



## Effect of Educational Program on Self management based on Orem's model among children with bronchial asthma in Buraidah Region, KSA

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**Abstract: Background:** Asthma is chronic diseases in the world. Shortage of asthma information can be caused to asthma exacerbations, emergency room visits, school absences, and reduced quality of life. In addition, the effectiveness of teaching intervention programs on asthma administration for school-aged students and their parents to the further side of inpatient clinic settings give good effectiveness. **The target of this research** estimate the influence of asthma teaching program based on Orem's self-care model on the advancement of self-care activities of prep and secondary stage students with asthma. **Design:** a quazi-experimental research was utilized. **Sample:** a purposive sample carried out on 86 prep and secondary stage students with asthma in the pediatric outpatient clinic in this study. **Data collected tools:** The tools collect were utilized the demographic properties for students' stage prep and secondary. **Results:** The results observed that the improvement of the case of asthmatic children after adherence of prep and secondary stage students to medications was considering making greater **Conclusion:** School and community for asthma educational intervention have as the foundation Orem's self-nursing is successfully become better the achievement of inhaler utilize. This research points out those self-nursing were influenced between students with asthma subsequent application of the program. **Recommendations:** could be recommended for attitude Orem's self-nursing model for prep and secondary stage students with bronchial asthma in addition, it could be recommended to replicate this study in many prep and secondary schools to support its effectiveness.

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**Keywords:** Educational program, self-management, Orem's model, bronchial asthma

### 1. Introduction

Asthma is the greatest popular illness between children and adolescents. It has a great influence on the lifestyle and for millions of missed school days each year. Thirty percent of children and adolescents with asthma have a few activities than with 5% of youngsters without asthma <sup>[1]</sup>.

Despite advances in the understanding of asthma, asthma morbidity has increased over the past decade. The reasons for this are unclear, but may be related to at combination of poor access to health care and environmental factors such as smoke and perennial allergen exposure <sup>[2]</sup>.

In Saudi Arabia, asthma is a common chronic disease, where more than 2 million individuals have been suffering from asthma <sup>[3]</sup>. Some specific reasons have been proposed as a cause of the increased asthma prevalence, including both environmental and genetic factors such as pollutants, lifestyle, and socioeconomic status, geographical area, tobacco smoke allergens, viral infections, low birth weight, and diet <sup>[4]</sup>. The more prominent of the mentioned factors are the environmental factor " <sup>[5]</sup>. Also Prevalence of asthma has increased in Saudi Arabia from 8% in 1986 to 23%

in 1995 among the ages between 6 and 18 years; and more than 2 million Saudis are affected <sup>[6]</sup>. In addition in Riyadh city (capital of Saudi Arabia), the prevalence of asthma was between 4.5% and 19.6% in students aged 16 to 18 (6, 8). Furthermore In other regions of Saudi Arabia such as Madinah city, Abha city and Taif area, asthma prevalence among school-age children was 23.6%, 9% and 13.1%, respectively <sup>[9-11]</sup>.

**Isik et al.** <sup>[12]</sup> check the performance of a school nurse to lead the demographic properties for prep and secondary students. The results indicated that although the variations in school was the missed not statistically important, meanwhile, school nurses can supply necessary teaching stages and continuity of nursing for school-age students which illness asthma.

Asthma is a great disease may be due to medical assistance form primary care. In hospitalization, about Five million school-age children were less than 15 years and also about 13 million absent days of school annually due to asthma <sup>[13]</sup>. Meanwhile, many were decided on progression in the control and administration of asthma. There are found asthma as global health and socio-economic problem. About, an

assessment of 334 million is presently asthmatic worldwide <sup>[14]</sup>.

