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Outcome of Self-Management Training On Quality Of Life And Self-Efficacy In Patients With Bronchial Asthma

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Abstract:
Background*: The prevalence of asthma and associated morbidity, mortality and related hospital readmission rates are high; therefore, self-care behaviors and self-efficacy represent critical issues in improving the quality of life (QOL) in asthmatic patients.* ***Purpose****: This study was developed to investigate the outcome of self-management training on health-related QoL and self-efficacy in patients with asthma.* ***Methods:*** *A total of 40 toddlers/ adults asthmatic patients aged (12-50) year old, from both sexes who visited the chest division of Suez-Canal University Hospital (outpatients & inpatients) for pediatric and adults between Jan 2016, and January 2017, were assessed. A quasi-experimental controlled clinical trial research design was conducted in this study, one group pre/post/ and follow-up.* ***The study instruments*** *included a Patient Interviewing Assessment sheet, Asthma knowledge questionnaire, Observational checklist, a self-efficacy scale, and QOL scale with previously tested content validity and reliability.* ***Results:*** *The current study found that there was a high statistically significant difference between pre/ post and pre/follow-up knowledge, practice, self-care behaviors, the effect of the disease on QOL and self-efficacy of the studied patients with p< 0.001. There is a high significant relationship between age and patient's level of knowledge and self-efficacy. Moreover, there is a positive correlation between all dimensions of the study (knowledge, practice, self-efficacy, and QOL).* ***Conclusions:*** *On the basis of these results, self-management program has been demonstrated a beneficial addition to toddler and adult asthmatic patients' self-efficacy and QOL regimen.* ***Recommendations:*** *In the light of the study findings, the present study recommends that nursing staff should acquire perceptive knowledge of self-efficacy skills and apply its concept in clinical practice to fulfill the patients' satisfaction and independence in self-management.*
Keywords: *Self-management, QoL, Self-efficacy, Bronchial asthma*

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I. Introduction

Asthma is a chronic respiratory disorder affecting all age groups. Although the revolutionary changes are noticed in the medical and technological advancements, the prevalence of asthma is still on rise worldwide. While raising prevalence and asthma control are negatively associated. The most common reasons are non-adherence to treatment and follow up, in addition to poor knowledge and skills in disease management. Uncontrolled asthma and ineffective management remains a public health challenge in the developing countries (1).

Asthma has been defined as a disease characterized by hyper responsiveness of the airway to various stimuli and manifested by slowing or forced expiration, which changes in severity either spontaneously or with treatment. Asthma is characterized by variable symptoms of shortness of breath, wheeze, chest tightness and/or cough, and by variable expiratory airflow limitation. Both symptoms and airflow limitation are vary over time in intensity. These variations are often triggered by factors such as allergen, exercise, change in weather, irritant exposure, and/or viral respiratory infections (2).

The prevalence of asthma is more associated with children with most patients being diagnosed by 5 years of age and up to 50% of children having symptoms by 2 years of age (3).The high prevalence of asthma among children is reported in many countries including Saudi Arabia, Australia, Iran and Oman. (4). The global prevalence of asthma in general population ranges from 1%-18% (2). According to estimates of (5), 235 million people suffer from asthma, it occurs in all countries regardless of level of development. Over 80% of asthma deaths occurs in low and lower-middle income countries, in December 2016, there were 383 000 deaths due to asthma in 2015.

Despite advances in asthma treatment, patients continue to be limited in their daily activities. Many people with asthma require ongoing treatment to suppress inflammation, either on a daily basis, or for brief periods during asthma exacerbations. Appropriate education and skills training may be important approaches to reduce the problems arising from asthma. Predisposing knowledge, attitude and belief factors influence the

degree to which an individual is motivated to engage in asthma self-training and comply with a medical regimen. (6). Self-management is a term applied to any formalized patient education program aimed at teaching skills to optimally control the disease, behavior change, and coping with the disease. The continuum of self-management programs varies from the provision of written material only, to more intensive patient management, including exercise, and efficacy of self-management education (7)

The long term goal of asthma education is to reduce asthma morbidity and mortality. Asthma deaths are relatively rare end; for most asthmatics the primary aims of education are to improve the quality of life, ability to function, and control of the disease. From the health-care perspective, reducing costs is the primary goal. Goals of asthma education programs are to promote compliance to the medical treatment which will limit the dysfunction directly attributable to asthma; this is achieved by controlling symptoms, thereby minimizing the preventable indirect or secondary psychological and social handicaps that occur as a result of numerous factors, and increased self-confidence and self-efficacy in managing or controlling asthma symptoms (8).

