Patients with Bronchial Asthma: Effect of Self Management Program on Knowledge, Practice, and Self Efficacy

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Abstract

Background: Bronchial asthma is a serious health problem worldwide ،it is a major cause of patients' disability and in rare cases causes sudden death; asthma morbidity and mortality are largely preventable when patients and their families are adequately educated about the disease and have access to high quality of care. **Aim:** This study aimed to develop ، implement and evaluates the effect of self-management program on knowledge ،practice and self-efficacy for patients' with bronchial asthma. The research hypotheses were that implementation of self management program will improve the knowledge ،practice and self efficacy. **Methods**: **Design:** A quasi-experimental research design was used with pre-post and follow up assessment of outcome ،It involve four steps; pre self management program assessment ،self management implementation ،post ،and follow up assessment. The study was conducted at Chest Outpatient Clinic at El Kaser Al-Eini Hospital ،started April 2013 and was completed by October ،2013. **Sample:** The study was carried on (130) a purposive sample of asthmatic adult patients with bronchial asthma based on selected criteria. **Tools:** Four tools were used for data collection ،1) Patients' Socio-demographic Characteristics and Clinical Data Sheet ،2) Arabic questionnaire for patient' knowledge ،3) Checklist to assess patients practices ،4) Self Efficacy Scale ، **Results:** The study revealed that there were a statistically positive significant difference between total knowledge ،total practice ،and total self-efficacy pre/post and follow up self-management program. **Conclusion:** The study concluded that the studied patients have a higher mean knowledge, practice, and self efficacy scores post self management program. **The study recommended** further study have to be carried out in order to assess the effectiveness self management program on patients' adherence to the prescribed therapeutic management.

Introduction

Bronchial asthma (BA) is a chronic inflammatory disorder of the airways associated with hyper-responsiveness, reversible airway limitation, and respiratory symptoms. It is the most common chronic lung disease in both the developed and developing countries. **(Kumar, Jose, & Naveen, 2011).**

According to **National Heart, Lung, and Blood Institute, NHLBI (2013),** Asthma is widely known as a multifactorial respiratory disorder with both genetic and environmental underlying risk factors. Exposure to common allergens and indoor and outdoor air pollution from various sources has all been implicated as triggers of the disease. Second hand tobacco smoking, viral infections, upper respiratory tract infections and "common cold", are also common risk factors·

patient with asthma may experience numerous of health problems include, wheezing, coughing, and being unable to catch his breath, anxious, and depressed, with feeling of helplessness, and also, many factors have been identified as possible causes of the increase morbidity and mortality of asthma, including poor patient understanding of the disease process,

appropriate medication use, and noncompliance to prescribed regimens. So, patient education is an essential component of successful asthma management because it is the mechanism through which patients acquire knowledge and skills to accomplish those tasks successfully **(Gibson, McDonalad, & Mark, 2010).**

Self-management education (SME) refers to inter active educational interventions specifically designed to enhance patient self-management. Self-management education is patient driven and focuses on building generalizable skills such as goal setting, decision making, problem solving, and self-monitoring (**Ryan, 2009; Ige, Falade, & Arinola, 2013; Budhwani, 2013).**

Self efficacy has been defined as: people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self efficacy beliefs determine how people feel, motivate themselves and behave. Such beliefs produce these diverse effects through four major processes. They include cognitive, motivational, affective, and selection process **(self-Management Science Center Working Group, 2011; Budhwani, 2013).**

Measurement of self-efficacy is helpful for planning patient education program. There are four main sources of self-efficacy mastery experiences; vicarious experience; verbal persuasion; and the final source is physiological feedback, produced by an individuals' own physiological state. Measurement of changes in self-efficacy over time is important to evaluate the impact of patient self-management education programs, and detect individual difference between patients **(Simpson & Jones, 2013).**