Patient teaching has been specified to give better asthma results in all fields of nursing every period to assist them which great active function in the self-nursing administration of their self-care and self-observation. Patient education in asthma self-administration moved out of an active, self-influential participant in their asthma nursing <sup>[15]</sup>. Moreover, asthma self-administration teaching programs for children and adolescents causes a considerable advancement in dominant the illness, lowering absent days of school, lowering contingency management visits and hospital insertion <sup>[16]</sup>. Meanwhile; this model had contained self-nursing which supply the best self-nursing and also, the nurses' possible assist a person at a return to the ability through immediate nursing <sup>[16]</sup>.

### Importance of the problem

The fundamental truth to self-care is the patient's involvement in self-care responsibility. Nurses could encourage self-care capability in patients by the way training and directing. The self-nursing capability by Orem had constitutive of care theory and the single capability of self-nursing <sup>[17]</sup>.

**Altay and Çavuşoğlu** <sup>[18]</sup> observed that the influence of the Orem model on self-nursing in the students with asthma. It was education suitable utilization of therapy, utilize action designs, useful diet, and safeguard from stimulants that perform in a considerable variation in the involvement group than pre-intervention.

### Target of this research

The goal in this research was carried out to assess the effect educational program on self management based on Orem's model among students with asthma as following:

- Estimate information of children concerning illness.
- Assess self of effectiveness to nursing being done between prep and secondary stage children concerning bronchial asthma.
- Define self-nursing effectiveness between students concerning asthma.
- Appreciate adherence to therapy concerning asthma between students.
- Assess the achievement of inhaler utilizes concerning asthma between students.

### Hypothesis of the research

The following hypotheses were explained in this research: structured bronchial asthma teaching program was achieved as stated by Orem's self-nursing model to become better for prep and secondary stage students self-care cleaver in disease administrate.

## 2- Subjects and Methods

### Research design

Research is quasi-experimental to evaluate prep and secondary stage.

### Subjects

Quasi-experimental research was achieved on 86 students from prep and secondary stage which illness bronchial asthma in Buraidah Maternity and Children' Hospital (pediatric outpatient & emergency units), Qassim region, KSA in this study.

### Inclusion criteria

Age of students' asthma was from 12-15 years as prep stage and 16-18 years as the secondary stage and indicates to Hospital with a final identification of asthma from the doctor, and who confirmed, with a parenting agreement, to involvement in the research that had the capability to read and write.

### Tools and data collection

Three tools were utilized to collect outcomes concerning this research as following;

**The First Tool:** arranged questionnaire and had contained six sections.

**The first section:** interested with demographic properties of evaluated for prep and secondary stage.

**The second section** had contained to evaluate of asthma triggers. It measured utilizing the Asthma Trigger Inventory (ATI) <sup>[19]</sup>.

**The third section** Asthma Knowledge Questionnaire (AKQ); confirmed from <sup>[20]</sup>. Translation from Arabic to appropriate English <sup>[21]</sup>. The questionnaire consists of 24 questions involved general information about asthma treatment and administration.

**The fourth section** of Asthma Self-administration was appropriate from <sup>[22]</sup>. Definition of the attitude of asthma self-administration which a strategy to administer asthma every day and is measured using the Asthma Self-Management Questionnaire (ASMQ) <sup>[22]</sup>.

**The fifth section** showed confident carrying out asthma self-administration attitude. It was confirmed to <sup>[23]</sup> which prepared it for children age from 10 to 18 years old. The average degree for the AMES was 58.0, the standard deviation 12.0 and Cronbach Alpha was 0.84 appears the accuracy to AMES.

**The six- section** indicated that therapy commitment measured using the Morisky commitment scale has contained eight units used to measure therapy commitment in asthma. This scale had enough internal uniformity accuracy with a Cronbach alpha degree of 0.80 <sup>[24]</sup>.

**The Second Tool** indicated to estimate of patient inhaler technique utilizing a shown checklist; suitable from <sup>[25-26]</sup>. Utilize of each inhaler apparatus was estimated and requiring children to explain their inhalation technique and consequently that all of the steps be noticed. If the total degree was 75% or more the student is suitable.