Self-efficacy has been reported to be a powerful predictor of self-management in a variety of studies of chronic illnesses, it is refers to the degree of confidence that an individual has in which he/she can successfully execute behaviors in order to produce certain outcomes (9).

Although asthma cannot be cured, appropriate management can control the disease and enable people to enjoy a good quality of life. Short-term medications are used to relieve symptoms. Medications such as inhaled corticosteroids are needed to control the progression of severe asthma and reduce asthma exacerbation and deaths (5). Asthma usually is characterized by substantial periods of relative freedom from symptoms, interrupted by episodes of severe symptoms. Therefore, it is important to assess the impact of episodes on quality of life; which has been conceptualized as multi-dimensional including various aspects such as physical, psychological, social, and emotional functioning, as asthma negatively affect them; asthma education programs could improve the patients' quality of life in terms of activity level, symptoms, and emotional domains (3).

II. Significant Of The Study

Asthma is an important cause of morbidity and mortality. It is the most common chronic illness in adolescents and a leading cause of school absence. Non-compliance with the medical regimen can be life threatening and have significant psycho-social effects that may have an impact on patients' quality of life and self-efficacy. Misuse of the medications is common that results in compromised outcomes and excess health-care cost. Nowadays; the prevalence of asthma increasing challenges of health care system to promote self-management. So this study will be done to examine the outcome of implementing a self-management training program to improve asthmatic patients QOL and self-efficacy.

III. Methodology

This study aimed to investigate the outcome of self-management training on health-related QoL and self-efficacy in patients with asthma.

Research hypothesis

Quality of life and self-efficacy of patients' with asthma will be improved after implementing the self-management program.

Research questions:

1. What are the needs of patients with asthma?
2. What is the effect of the self-management program on quality of life and self-efficacy in patients with bronchial asthma?

Research Design:

A quasi-experimental controlled clinical trial research design was conducted at this study. One group pre/post/ and follow up.

Setting: The study conducted at the medical and pediatric inpatients and the outpatients (chest and pediatric) of Suez-Canal University Hospitals.

Subject:

A purposeful sample of 40 patients with bronchial asthma, from the previously mentioned settings, is included in this study. They were selected in relation to the number of patients with asthma within the year from Jan 2016 to Jan 2017 based on some criteria that include: being a toddler or an adult patient aged (12-50) years old, from both sexes, free from complications and chronic disease, diagnosed at least six months ago, receiving inhaler medications, and agree to participate in this study. The exclusion criteria include: patient's with audio

and visual deficits and critically ill patients whose health status makes them unable to participate. Four patients participated in the pilot study and excluded from the study sample with a total number of the study sample after exclusion (40).

Tools for data collection:

Five tools were used in the present study to collect data as follow:

A- Patient Interviewing Assessment sheet: It was designed by the researchers in the light of relevant and related literature and written in simple Arabic language, and it was divided into three parts:

The first part: expressed the demographic criteria of the subject as well as age, gender, marital status, educational level, area of residence, occupation, monthly income, source of fund for treatment, and the presence of comorbid disease.

The second part: concerned with medical characteristics of study sample such as the duration of disease, onset and severity of the disease, smoking history, smoking duration, passive smoking, family history of respiratory disease, and the relationship degree**.**

The third part : concerned with the present history of the study sample as the duration of inhaler use in months, the frequency of inhaler use, type of used inhaler devices, hospitalization during last year due to the disease, received health education related to the disease, and asthma triggers.