The nursing goal in SME is to empower patients with knowledge and skills necessary to reach optimal safe performance of self-management and maximum

independence to improve health outcomes, and increase patient satisfaction. Components of self-management include information about asthma etiology, pathophysiology, precipitating factors, treatment of a disease, training skills in asthma management, self- monitoring, & written action plan **(Merghani, Zaki, Ahmed, & Toum, 2011).**

Significance of the Problem

Asthma is a serious global health problem. People of all ages in countries throughout the world are affected by this chronic airway disorder that, when uncontrolled, can place severe limits on daily life and is sometimes fatal. An estimated 300 million people worldwide suffer from asthma, with 250,000 annual deaths attributed to the disease. Workplace conditions, such as exposure to fumes, gases or dust, are responsible for 11% of asthma cases word wide. About 70% of asthmatics also have allergies. It is estimated that the number of people with asthma will grow by more than 400 million by 2025. Asthma accounts for approximately 500,000 hospitalizations each year, asthma account for about 10.1 million missed work days for adults annually. The annual economic cost of asthma is $19.7 billion **(world Health Organization, 2013)**.

In Egypt, asthma prevalence in adults is around 7-8% of the total population and air pollutants, smoking cigarettes, water pipes, or shisha, sandstorms and repeated attack of respiratory tract infection have been identified as key asthma trigger. Much of morbidity from asthma is due to factors such as denial of having a chronic condition, poor knowledge of the disease process and medication use, poor understanding on the use of inhalers and poor self-management. Numerous studies worldwide have evaluated the impact of patient education and indicated that each of the above components is amenable to asthma education. The reason of conducting this study was also due to that the researcher through her experience in

chest department found that patients with bronchial asthma suffer from debilitating fatigue, loss of body function, low of self esteem, lack of knowledge related to the disease, poor misconception and beliefs toward BA, and depression which affects disease progression. So, patient education has become a key component of asthma management for asthma patients at all age groups **(Ministry of Health & Population MOHP, 2014).**

Aim of the Study

Developing, implementing and evaluating the effect of self-management program on knowledge, practice and self efficacy for patients' with bronchial asthma.

Research Hypotheses

It is hypothesized that the implementation of self management program will improve the knowledge, practice and self efficacy of patients with bronchial asthma.

Subjects and Methods
1-Technical design:
Research Design:

A quasi-experimental research design was used with pre-post and follow up assessment of outcomes.

Setting:

This study was conducted at the chest outpatient clinic at El Kaser Al-Eini Hospital affiliated to Cairo University.

Subjects:

A Purposive sample size was determined considering the total number of patients presented outpatient clinic at El Kaser Al-Eini Hospital year 2010. Power analysis indicate that 130 patients would be enough to assess effect of self management program on knowledge, practice, and self efficacy of patients with bronchial asthma, at the previous setting it was one group *(pre, post, and follow up)* on identified criteria were recruited for this study sample.

Technical design:

Data for this study were collected using the following tools:

I- Patients' Socio-demographic Characteristics and Clinical Data Sheet (appendix I):

An Arabic questionnaire sheet based on criteria selection for subjects was filled in by participated patients and by the researcher if the participated patients were illiterate. It contains 5 parts:

- **Part (1)**: It deals with socio-demographic characteristics of the patient under study as regards; age, sex, level of education, social status, occupation, residence and family income and contain 10 items.
- **Part (2):**It is related to patients past medical and family history related to bronchial asthma, duration of present illness, effect of current illness on patients' work, and medications prescription and adherence, grade of disease, factors precipitating, sign and symptoms, diagnostic tests and contains 11 items.
- **Part (3):** It includes data about patient's environment and contains 8 items.
- **Part (4):** It includes data about treatment plan & follow-up and contains 4 items.
- **Part (5):** It includes data about patient's habits as smoking**,** sporting, nutrition, and contains 9 items.

