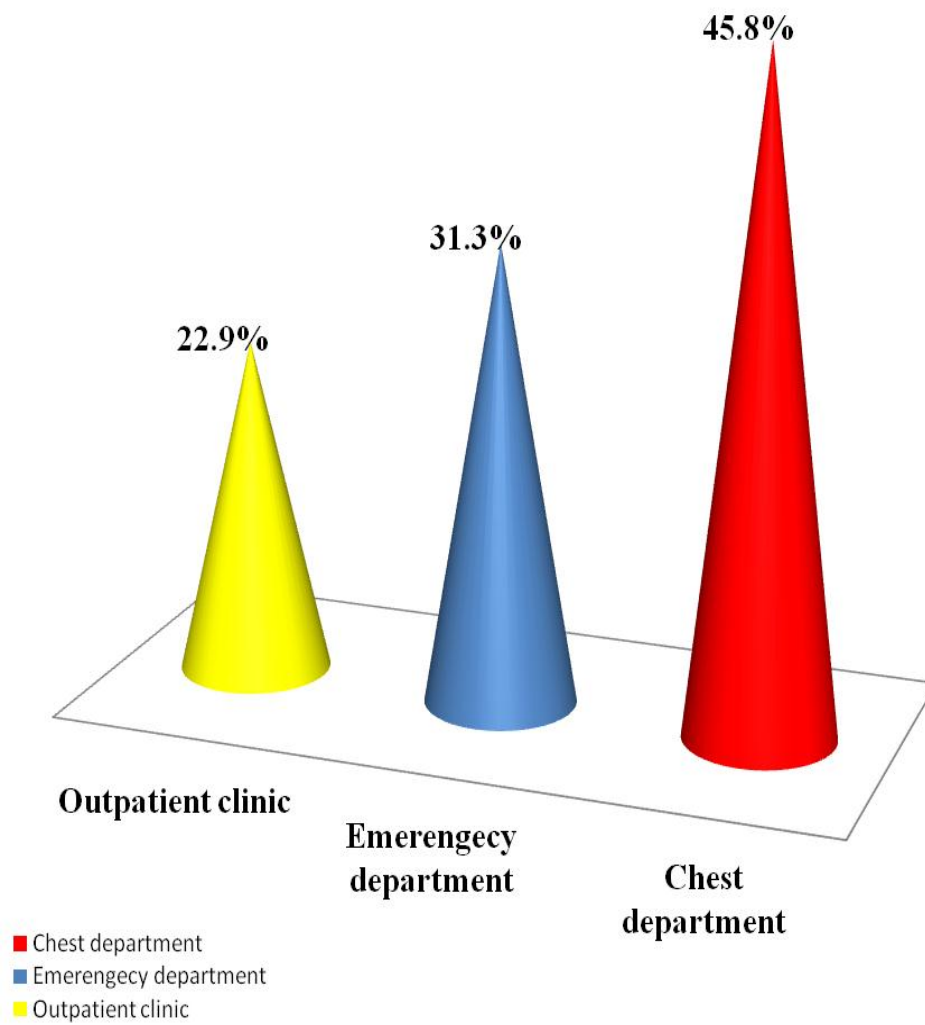
Table (3): Number and percentage distribution of knowledge score, pre and post one month of application of evidence based guidelines about asthma of studied nurses groups(n=48).

Knowledge items	Phase								X^2	P-value
	Pre evidence -based guidelines				Post evidence -based guidelines					
	Unsatisfactory		satisfactory		Unsatisfactory		Satisfactory			
	No	%	No	%	No	%	No	%		
▪ **Definition of asthma**	38	79.2	10	20.8	2	4.2	46	95.8	0.3	<0.001**
▪ **Triggering factors of asthma**	13	27.1	35	72.9	10	20.8	38	79.2	0.7	0.007
▪ **Risk factors of asthma**	37	77.1	11	22.9	5	10.4	43	89.6	21.8	<0.001**
▪ **Signs & symptoms of asthma**	11	22.9	37	77.1	8	16.7	40	83.3	29.3	0.180
▪ **Investigations of asthma**	39	81.2	9	18.8	7	14.6	41	85.4	2.2	<0.001**
▪ **Complication of asthma**	35	72.9	13	27.1	7	14.6	41	85.4	24.3	<0.001**
▪ **Causes of complications**	40	83.3	8	16.7	7	14.6	41	85.4	32.02	<0.001**
▪ **Methods treatment of asthma**	25	52.1	23	47.9	4	8.3	44	91.7	0.08	<0.001**
▪ **Medication used for asthma**	27	56.2	21	43.8	4	8.3	44	91.7	3.3	<0.001**