B- Asthma knowledge questionnaire: Concerned with the assessment of patients' knowledge regarding asthma for developing the booklet of self-management training program, it was designed by the researchers in Arabic form according to the previous researches and literatures and applied as pre/post/follow-up tests for the study subjects. It was consisted of 25 MCQ items covering 9 aspects about (definition of bronchial asthma, pathophysiology, manifestation, diagnosis, type of treatment, management, complications, nutrition, and follow-up), and 6 items short answers asking about (medications, triggers of asthma, management, how to prevent an attack, and exercise with asthma). The tool has been modified from (10),with α 0.90 of the entire test. Each question is scored "zero" for the incorrect or non-choose answer; and "one" for the correct answer. The general patients' knowledge is classified into satisfied knowledge if the score is ≥ 60% and unsatisfied knowledge if it is < 60% from the maximum score.

C- Observational checklist: It was developed by the researchers to assess patients' practice regarding the most important skills before and after the program then in the follow-up phase. It includes some procedures: Oxygen therapy (7 items) derived and modified from (11), (12) & (13), breathing and coughing exercise (7 items) according to (14), use of incentive spirometer (8 items) according to (15), position to improve breathing (1 item).

The participants' inhaler technique has been evaluated in a practical manner, by asking patients to demonstrate their inhaler technique with a placebo device using prepared checklists derived from Global Initiative for Asthma (16),the check-list adapted for each inhaler as follow: metered dose inhaler (MDI) (8 steps), Accuhaler Inhaler Technique (8 steps), and aerolizer/hand haler Technique (12 steps). One point was allotted for each correct step done. The general patients' practice is classified into satisfied practice if the score is ≥ 60% from the maximum score and unsatisfied practice if it is < 60%. The observational checklist reliability was 0.92.

D- Self-Efficacy questionnaire: This scale was adopted from (17) and translated by (18) and (19). The scale consisted of 20 questions. The first part addressed avoidance of asthma triggers (7 questions), the second addressed control of asthma symptoms (6 questions), and the third part is concerned with using inhalers (7 questions). The tool includes 18 positive statements and 2 negative statements. A 5-point Likert scale was used, with 5 indicating completely certain and the 1 indicating not at all confident. The higher scores implied very confident. The validity of the current tool was 0.91, with α value of 0 .83.

E- Asthma Quality of Life Questionnaire (AQLQ): A disease-specific health-related quality of life instrument that taps both physical and emotional impact of disease, adapted from the (20) with relation to (21)**.** It included 32 items with 2-week recall. It covers 4 domains, Symptoms (11 items), Activity Limitation (12 items, 5 of which are individualized), Emotional Function (5 items), and Environmental Exposure (4 items). It is a 7-point Likert scale (7 = not impaired at all and 1 = severely impaired), Scores range 1-7, with higher scores indicating better quality of life. Reported with high correlation coefficient (>0.90)

Educational interventions

The educational self-management program involved notes on general knowledge of the disease epidemiology, etiology, physiology & pathophysiology, triggers of asthma and techniques to control them, investigations, clinical manifestations, medications and use of inhaler devices, exercises with asthma, diet and prognosis, in addition to asthma exacerbation. Modules for education include physical and video demonstration, power point, lectures, handout, discussion, and colored brochures that contained pictures for different inhaler devices and correct technique of everyone. The program derived from (16) & (Damanic, 2009).The study conducted through three phases‟ preparation, implementation, and evaluation phase.

1- Preparation phase:

At this phase, the researchers prepare the tools of data collection and educational material after reviewing the related literature. Official permissions to conduct the study were obtained after clear clarification of the aim and nature of the study in addition to its expected outcomes. A pilot study was carried out on 4 asthmatic patients to test the clarity and simplicity of the tools. Then minor modifications were done.

2- Implementation Phase:

At this time the researchers approaching the patients and explain the study purpose and collect baseline data. For literate patients, the researchers provide them the tools except the checklists because all of them were self-reported, but in relation to illiterate patients they interviewed individually and data were obtained through asking the questions and recording their responses by the researchers. Carrying out the program has been done through providing 4 educational sessions each one lasted for 45 minutes included face to face lectures, video and physical demonstration by the researchers. The data collected through the period of 12 months, starting from Jan 2016 to Jan 2017, as 3 months for the pre-test, 4 months for implementation of the program & post-test, the 3 months follow up test after 2 months from the post-test. Data were collected three days/ week from the (outpatient and inpatient chest and pediatric) departments of Suez-Canal University Hospitals from 9:00 am to 12:30 pm.