II- Arabic questionnaire for patient's BA knowledge (appendix II)

Developed by the researcher after extensive review of the related literature, includes assessment of patients' BA knowledge related to: definition, precipitating factors, diagnostic studies, clinical manifestations, complications, treatment, ways of control and prevention, action plan, importance of breathing exercise, and dietary instructions. Patients' responses to knowledge questionnaire were checked with model answered and given 1 point if correct and zero if incorrect. The points were summed up and converted into a percent score. The items of this sheet were constructed, by the researcher based on review of literature under guidance of

supervisors **Timby & Smith, (2003***); **Black & Keene, (2004); Nettina, (2006); Monhan, et al., (2007); WHO, (2010***).

❖ **Scoring system of patients' bronchial asthma knowledge:**

For each area of knowledge the scores of the items were summed-up and the total divided by the number of items, giving a mean score for the part. These scores were converted into a percent score, and then means and standard deviations were computed. Knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60%.

III- Checklist to assess BA patients practices:

These checklists aimed to assess patient's practice regarding: deep breathing, diaphragmatic, pursed lip breathing, how to use incentive spirometry, nebulizer and inhaler therapy. It was adapted from (**Lewis, et al., 2004**; **Berman & Nosek, 2007**). These checklists were used for program assessment and post program evaluation. It consists of 5 Performance assessment checklists.

❖ **Scoring system of patients' bronchial asthma practices:**

Subjects were given 1 point if the step was correctly done and zero if not done or incorrect. The points were summed up and converted into a percent score. A total score of 60% or higher was considered adequate practice.

IV- Self Efficacy Scale

It is adapted from **Lorig et al. (2001)** and modified by the researcher. The scale constructed of 6 items to identify how the participated patient with BA were confident in doing certain activities regularly and keep it from interfering with the thing they want to do such as, fatigue. Physical discomfort, emotional distress, symptoms and other health problems, different tasks and activities, and doing things other than just taking medications.

❖ **Scoring system of self-efficacy:**

The self-efficacy scale was scored on a continuous scale from "1" or not at all confident to "10" or totally confident. The scores of the items were summed-up and the total divided by the number of the items, giving a mean score. These scores were expressed in means and standard deviations the higher the score indicate the more of self efficacy.

2- Operational design

It included preparatory phase, content validity, pilot study, and field work.

Preparatory phase:

It included reviewing related current, past, local, international literature covering the various aspects of the problem using books, articles, periodicals, magazines and internet explorer in order to help the researcher to be more acquainted with the problem and develop the tools for data collection.

Ethical considerations:

The necessary official approvals were obtained from the heads of the outpatient departments, and from the general directors of Kasr Al Eini University Hospitals. Letters of request were issued to them from the faculties of nursing at Ain Shams University explaining the aim of the study and its procedures. Before the initial interview, a written consent was secured from each participant subject after being informed about the nature, purpose, and benefits of the study, Patients were also informed that participation is voluntary and about their right to withdraw at any time without giving reasons. Confidentiality of any obtained information was ensured through coding of all data. The researcher reassured patients that the data will be used only to improve their health and for the purpose of the study.

Tools validity and reliability:

For content validity it was established by a panel of (7) expertise's from nursing and medical staff members were

given a list of objectives and questionnaire and then, using a checklist was asked to the rate degree to which the questions match the objectives. As follow clarity, relevance, comprehensiveness, and understanding and according to their opinion, some modification on the tool was done. **Tools were statistically tested for reliabilit**y by using Cronbach's Alpha Coefficient statistical test the result of the test was acceptable for all studied tools.

Pilot study:

A pilot study was conducted on 10% of adult patients' with bronchial asthma under study selected from the same study settings to check and ensure the clarity, applicability, and relevance of the tools, to identify any difficulties with their application, and to test the availability of the tools. Modifications of the tools were done according to pilot results to reach to the finalized form. Subjects who shared in the pilot study were not included in the main study sample.

Fieldwork:

The actual fieldwork started from April 2013 and completed by October, 2013 and data collection was carried out through six months in the period of beginning the program. It started by interviewing the participant study subjects who agreed to participate in a teaching program at the above-mentioned setting the researcher started by introducing herself to the participant studied subjects. Clarification of the nature and purpose of the study were done. In case of positive verbal answer and agreement to be active participant in the study, the researcher confirmed the willingness of the patients to participate by a few days before the meeting. The patients were divided to groups of 5-10 patients. Also, the researcher assured that the data collected and information will be confidential by using serial number for every patient till the end of data collection.