**The Third Tool** improvement the students' information and practices had concerned self-

administration, self-efficacy and prevention of the asthmatic. Teaching methods were lectures and group discussion ranged 35- 45 minutes. Each group had contained from five to seven participants. This estimation was initiated before and after 2 months of the health instructions.

#### Validity and reliability

Take measures to check the quality the research tools was by 5 experts various denominations at the collage of Nursing. Evaluating the accuracy tools was statistically by Cronbach's alpha test.

#### Administrative and ethical observations

Formal confirmed to collect the finding was got by submission of a letter Dean of the collage of nursing, Qassim University to Manager Buraidah Maternity and Children' Hospital (Out-Patient Clinics). Oral approval was got from the asthmatic children and their parents and then confirm on the particularity of subjects' inform, and also, an assurance to gets out in any stage.

#### Pilot study

Research organized and carry out on a small group has contained from 5 to 7 asthmatic children.

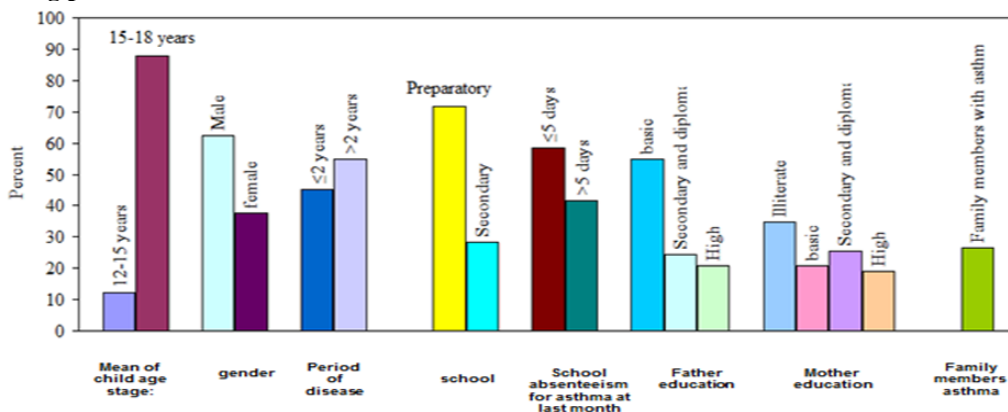
#### Field work

This research was carried out during four sequential stages: assessment, planning, implementation and evaluation.

#### I) Assessment phase:

Researchers begin with a pilot test and then proved from during the nursing. After that, the researchers are present at the Pediatric Outpatient Clinic for information collection and each child bronchial asthma was individually interviewed.

#### II) Planning phase



**Figure (1):** Number and Percent Distribution of Asthmatic students

Figure (2) showed that most (81.1%, 79.2% and 84.9%) of children their asthma was caused a cold, flu and exhaust fumes, respectively. Furthermore, more than two thirds (69.8%, 71.7%, 66% and 71.7%) of them their triggers may be due to cigarette smoke,

After that the planning phase was prepared and also, the health instructions (the third tool) were advanced on the basis results from the assessment phase.

#### III) Implementation phase

The program was performed from January to April 2019. Aural-visual aids and booklet were utilized to facilitate the process of teaching the program to perform duties the target prepared.

#### IV) Evaluation phase

Confirm influence for a pedagogical on students' information was evaluated and it concerning bronchial asthma administration. After that, estimate their information and practices utilizing the first and second tool. Follow up adolescents' information and practices were checked again after two months utilizing the same tools.

#### Statistical design

Results were recorded in tables and figures utilizing present the percentages. Suitable methods were used as chi-square ( $\chi^2$ ), repeated measure ANOVA and p-value.

#### 3. Results

Figure (1) showed that the average of the preparatory stage students was 12-15 years old (12.3%) and secondary stage student was 16-18 years old (57.7%), whereas 62.3% male and 37.7% female. More than half (45.3 and 54.7%) of them their asthma begins from 12 years and more, and the students missed day from the school more than 5 days monthly may be caused to asthma, respectively. Concerning education, about 54.7% of fathers had basic education and 34.9% of mothers were illiterate.

running, being angry, and feeling unhappy.