3- Evaluation phase

Post-test was completed for evaluating participants' response to the program through using the previously used tools at the end of the final session, then 2 months later for the follow-up.

Ethical considerations:

Oral consents were obtained from asthmatic patients who agreed to participate before his/her inclusion into the study after clarification of method and aims of the study. Confidentiality and anonymity were assured to participants. The investigator declared that the participation is voluntary and confidential, as there is no names will be written only codes will be given to the study sheets, confirming on the participants that they have the freedom to withdraw from the study at any time. Moreover, leaving the phone numbers of the researchers available to the participants fore safe and effective contact.

Statistical design

Statistical analysis was implemented using SPSS version 14 statistical software package for frequency tables and statistical significance. The statistical significance and associations were assessed using, the arithmetic means, the standard deviation (SD), (Z test), Pearson chi-square test (X2) and Pearson Correlation (r) to detect the correlation between the variables. Significant level was pre-set at $p < 0.05$.

Limitations of the study:

The practical part was very difficult and so exhausted to implement at the outpatient. Also, data collection take more time and efforts.

IV. Results

Table 1: Frequency and percentage distribution of Socio-demographic data among the studied patients (n=40).

Characteristics	Number	%
Age	16	40
< 18 years	24	60
≥ 18 years	12-50 years	
Range	31.28 ± 9.90	
Mean± SD:	31.00	
Median		
Gender		
Female	9	22.5
Male	31	77.5
Marital status		
Single	18	45
Married	20	50
Widow	2	5
Divorce	0	0
Education level		
Not educated	7	17.5
Intermediate education	18	45.0
University/academic	15	37.5
Residence		
Rural	23	57.5
Urban	17	42.5
Occupation		
working	23	57.5
Not working	17	42.5
Retirement	0	0
Monthly income		
Enough for living	13	32.5
Not enough for living	25	62.5
More than enough	2	5
Source of fund for treatment		
Health insurance	17	42.5
State fund	11	27.5
Personal income	12	30
Presence of co-morbid medical illness		
Diabetes mellitus	16	40
Hypertension	8	20
Cardiac disease	4	10
Gastro-intestinal disorders	6	15
None	6	15

Table (1) shows that the age of the studied sample ranged from 12 to 50 years old, with two-thirds of them (60%) are more than 18 years with the mean of 31.28 ± 9.90. The majorities (77.5%) of the studied sample are males; half of the sample (50%) is married followed with slightly less than half (45%) are single and intermediate educated. Slightly more than half of the studied sample (57.5%) are from rural areas and are working. In addition, slightly more than two-thirds (62.5%) of the studied sample their monthly income is not enough for the living. Moreover, around two-fifths of the studied sample (42.5%, 40%) respectively their source of fund for treatment is health insurance and have DM as a comorbid disease.

Table 2: Frequency and Percentage distribution of medical characteristics of the studied patients (n=40).

Characteristics	Number	%
Onset of illness		
Sudden	30	75
Chronic	10	25
Duration of illness		
<5 years	28	70
≥ 5 years	12	30
Severity of disease		
Mild	16	40
Moderate	20	50
Sever	4	10
Smoking history		
Yes	17	42.5
No	23	57.5
Smoking duration (n=17)		
< 5 years	6	35.3

≥5	11	64.7
Passive smoking		
Yes	23	57.5
No	17	42.5
Family history of respiratory disease		
Yes	16	40
No	24	60
Relationship degree (n=16)		
1st degree	13	81.2
2nd degree	3	18.8

Table (2) represents that the majority of the studied sample (75%, 70%) have a sudden onset of the disease for a period of fewer than 5 years respectively. Around half of the studied patients (50%, 40%) have asthma in moderate severity followed by mild severity respectively. Slightly more than two-fifths of the patients (42.5%) are smokers, and around two-thirds of them (64.7) smoking for 5 years or more, while the rest of the patients (57.5%) are passive smokers. In addition, around two-fifths of the studied sample (40%) have a family history of respiratory disease with most of the diseased persons (81.2%) are from the 1st-degree relationship.