Program phases:

Phase 1: Preparation of the program:

The researcher coordinated with chest outpatient clinic team in order to control over the source of information. The researcher distributed the patients to groups and each group contain from 5 to 10 patients was chosen from outpatient chest clinic at Al -Kasr El-Ani Hospital affiliated to Cairo University, Follow up also, was performed in the outpatient clinic for each group every month. The total number of session was 8 sessions (4) for theory and (4) practice; each time took about 45 minutes (about 3hours theory & 3 hours practice, of total 6 hours.

Phase 2: implementation phase:

The researcher attended at chest clinic from 9.00 a.m. to 12.00 p.m., every Monday. Patient consent for participation was obtained after explaining the purpose of the study. Then the researcher started the interviewing process, which lasted for about 45 minute. About 10 subjects were interviewed per time by using the data collection tools. After completing the filling of the sheets, the researcher reviewed every point in each sheet in front of the patient to be sure that no points are missed. Based on actual educational needs assessment of the patients and guided by relevant literature, the researchers developed the self-management program which included theoretical background about asthma definition, types, triggers, signs and symptoms, diagnoses, prevention, medical management and self-management guidelines, as well as compliance and follow-up schedule.

The theoretical part was presented in 4 sessions using different teaching strategies as lectures, discussions, and media as booklet and videos. The program had 4 practical sessions that involved demonstration and redemonstration on steps for using the inhaler, nebulizer therapy, diaphragmatic deep breathing, mouth-lip

breathing, and using incentive spirometry.

Moreover, colored booklets were designed by the researchers and distributed to each patient or accompanying relative. Teaching was carried out in groups of patients by the researcher with one of their family member to help in following the program at home. During the (4) practical sessions, each patient was assessed in performing the prescribed procedure. The observation checklist was filled by the researcher. The patient was asked to practice alone or with another patient.

Phase 3: Evaluation of the program.

The evaluation of the program' effect was carried out using the afore mentioned tools. Each patient was evaluated three times during the study: immediately upon presenting to the outpatient asthma clinic (pre-test), immediately after implementation of the self -management program (post-test), and two months after implementation of the program (follow-up).

III- Administrative design:

The necessary official approvals were obtained from the heads of the outpatient department, and from the general directors of Kasr Al Eini University Hospitals. Letters of request were issued to them from the Faculties of Nursing at Ain Shams University explaining the aim of the study and its procedure.

V- Statistical design:

To achieve that, the data collected were analyzed by using tests of significance of frequency and percentage distributions and changes occurred were obtained for the variables. The statistical analysis was performed using the statistical package for social sciences (SPSS) program, version 15 for windows Data Editor, and Microsoft Excel 2007.

The collected data were organized, categorized, tabulated, and statistically analyzed to evaluate the difference between pre and post program regards the various parameters. The statistical significance and associations were assessed using the arithmetic mean (X^-), the standard deviation (SD) and the chi-square test (X^2).

Comparison was done between the total score of the pre-test and post-test of the different items obtained by patients with bronchial asthma using t-test, chi-square (X^2). And P value was used to determine the relation between patients' knowledge, practice, self efficacy, and socio-demographic characteristics.

Presented using descriptive statistic in the form of frequencies and percentages for qualitative variables, means and standard deviation for quantitative variables, qualitative variables were compared using chi-square test, while quantative variables were compared using independent T-test. Statistical significance was considered at P value < 0.05.

Limitation of the study:

Some participant subjects discontinued the follow-up period and were excluded from the study sample.

Results:

Table (I): describes socio-demographic of studied patients sample, this table showed that the mean age of studied sample was (39.2%). Concerning sex, slightly more than half (53%) of patients are females, and (62%) are married. As regards patient's educational level, more than one third (37%) of the studied sample were educated secondary and university, slightly less than one third (31%) of patients are read and write, while (22%) are illiterate. As for occupation more than one third (42%) of patients are manual workers.