Table (1) indicated that about three-quarters of students pre-intervention had unsatisfactory information concerning information, medications, and protective. Moreover, unsatisfactory had 50%

information concerning asthma administration also the greater number 93.4% unsatisfactory of scoring from information concerning the illness. Furthermore, observed that advancement information of student post and follow up intervention phase concerning the illness with little lowering in follow up phase and little statistically considerable variations among knowledge differences.

Figure (3) showed the average total knowledge concerning asthma pre, post and follow up application

were  $11.07 \pm 2.71$ ,  $21.84 \pm 3.25$  and  $19.28 \pm 4.03$  respectively.

Tables (2) pointed out those greatly statistically considerably variations in pre, post and follow up the application concerning average sides of asthma Self-Efficacy items. Additionally, it observed that the advancement self-efficacy of illness Self-Efficacy items meanwhile  $(39.72 \pm 4.32)$ ,  $(76.98 \pm 6.45)$  and  $(75.09 \pm 6.18)$  were the mean score in pre, post and follow up program

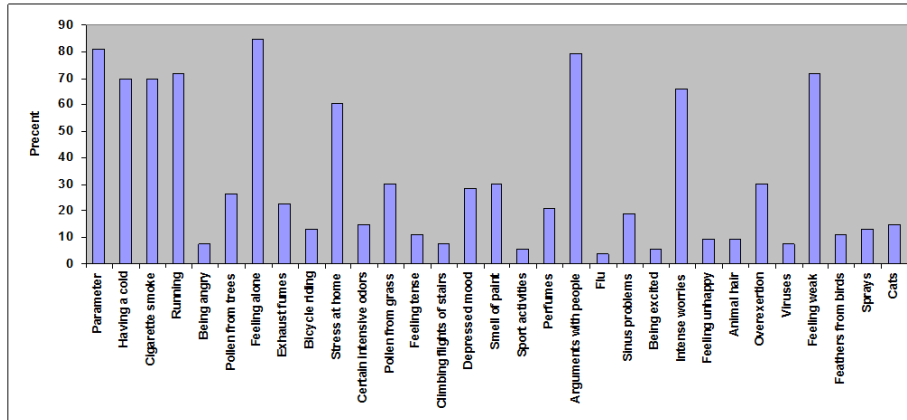
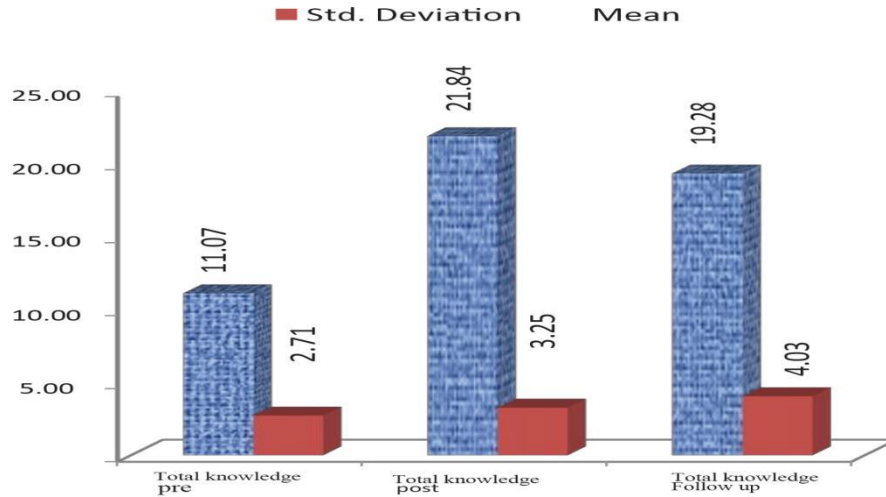