Table 3: Frequency and Percentage distribution of the present history of the studied patients (n=40).

Characteristics	Number	%
Duration of inhaler use in months	M±SD 8.22±5.15	
Frequency of inhaler use /day		
Once	10	25
Twice	20	50
Three	7	17.5
Four	3	7.5
Type of inhaler device used		
PMDI	25	62.5
Diskus	10	25
Aerolizer/ hand haler	5	12.5
Hospitalization during last year due to disease condition		
Yes	27	67.5
No	13	32.5
Received health education related to disease condition		
Yes	10	25
No	30	75
Asthma triggers as reported by the study participants		
Smoke	30	75
Dust	40	100
Cold	20	50
Exercise	23	57.5
Sprays and Perfumes	12	30

Table (3) shows that the mean duration of inhaler use in months is 8.22±5.15, frequency of inhaler use is twice/day in half of the studied patients (50%), around two-thirds of the studied patients (62.5%, 67.5%) use PMDI type of inhaler and hospitalized during the last year due to the disease respectively. Three-quarters of the studied patients (75%) didn't receive health education related to the disease. And asthma triggers as reported by the study participants are as follow (100%, 75%, 57.5%, 50%, and 30%) dust, smoking, exercise, cold, and sprays & perfumes respectively.

Table 4: The relation between satisfied level of knowledge about asthma among the studied patients throughout the study phases (n=40).

Patients' knowledge regarding Asthma	Pre/Post		Pre/FU	
	Z	P	Z	P
Definition	-4.707	.000**	-4.491	.000**
Pathophysiology	-4.690	.000**	-4.583	.000**
Triggers of Asthma	-2.449	.014*	-.632	.527
Diagnosis	-4.123	.000**	-3.153	.000**
Clinical Manifestations	-4.123	.000**	-3.638	.000**
Types of treatment	-4.796	.000**	-4.472	.002**
Prevention of attack	-4.123	.000**	-3.153	.000**
Management during asthma attacks	-4.690	.000**	-4.379	.000**
Complications	-3.742	.000**	-3.357	.001**

Diet regiment	-4.000	.000**	-3.742	.000**
Exercises with asthma	-4.243	.000**	-3.638	.000**
Follow up schedule	-4.025	.000**	-2.982	.003**
general Management of disease	-5.831	.000**	-5.385	.000**
Total satisfied knowledge	-5.477	.000**	-5.099	.000**

(*) Statistically Significant at p< 0.05 and (**) Highly Statistically Significant at p< 0.

Table (4) stated that there is a high statistically significant difference between pre/ post and pre/follow-up knowledge of the studied patients regarding asthma in all items and the total knowledge also with the higher percentage in the post-program by the majority of patients (77.5%) with p< 0.001. except patients' knowledge regarding triggers of asthma there is no statistical significant difference between pre/follow-up phase.

Table 5: The relation between patients' satisfied level of practice among the studied patients throughout the study phases (n=40).

Patients' practices regarding the following items	Pre/Post		Pre/FU	
	Z	P	Z	P
Oxygen therapy	-4.123	.000**	-4.123	.000**
Breathing and coughing exercise	-5.000	.000**	-4.899	.000**
Use of spirometery	-4.243	.000**	-4.123	.000**
Metered dose inhaler (MDI)	-3.606	.000**	-3.464	.001**
Accuhaler Inhaler Technique (Diskus)	-4.243	.000**	-4.123	.000**
aerolizer/ hand haler Technique	-4.583	.000**	-4.583	.000**
Position to improve breathing	-3.606	.000**	-3.464	.001**
Total patients' practice	-5.745	.000**	-5.477	.000**

(*) Statistically Significant at p< 0.05 and (**) Highly Statistically Significant at p< 0.01

Table (5) stated that there is a high statistically significant difference between pre/ post and pre/follow-up practice of the studied patients regarding asthma in all items and the total practice also with the higher percentage in the post-program by the majority of patients (87.5%) with p< 0.001.