Table (2): showed socioeconomic characteristics of the studied patients' sample. As regards residence, less than two thirds (60%) of patients live in urban areas,

while more than one third (40%) are living in rural areas. The most (95%) of the sample has insufficient income to satisfy their basic needs, while (5%) of them have sufficient income. Regarding disease effect on work/school attendance nearly two third (65%) of study sample their work/ school attendance affected by BA disease.

Table (3): regarding the difference between pre, post, and follow up test mean scores of knowledge related to general knowledge, medication, self management, and total knowledge. there were a statistically significant differences between mean scores of the pre, post, and follow up tests of knowledge for the study groups (p<0.001).

Table (4): illustrated the difference between pre, post, and follow up mean scores of practice as regard to administering metered dose inhaler, administering dry powder inhaler, using nebulizer therapy, performing breathing exercise and spirometer practice was (4.031 ± 1.446), post was (9.623 ± 1.014), and follow up was (7.823 ± 1.903), and total practice. It shows that there were a statistically significant differences between mean scores of the pre, post, and follow up of practices for the studied groups (p<0.001).

Table (5): showed difference between pre, post, and follow up mean scores of total self-efficacy as regard to fatigue, physical discomfort/pain, emotional distress symptoms/health problems, tasks/activity and follow up. It showed that there were a statistically significant differences between mean scores of the pre, post, and follow up of total self-efficacy for the studied groups (p<0.001).

Table (6): as regard relation between socio-demographic characteristics and total knowledge score for the studied patients' group pre, post, and follow up implementation of the self management program. It pointed a positive statistically significant relation between post program knowledge score and educational level, age, residence, occupation, income, duration of disease, and previous health instruction (p<0.001), which means that the educated patients living in urban residence, with sufficient income lead to high score of knowledge.

Table (7): showed relation between socio-demographic characteristics and total Practice for the studied patients' group pre, post, and follow up implementation of the self management program. It pointed a positive statistically significant relation between post program practice score and educational level, age, occupation, and residence, (p<0.001). Which means that the educated patients, age 40-50, manual worker, living in urban area has high score of practice.

Table (8): as regard relation between socio-demographic characteristics and total self-efficacy for the studied patient's group pre, post, and follow up implementation of the self management program. It pointed a positive statistically significant relation between post program self-efficacy score and educational level, age, occupation, and residence, (p<0.001). Which means that the educated patients, age 40-50, manual worker, living in urban area has high score of self-efficacy.

Table (1): Socio-demographic characteristics, of the studied patients' sample (N=130).

Items	Frequency N=130	Percent %
Age:		
• < 30	34	**26.00**
• 30 –	30	**23.00**
• 40 -	36	**28.00**
• > 50	30	**23.00**
Mean = 39.215 ± SD =10.925		
Gender:		
• Male	61	**47.00**
• Female	69	**53.00**
Marital status:		
• Single	27	**21.00**
• Married	80	**62.00**
• Divorced	11	**8.00**
• Widowed	12	**9.00**
Educational level:		
• Illiterate	28	**22.00**
• Read/write	41	**31.00**
• Basic	6	**5.00**
• Preparatory	7	**5.00**
• Secondary	23	**18.00**
• University	25	**19.00**
Occupation:		
• Employee	38	**29.0**
• Manual worker	54	**42.0**
• Unemployed	38	**29.0**

Table (2): Socio-economic characteristics, of the studied patients' sample (N=130).

Items	Frequency N=130	Percent %
Residence		
• **Rural**	52	40.0
• **Urban**	78	60.0
Income as stated by patient		
• **Sufficient**	6	5.0
• **Insufficient**	124	95.0
Effect of disease on regular work/ school attendance		
• **Yes**	**85**	**65.0**
• **No**	**45**	**35.0**

Table (3): Difference between pre/post, and follow up test mean scores of knowledge for the studied patients group.