Figure (2): Number and Percent Distribution of Asthma Triggers Experienced by Asthmatic students

Table (1): Number and Percent Distribution of information variations for illness students

Items	Pre intervention Total=86		Post intervention Total=86		follow up intervention Total=86		X <sup>2</sup> Pre-post	P-value	X <sup>2</sup> Pre-follow up	P-value
	No	%	No	%	No	%				
<b>General knowledge</b>										
Satisfactory	23	26.4	68	79.2	51	59.4	53.32	0.00**	21.17	0.00**
unsatisfactory	63	73.6	18	20.8	35	40.6				
<b>Symptoms</b>										
Satisfactory	19	21.7	73	84.9	62	72.6	75.43	0.00**	19.45	0.00**
unsatisfactory	67	78.3	13	15.1	24	27.4				
<b>Medications</b>										
Satisfactory	20	23.6	70	81.1	58	67	64.22	0.00**	36.07	0.00**
unsatisfactory	66	76.4	16	18.9	28	33				
<b>Triggers</b>										
Satisfactory	23	26.4	70	81.1	62	72.6	56.76	0.00**	47.55	0.00**
unsatisfactory	63	73.6	16	18.9	24	27.4				
<b>Preventive measures</b>										
Satisfactory	25	29.2	75	87.7	65	75.5	71.33	0.00**	42.9	0.00**
unsatisfactory	61	70.8	11	12.3	21	24.5				
<b>Management</b>										
Satisfactory	42	49.1	70	81.1	57	66	23.66	0.00**	6.03	0.012*
unsatisfactory	44	50.9	16	18.9	29	34				
<b>Score of total knowledge</b>										
Satisfactory	6	6.6	76	88.7	73	84.9	133.5	0.00**	98.92	0.00**
unsatisfactory	80	93.4	10	11.3	13	15.1				

\*\*highly significant \* significant



**Figure (3):** Total information means and standard deviation variation for illness students

**Table (2):** Mean Scores of Self-Efficacy of Self-Care Activities for Self-Efficacy items

Self-Efficacy items	Pre intervention		Post intervention		Follow up intervention		Repeated-measured ANOVA	SIGN
	Mean	SD	Mean	SD	Mean	SD		
Basic information/feelings about asthma	8.67	2.21	16.67	1.18	15.67	1.78	567.97	0.0**
Recognizing and managing asthma symptoms	20.11	3.66	41.56	6.78	37.98	9.62	521.98	0.0**
Solving problems with medicines/deciding how bad symptoms are	6.09	2.22	12.76	1.98	12.34	1.32	684.09	0.0**
Finding and controlling asthma triggers	1.72	0.87	3.32	0.78	3.06	.056	154.05	0.0**
Keeping your battery charged: How to get enough exercise	2.78	1.11	6.34	1.32	6.34	0.87	298.07	0.0**
Doing well in school	1.45	0.67	3.23	0.71	3.01	0.54	215.56	0.0**
Total Self Efficacy	39.72	8.67	76.98	8.98	78.09	9.87	956.45	0.0**

\*\*highly significant \* significant

Concerning asthma self-administration Table (3) explained that about 64.2% of asthmatic children had unsuitable administration utilizing protective strategies. About 50% had inadequate administration concerning inhaler utilize. Moreover, more than 79.2% of them had administration concerning variations among maintenance and saving medications and, the greater number 90.6% of them had unsuitable administration concerning the utilize of peak flow

meters. Concerning total administration appears 76.4% involvements had unsuitable asthma administration before program application. Furthermore, showed that advancement of asthma administration application and follow up phase concerning all items of self-administration a slight lowering in follow up a greatly statistically considerably variation in pre, post phase and pre follow up phase.