Table 6: Effect of the disease on QOL among the studied patients throughout the study phases (n = 40).

QOL affected severely	Pre/Post		Pre/FU	
	Z	P	Z	P
Symptoms	-3.162	.002**	-3.000	.003**
Emotions	-4.243	.000**	-3.873	.000**
Environmental stimuli	-3.464	.001**	-3.357	.001**
Activity limitations	-2.646	.008**	-1.508	.132
Total	-4.899	.000**	-4.690	.000**

(*) Statistically Significant at p< 0.05 and (**) Highly Statistically Significant at p< 0.

Table 7: Effect of the disease on self-efficacy of the studied patients throughout the study phases (n=40).

Self-efficacy items	Pre/Post		Pre/FU	
	Z	P	Z	P
Avoid Asthma triggers	-4.690	.000**	-4.359	.000**
Control symptoms of asthma	-4.796	.000**	-4.583	.000**
Using Inhalers	-2.236	.025*	-4.379	.000**
Total	-5.385	.000**	-4.796	.000**

(*) Statistically Significant at p< 0.05 and (**) Highly Statistically Significant at p< 0.00

Tables (6 and 7) showed statistical significant difference regarding effect of the disease on patients' self-efficacy and QOL among the studied patients at all phases of the study with P< 0.001, except in activity limitations there is no significant difference between pre/follow-up phases

Table 8: Relation between age and the study variables among the studied patients

Variable	≤ 18yrs		> 18yrs		T	P-value
	Mean	SD	Mean	SD		
Knowledge Pre-Test	13.24	2.46	14.0	2.53	1.719	0.088
Post-Test	14.4	2.13	18.4	2.54	9.646	<0.001**
Follow up	13.4	1.73	18.0	2.33	12.867	<0.001**
Practice: Pre-Test	45.2	13.9	50.5	10.9	2.359	0.019
Post-Test	47.4	6.7	48.2	9.5	0.545	0.587
Follow up	46.6	3.67	49.5	11.1	2.034	0.044
Self-Efficacy Pre-test	40.71	18.5	44.75	18.3	1.235	0.219
Post-Test	44.7	15.7	28.4	15.7	5.806	<0.001**
Follow up	53.3	5.7	30.6	17.7	10.210	<0.001**
QOL Pre-test	93.5	34.4	86.1	28.4	1.308	0.193
Post-Test	120.4	10.3	120.1	15.2	0.126	0.899
Follow up	123.3	13.7	119.9	13.4	1.406	0.162

Table (8) showed that there is a high significant relationship between age and patient's level of knowledge with the high level in patients aged more than 18 years during the post-test with a mean of 18.4±2.54 and follow-up stage with a mean of 18.0±2.33. In addition, there is a high statistical significant relationship between age and patient's self-efficacy with the high level in patients aged less than 18 years during the post-test with a mean of 44.7±15.7 and follow-up stage with a mean of 53.3±5.7 with
P< 0.001.

Table 9: Correlation coefficient between knowledge, practice, QOL and self-efficacy of study patients throughout the study phases (n=40).

Items	Knowledge		Practice		QOL		Self-efficacy	
	r	p	r	p	r	p	r	p
Pre Knowledge	1	0	.561	.000**	.280	.080	.248	.123
Pre practice	.561	.000**	1	0	.344	.030*	.388	.013*
Pre Self-efficacy	.248	.123	.388	.013*	.380	.010*	1	0
Pre QOL	.280	.080	.344	.030*	1	0	.380	.010*
Post Knowledge	1	0	.745	.000**	.264	.100	.379	.016*
Post-practice	.745	.000**	1	0	.319	.045*	.276	.045*
Post Self-efficacy	.379	.016*	.276	.045*	.217	.179	1	0
Post QOL	.264	.100	.319	.045*	1	0	.217	.179
FU Knowledge	1	0	.740	.000**	.155	.341	.446	.004*
FU practice	.740	.000**	1	0	.006	.972	.449	.004*
FU Self-efficacy	.446	.004*	.449	.004*	.230	.034*	1	0
FU QOL	.155	.341	.006	.972	1	0	.230	.034*