Items of knowledge		Total practice		
		Mean ± SD	T-test	P value & significance
General BA knowledge	Pre	12.331 ± 3.629	-34.600	<0.001*
	Post	24.208 ± 1.710	-38.061	<0.001*
	Follow up	21.508 ± 1.958	11,845	<0.001*
Medication	Pre	4.446 ± 3.063	-42.706	<0.001*
	Post	17.154 ± 1.197	-44.407	<0.001*
	Follow up	15.385 ± 1.449	10.812	<0.001*
Self management	Pre	4.862 ± 2.149	-19.238	<0.001*
	Post	8.385 ± 0.534	-54.960	<0.001*
	Follow up	14.515 ± 0.638	-87.262	<0.001*
Total	Pre	21.600 ± 7.890	-40.395	<0.001*
	Post	49.731 ± 2.803	-55.888	<0.001*
	Follow up	51.392 ± 3.084	-4.665	<0.001*

(*) Statistically significant at p<0.001

Table (4): Difference scores of practice pre/post, and follow up self management program for the patients studied group.

Items of practice		Total practice		
		Mean ±SD	T-test	P value & significance
Metered dose inhaler	Pre	6.831±1.938	-30.419	<0.001*
	Post	12.000± 0.000	-30.537	<0.001*
	Follow up	11.908 ± 0.421	2.498	0.014*
Dry powder inhaler	Pre	4.008 ± 1.279	-44.419	<0.001*
	Post	8.977 ± 0.196	-40.054	<0.001*
	Follow up	8.785 ± 0.557	3.664	<0.001*
Nebulizer therapy	Pre	4.762 ± 1.724	-30.029	<0.001*
	Post	10.592 ± 0.962	-25.921	<0.001*
	Follow up	9.292 ± 1.332	9.334	<0.001*
Breathing exercise	Pre	1.608 ± 2.029	-39.552	<0.001*
	Post	8.962 ± 0.230	-37.008	<0.001*
	Follow up	8.685 ± 0.890	3.586	<0.001*
Using spirometer	Pre	4.031 ± 1.446	-33.215	<0.001*
	Post	9.623 ± 1.014	-18.650	<0.001*
	Follow up	7.823 ±1.903	9.041	<0.001*
Total	Pre	21.238±6.275	-46.190	<0.001*
	Post	50.154 ± 1.870	-44.944	<0.001*
	Follow up	46.492±3.143	11.599	<0.001*

(*) Statistically significant at p<0.001

Table (5): Difference scores of self efficacy pre/post, and follow up self management program intervention for the studied patients group.

Items of self efficacy		Total practice		
		Mean ± SD	T-test	P value & significance
1-Fatigue	Pre	2.746±1.343	-44.489	<0.001*
	Post	8.077± 0.794	-34.738	<0.001*
	Follow up	6.854 ±0.636	16.646	0.014*
2-Physical discomfort/pain	Pre	3.385 ± 1.088	-47.786	<0.001*
	Post	8.023 ±0.698	-35.313	<0.001*
	Follow up	7.008 ± 0.665	15.500	<0.001*
3-Emotional distress	Pre	3.577 ± 1.193	-40.319	<0.001*
	Post	8.231 ± 0.773	-34.728	<0.001*
	Follow up	7.200 ± 0.848	11.993	<0.001*
4-Symptoms/health problems	Pre	3.646 ± 1.225	-41.323	<0.001*
	Post	8.223 ± 0.685	-31.301	<0.001*
	Follow up	7.185 ± 0.568	14.778	<0.001*
5-Tasks/activity	Pre	3.923±1.001	-45.914	<0.001*
	Post	8.092 ± 0.741	-38.606	<0.001*
	Follow up	7.377±0.739	8.978	<0.001*
6-Do thing/medication	Pre	3.692±1.167	-42.327	<0.001*
	Post	8.800 ± 0.715	-31.833	<0.001*
	Follow up	7.269±0.755	10.886	<0.001*
Total	Pre	20.969±5.581	-59.047	<0.001*
	Post	48.646±3.448	-46.729	<0.001*
	Follow up	42.829±2.958	19.111	<0.001*

(*) Statistically significant at p<0.001

Table (6): Relation between socio-demographic characteristics and total knowledge score for the studied patients group.