**Table (3):** Number and Percent Distribution of Asthma Self-Management variation for illness students

Items	Pre intervention Total=86		Post intervention Total=86		Follow up intervention Total=86		X <sup>2</sup> Pre-post	P-value	X <sup>2</sup> Pre-follow up	P-value
	No	%	No	%	No	%				
<b>Management using preventive strategies</b>										
Adequate	31	35.8	75	86.8	66	76.4	56.87	0.0*	32.98	0.0*
Inadequate	55	64.2	11	13.2	20	23.6				
<b>Inhaler use</b>										
Adequate	41	48.1	75	87.7	62	72.6	36.98	0.0*	12.56	0.0*
Inadequate	45	51.9	11	12.3	24	27.4				
<b>Differences between maintenance and rescue medications</b>										
Adequate	18	20.8	72	84	62	71.7	83.78	0.0*	53.78	0.0*
Inadequate	68	79.2	14	16	24	28.3				
<b>Use of peak flow meters</b>										
Adequate	8	9.4	65	75.5	54	63.2	92.98	0.0*	64.98	0.0*
Inadequate	78	90.6	21	24.5	31	36.3				
<b>Total asthma self-management:</b>										
Adequate	20	23.6	80	92.5	68	79.2	104.23	0.0*	63.12	0.0*
Inadequate	66	76.4	6	7.5	18	20.8				

\*highly significant \* significant

Data from Figure (4) explained the average self-administration concerning illness pre-intervention was 38.00±16.36 improved to 81.36±11.95 and 75.05±14.95 in the other application respectively.

Table(4) showed that about 70.8% of students illness had a decreased commitment to

asthma therapy before the implementation of the program becomes better after and follow up phase. Meanwhile, post and follow up were 90.6% and 73.6% of the commitment and adequate to illness therapy with greatly statistically considerably difference.

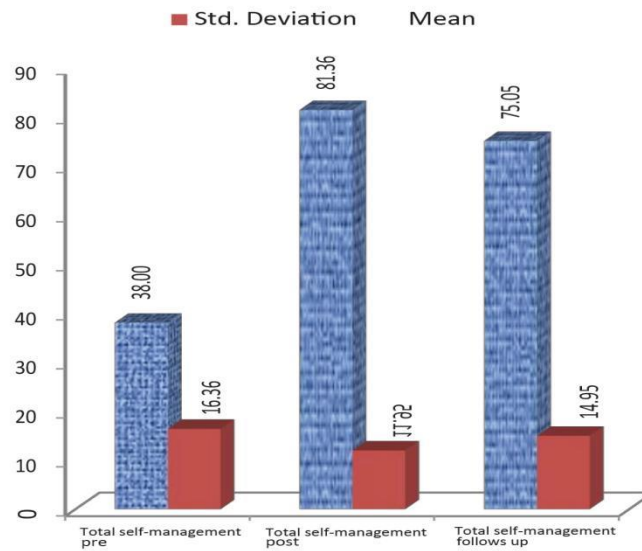


Figure (4): Total self-management average and standard deviation variation for illness students



**Table (4):** Number and Percent Distribution Regarding Scores of Adherence to Medications for illness students

Items	Pre intervention Total=86		Post intervention Total=86		Follow intervention Total=86		Repeated measure ANOVA	P-value
	No	%	No	%	No	%		
adherence to medications								
Adequate	25	29.2	78	90.6	63	73.6	367.98	0.0**
Inadequate	61	70.8	8	9.4	23	26.4		
Adequate	3,57±1.37		6.22±0.87		5.60±1.16			

\*\*highly significant \* significant

Concerning inhaler utilize Table (5) showed that 27.4% of students utilized inhaler appropriate before the implementation, whilst a greater number 86.8%

and 77.4% utilizing it appropriate after and follow up the program application greatly statistically significant variation.