*Correlation is (not significant NS at > 0.05 level, significant S at< 0.05, highly significant HS at <0.01)
*rs: Spearman correlation coefficient
* r: Weak correlation (0.1-0.24) Intermediate correlation (0.25-0.74) Strong correlation (0.75-0.99)

Table (9) showed that there are different correlational levels between all variables of the study at the all phases

V. Discussion

Asthma is one of the diseases which affected large numbers of people around the world. Asthma has been considered a disease primarily affecting children and young adolescents but elderly asthmatic patients appear to have more severe disease. Patient education is one of the most important aspects in developing and improving patients' knowledge about the disease and improving overall quality of life and self-efficacy (13)**.** So this study aimed at evaluating the outcome of self-management training on health-related QOL and self-efficacy in patients with bronchial asthma, with the results will be discuss as follow:

Section I: Sample Characteristics

The present study shows that the age of the studied sample ranged from 12 to 50 years old, with two-thirds of them are more than 18 years, the majority of the studied sample are male, half of the sample is married and intermediate educated, slightly more than half of the studied sample are from rural areas and are working, slightly more than two-thirds of the studied sample their monthly income is not enough for living. moreover, around two fifths of the studied sample their source of fund for treatment is health insurance and have D.M as a comorbid disease.

In the same line a study that assesses the knowledge, attitude and medication adherence among asthma patients in a rural population by (23), found that the sample age ranged from 18 to ≥50, half of the sample are males, with low education, and worked as employee. Also, (24) who studied Asthma Patient's Knowledge Regarding Diagnosis and Treatment, found that Less than half of the subjects belonged to the age of 21-30 years, and the majority of the sample were males, unemployed and living in rural area. Slightly more than half of the subjects didn't have family history of asthma. Moreover, (9) who studied Factors Which Influence Adult African Americans' Asthma Self-Management found that more than half of the sample had one or two other medical conditions and have health insurance with insufficient income. From the researchers' point of view these results are related to the recovery of many children with asthma by the age, males are more affected as they are more smokers than females either positive or negative smoking. Also, D.M is a disseminated disease nowadays related to more stress; moreover the life is very expensive and most of patients have no money to follow-up and manage their disease.

Section II: History and medical characteristics of the studied patients

The current study represents that the majority of the studied sample have sudden onset of the disease for a period of less than 5 years. Half of the studied patients have the asthma in moderate severity, smokers, and has family history of respiratory disease. The mean duration of inhaler use /month is 8.22±5.15, frequency of inhaler use is twice/day in half of the studied patients, around two-thirds of the studied patients use PMDI type of inhaler and hospitalized during the last year due to the disease. Three-quarters of the studied patients didn't receive health education related to the disease. And the asthma triggers as reported by the study participants are as follow: dust, smoking, exercise, cold, and perfumes & sprays respectively.

These results are supported in some points and contradicted with others by a study implemented in Mansoura University Hospitals by (7) who implement self-management program to improve asthma knowledge and inhaler technique among adult with asthma and found that the majority of their participants had no smoking history, and used PMDI, one-quarter of the patients were used Diskus inhaler, and Aerolizer/ hand inhaler. In relation to asthma triggers reported by the majority of the study participants were related to dust and smoke. Duration of inhaler use in months 7.22±5.15, frequency of inhaler use is twice/day in around half of the studied patients, most of the studied patients received no health education related to the disease.

These results contradicted with (25) who studied the effects of the self-efficacy method on adult asthmatic patient self-care behavior, found that the majority of the participants did not have a family history of asthma, did not have a smoking history, half had previously received asthma health education, The average duration of asthma was < 2-5years. Moreover; (9) found that The vast majority of the participants did not currently smoke; however, one third reported a history of smoking, more than half had received asthma education. This may be due to non-regular follow-up as our culture didn't encourage it, in addition to poor health life style from the researchers' view.