***Highly significant at p<0.001*

Table (4): Number and percentage distribution of Practices score, pre and post one month of application of evidence based guidelines about asthma of studied nurses groups**(n=48).**

Practice items	Phase				X²	P-Value
	Pre evidence -based guidelines		Post evidence - based guidelines			
	No	%	No	%		
Peak expiratory flow rat					36.02	<0.001**
▪ Done	0	.0	38	79.2		
▪ Not done	48	100	10	20.8		
Breathing exercise					39.02	<0.001**
▪ Done	4	8.3	45	91.7		
▪ Not done	44	91.7	3	6.3		
Meter dose inhalation					29.03	<0.001**
▪ Done	15	31.2	46	47.9		
▪ Not done	33	68.8	2	2.1		
Nebulizer care					40.2	<0.001**
▪ Done	13	27.1	47	97.9		
▪ Not done	35	72.9	1	2.1		
Nebulizer cleaning after use					35.02	<0.001**
▪ Done	7	14.6	44	91.7		
▪ Not done	41	85.4	4	8.3		
Nebulizer weekly clean					28.2	<0.001**
▪ Don	2	4.2	34	70.8		
▪ Not done	46	95.8	14	29.2		
Total practice					40.2	<0.001**
▪ Done	2	4.2	44	91.7		
▪ Not done	46	95.8	4	8.3		

***Highly significant at p<0.001*

Table (5): Relationship between the nurse's total knowledge score, pre and post one month of application of evidence based guidelines and their personal characteristics (n=48).

Nurse demographic data	pre total knowledge evidence -based guidelines					post total knowledge evidence -based guidelines				x²,p
	Satisfactory		Unsatisfactory			Satisfactory		Unsatisfactory		
	No	%	No	%	x²,p	No	%	No	%	
Nurse age (years)										
▪ <20	1	14.3	4	9.8		5	11.1	0	.0	
▪ 20-<25	0	.0	15	36.6		14	31.1	1	33.3	0.92
▪ 25-<30	4	57.1	16	39.0	3.8	19	31.1	1	33.3	
▪ ≥ 30	2	28.6	6	14.6	0.27	7	15.6	1	33.3	0.82
Qualification										
▪ Diploma										
▪ Technical	3	42.9	21	51.2		22	48.9	2	66.7	
▪ Nursing	2	28.6	11	26.8	0.9	12	26.7	1	33.3	13.2
bachelor	2	28.6	9	22.0	0.02*	11	24.4	0	.0	0.010*
Experience years										
▪ 1- < 5	0	.0	6	14.6		6	13.3	0	.0	
▪ 5-< 10	7	100.0	25	61.0	4.9	31	68.9	1	33.3	6.69
▪ ≥ 10	0	.0	10	24.4	0.12*	8	17.8	2	66.7	0.035*

* Significant p< 0.05

Table (6): Relationship between the nurse's total practices score, pre and post one month of application of evidence based guidelines and personal characteristics (n=48).

Nurse demographic data	pre total practices evidence -based guidelines					posttotal practices evidence -based guidelines				X² P Value
	Not done		Done			Not done		Done		
	No	%	No	%	X²P Value	No	%	No	%	
Nurse age (years)										
▪ <20	5	10.9	0	.0		1	25.0	4	9.1	
▪ 20-<25	14	30.4	1	50.0		2	50.0	13	29.5	
▪ 25-<30	19	41.3	1	50.0	0.83	1	25.0	19	43.2	2. 4
▪ ≥ 30	8	17.4	0	.0	0.84	0	.0	8	43.2	0.49
Qualification										
▪ Diploma	23	50.0	1	50.0		2	50.0	22	50.0	
▪ Technical	12	26.1	1	50.0	0.88	1	25.0	12	27.3	6.78
▪ Nursing bachelor	1	23.9	0	.0	0.64	1	25.0	10	22.7	0.03*
Experience years										
▪ < 5	6	13.0	0	50.0		0	.0	6	13.0	
▪ 5-< 10	31	67.4	1	50.0	6.69	1	50.0	31	67.4	7.8
▪ ≥ 10	9	19.6	1	.0	0.035*	1	50.0	9	19.6	0.02*

* Significant p< 0.05

Table (7): Correlation between the nurse's total knowledge score, and total practicespre and post one month of application of evidence based guidelines (n=48).

Knowledge	Pre total practice		Post total practice	
	r	p	r	P
Pre total knowledge	0.619	0.000	-	-
Post total knowledge	-	-	-0.534	0.000

* Significant p< 0.05