**Table (5):** Number and Percent Distribution Concerning Scores of Inhaler Utilize for illness students

Items	Pre intervention Total=86		Post intervention Total=86		Follow intervention Total=86		Repeated measure ANOVA	P-value
	No	%	No	%	No	%		
Inhaler Use								
High score	24	27.4	75	86.8	67	77.4	265.11	0.0**
Low score	62	72.6	11	13.2	19	22.6		
Mean Score	4.33±1.35		8.18±1.50		7.37±1.72			

\*\*highly significant \* significant

#### 4. Discussion

Concerning baseline properties, the results indicated that more 50% of involvements asthma begin from 3 years, and they missed from school for more than 5 days monthly may be caused to asthma which may be caused by environmental alteration in the duration outcomes collecting. The effect of asthma on missed school days was studied by **Moonie et al.** [1]. (27) who showed that asthma puts children at danger of absent more days from school than healthy children. Moreover, it could be found a relationship between asthma acute and the number of days missed from the school.

Our results reported that asthma between children could be due to an environmental alteration in the duration outcomes collecting. The increase prevalence of pediatric asthma may be explained by the increasing exposure to agents such as outdoor contamination, for example, ozone, sulphur dioxide, and cigarette smoke, a lowering in host resistance, or a together of both [1]. (28). It may also be due to the change in dietary habits, which may lead to a reduction in natural antioxidant defenses, with more susceptibility to the oxidant injurious effects on the respiratory system [1]. (29).

From the results, it could be noticed that the level of information was become better considerably post-intervention with slightly reduce in follow up

phase which confirmed by **Nalina and Chandra** [1]. (30) which confirmed that the people with asthma observed that the effect on the physical, psychological and social fields of the goodness of life. Also, the Pediatric asthma quality of life questionnaire (PAQLQ) is fully validated to be used in both clinical trials and clinical practice. It is composed of the daily problems and limitations, which the majority of asthmatic children are suffered from. It contains both discriminative properties and strong evaluative properties [31].

Our results reported that the asthma teaching program becomes better sides' self-efficacy of illness administration after the intervention and follow up application. Moreover, the functional ability could necessary implement social activities and important individual's daily life overcome feelings of social isolation [32]. . Also, **Hsu et al.** [33]. observed that social coping strategies assist to decrease their psychological tribulation and making greater their psychological the state existence comfortable, healthy.

Our research was found a considerable advancement in asthma administration after application and follow up a slight lowering the follow-up phase. These results could demonstrated utilizing a self-care model simulating children responsibility for the therapy and administration

disease particularly students illness who need support and teaching care and guidance. **Ekim and Ocakci** <sup>[34]</sup> identified design teaching, and telephone counseling were helpful in becoming better asthma administration. Reduce of outpatient clinic visits and numbers emergency departments considerably lowered for asthma group. Asthma administration self- efficacy consciousness level mothers the studies group following considerably greater than the mothers of the control group.

From the results, the considerable influence of asthma teaching on adherence to asthma therapy whilst 75% students illness depressed commitment to asthma therapy before the application becomes better after and follow up. These findings are an agreement by **Foster et al.** <sup>[35]</sup> presented a highly successful strategy elevating commitment affecting practice clients with asthma. Moreover, **Elbanna et al.** <sup>[36]</sup> observed teaching can be a crucial element advancement of commitment results demonstrates greatly considerable advancement in commitment to an action design with asthma teaching intervention.

### 5. Conclusion:

From obvious results, it could be average information concerning asthma was become better the post and follow up application phase. Moreover, observes an advancement of self-efficacy and asthma administration in pre, post and follows up application Most students with illness depressed commitment to asthma therapy before the application becomes better after and follow up phase, with greatly statistically considerably variations Concerning inhaler utilizes most the asthmatic children have utilized accurately after and follow up the program application greatly statistically considerably variations The finding of this research pointed out that the application of a teaching package on children with asthma based on Orem's self-care model becomes better all sides of self-administration.

### 6. Recommendations:

- Could perform Orem's self-care model in many settings give assistance performance.
- Could be pointed out that to exam the influences of advanced program in a presented clinical experience to assure the results.
- Estimate the self-care of students with asthma during follow-up visits at outpatient clinics and home

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### Conflict of Interest

Authors (s) are in approval with the content of the document.

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