III: Patient's Knowledge and Practices:

The current study stated that there is high statistical significant difference between pre/ post and pre/follow-up knowledge and practice level of the studied patients regarding asthma in all items. These findings supported by (22) who studied the impact of patient counseling on knowledge, attitude and practices in asthma patients and reported that there was a significant improvement in knowledge, attitude and practices of asthma patients in counseling group. Also, (26) who studied the effect of therapeutic guidelines for bronchial asthma on adult patients' knowledge, practice, compliance, and disease severity reported that the post guidelines phase showed a statistically significant improvement in patient's knowledge and practices, this improvement persisted during the follow-up period. In addition, (6) who studied asthma knowledge, attitude, and self-efficacy in Iranian asthmatic patients stated that asthma education programs lead to better knowledge and self-management abilities, reducing asthma morbidity rate. From the researchers' point of view this may be related to the positive effect of education on person's knowledge, skills, and attitudes as the level of patient knowledge can influence a patient's ability to handle an asthma attack.

VI: Effect of the program on QOL, and self-efficacy

The current study showed that there is high statistical significant difference pre/ post and pre/follow-up in all items of effect of the disease on self-efficacy, and QOL except in activity limitations there is no significant difference between pre/follow-up phases of the program. These results are consistent with (3) who studied the impact of school-based, nurse-delivered asthma health education program on quality of life, knowledge and attitudes of Saudi children with asthma and found that the level of asthma knowledge and the total quality of life scores was changed significantly between the three phases of the program among the intervention group showing a statistical significant difference. Also, a study by (25) who studied The Effects of the Self-Efficacy Method on Adult Asthmatic Patient Self-Care Behavior revealed a significant improvement of self-efficacy after implementing self-efficacy program. These results could be related to the concept which state that if the person have accurate wide base of knowledge and skills will have also a high ability to manage his life effectively, implement his self-care independently so, will have high self-esteem and in turn efficient QOL.

V: Relation between age and the study variables among the studied patients

The current study showed that there is high significant relationship between age and patient's level of knowledge with the high level in patients aged more than 18 years during the post-test. Also, between age and patient's self-efficacy with the high level in patients aged less than 18 years. These results are inconsistent with (3) who found that There was no statistically significant difference between participants from different age categories in knowledge of asthma in pre/ post-test phases. However, participants from all age categories exhibited a remarkable increase in knowledge and quality of life after implementing the program, although scores declined slightly at post-test II. Also, (6) found no association between asthma knowledge and age. From the researchers' point of view, this could be related to the person's physical and psychological growth with age and different personal abilities to use previously learned experience in the real situations, moreover; the young have high desire to feel high self-esteem and efficacy through controlling their life independently.

IV: **Correlation coefficient between knowledge, practice, QOL and self-efficacy**

The current study showed that there is correlation between different variables of the study with different levels as shown earlier in results. In the same line (27) who studied the correlation between efficacy of asthma control and quality of life in asthmatic patients shows a significant correlation between self-efficacy and all dimensions of quality of life. Also, (28) who studied asthma control on the basis of stress, locus of control, and self-efficacy in patients with asthma show at their results that there is a positive significant relationship between asthma control and self-efficacy. But these results are inconsistent with (29) who studied the impact of self-efficacy on asthma management amongst older Australian adults, and stated that people who reported high physical or emotional self-efficacy were more likely to report better health and quality of life but neither physical nor emotional self-efficacy are significantly correlated with asthma self-management strategies. This result could be related to interrelationship between our body of knowledge and practice with better physical and psychological health that translated into high efficient self-efficacy and QOL.

VI. Conclusion

On the basis of these results, the self-management program introduced by this study has been demonstrated a beneficial addition to toddler and adult asthmatic patient self-efficacy and QOL regimen.

VII.Recommendations

The present study recommends that nursing staff should acquire perceptive knowledge of self-efficacy skills and apply its concept in clinical practice to fulfill the patients' satisfaction and independence in self-management. Also, nursing staff should promote asthma education program to help patients understand asthma to control their Qol with high self-efficacy.

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