		Total knowledge		Test	
		N	Mean+ SD	F/t	P-value
Gender	Male	61	21.738 ± 8.070	0.186	0.852
	Female	69	21.478 ± 7.785		
Age	<30	34	21.794 ± 7.942	21.385	<0.001*
	30-40	30	28.167 ± 7.879		
	40-50	36	21.667 ± 5.777		
	>50	30	14.733 ± 3.062		
Marital status	Single	27	22.259 ± 8.886	1.743	0.162
	Married	80	22.350 ± 8.279		
	Widow	11	18.273 ± 3.797		
	Divorced	12	18.167 ± 3.010		
Educational level	Illiterate	28	15.643 ± 3.955	75.783	<0.001*
	read/write	41	18.317 ± 4.083		
	Basic	6	19.667 ± 4.131		
	Preparatory	7	21.286 ± 1.604		
	Secondary	23	20.609 ± 4.251		
	University	25	35.120 ± 4.045		
Occupation	Employee	38	17.368 ± 4.302	61.888	<0.001*
	Manual worker	54	18.556 ± 4.479		
	Unemployed	38	30.158 ± 7.917		
Residence	Rural	52	18.404 ± 3.717	-3.982	<0.001*
	Urban	78	23.731 ± 9.146		
Income	sufficient income	6	36.667 ± 1.033	5.261	<0.001*
	insufficient	124	20.871 ± 7.324		

(*) Statistically significant at p<0.001

Table (7): Relation between socio-demographic characteristics and total Practice for the studied patients group.

			Total Practice	Test	
		N	**Mean + SD**	**F/t**	**P-value**
Gender	Male	61	20.328 ± 6.643	-1.564	**0.120**
	Female	69	22.043 ± 5.862		
Age	<30	34	22.235 ± 6.015	11.072	**<0.001***
	30-40	30	25.567 ± 8.516		
	40-50	36	19.611 ± 3.827		
	>50	30	17.733 ± 2.690		
Marital status	Single	27	22.593 ± 6.606	0.576	**0.632**
	Married	80	21.013 ± 6.530		
	Widow	11	20.545 ± 1.809		
	Divorced	12	20.333 ± 6.569		
Educational level	Illiterate	28	17.357 ± 2.392	68.264	**<0.001***
	read/write	41	19.024 ± 4.269		
	Basic	6	21.000 ± 1.549		
	Preparatory	7	18.714 ± 5.345		
	Secondary	23	18.957 ± 2.078		
	University	25	32.080 ± 2.827		
Occupation	Employee	38	19.711 ± 4.191	46.211	**<0.001***
	Manual worker	54	17.944 ± 3.062		
	Unemployed	38	27.447 ± 6.962		
Residence	Rural	52	18.865 ± 3.694	-3.689	**<0.001***
	Urban	78	22.821 ± 7.113		
Income	sufficient income	6	36.000 ± 1.549	6.878	**<0.001***
	insufficient	124	20.524 ± 5.482		

(*) Statistically significant at p<0.001

Table (8): Relation between socio-demographic characteristics and total self- efficacy for the studied patients group.

			Total Self-Efficacy Scales	Test	
		N	**Mean + SD**	**F/t**	**P-value**
Gender	Male	61	20.311 ± 5.204	-1.266	**0.208**
	Female	69	21.551 ± 5.870		
Age	<30	34	20.000 ± 5.152	6.840	**<0.001***
	30-40	30	24.467 ± 6.350		
	40-50	36	20.917 ± 5.997		
	>50	30	18.633 ± 2.282		
Marital status	Single	27	20.000 ± 5.805	2.486	**0.064**
	Married	80	21.950 ± 5.972		
	Widow	11	19.091 ± 0.831		
	Divorced	12	18.333 ± 2.902		
Educational level	Illiterate	28	17.250 ± 1.917	23.130	**<0.001***
	read/write	41	18.976 ± 2.340		
	Basic	6	18.667 ± 1.033		
	Preparatory	7	20.429 ± 0.535		
	Secondary	23	21.870 ± 6.107		
	University	25	28.280 ± 6.235		
Occupation	Employee	38	18.842 ± 1.966	42.573	**<0.001***
	Manual worker	54	18.611 ± 3.194		
	Unemployed	38	26.447 ± 6.821		
Residence	Rural	52	18.154 ± 2.420	-5.138	**<0.001***
	Urban	78	22.846 ± 6.275		
Income	sufficient income	6	24.667 ± 5.164	1.673	**0.097**
	insufficient	124	20.790 ± 5.557		

(*) Statistically significant at p<0.001

Discussion

Regarding to the socio-demographic characteristics of patients, findings of the current study revealed that less than one third of the of the total sample their age ranged between 40-50 years, unfortunately, at this age, of this disease, of middle adulthood, characterized by work and being productive persons for both the family and society which affect on their production and their income. In addition, many patients at this age have a poor prognosis, with a faster decline in lung function and more severe persistent airflow limitation which affect on self management outcome **(Nijs, Venekamp, and Bel, 2013)**.

These results disagree with **Taha & Ali (2011),** who reported that, the disease affects adults and less than half of cases occur among the age groups of 40- 54 years. It also, the results contradicted with **Manchana & Nahal, (2014),** who mentioned that BA incidence rates shows that more than one third were in the age group of 21 - 30 years. The current study also revealed that there is a positive statistically significant relation between age, total knowledge, total practice, and total self efficacy.

As regards gender distribution, the present study sample revealed that, more than half of the sample was female. This finding is agree with **Holland, (2014),** who reported that gender, has an impact on the disease and its control and female patients are higher incidence of BA than men. This result also is supported by **Kynyk, Mastronarde &McCallister (2011),** who reported that asthma was 20% more frequent in females than in males over the age of 35 years. The difference of sex distribution for BA might be attributed to obesity and hormonal fluctuations around the menstrual cycle, behaviors, socioeconomic status, or due to BA under diagnosed or under reported in men. Teaching women with

asthma how to be partners in asthma management and the correct use of both preventive and rescue drugs remains a nursing priority in improving the outcomes of the disease.

Regarding to patients' educational level, the current study results revealed that, less than one third of patients are read and write while more than one third were educated secondary and university graduates. This finding demonstrates that, bronchial asthma can occur in less educated patients as well as highly educated. These findings incongruent with **Rifaat, Abdel-Hady, & Hasan (2013),** who stated that, less than half of patients with bronchial asthma, were university educated.

As regards occupation, the present study showed that, less than half, of patients were manual workers as painter, carpenter, this finding reflects that they are exposed to environmental air pollution at work place which increasing the risk of bronchial asthma for adults. This result also may be due to the life style and attitude of manual worker as smoking, drug addict and lack of awareness about disease management. This result is contradicted with **Manchana & Mahal (2014),** who stated that, more than one third of patients in the study were employed.

Concerning to residence, the study findings showed that the urban area groups had higher incidence of BA than those living in rural areas. These results are supported by that of **Zhang et al. (2011),** who stated that, the highest notification rate are found among urban residents compared with rural areas. This reflects that, the populations of urban areas are more exposed to BA because of overcrowding and environmental outdoor air pollution may be a main reason for this phenomenon. A higher concentration of harmful gas and fine particular matter is present in outdoor air in urban area than rural. The present study also revealed that,

most of the total sample had insufficient income to satisfy their basic needs. These results incongruent with **Taha & Ali (2011),** who reported that, the highest occurrence of having any family history of asthma was observed in the high class group**.**

The findings indicate that all of the patients' total knowledge was unsatisfactory before implementation of self management program. The worse knowledge was regarding self management items. This lack of knowledge can be attributed to the lack of educational programs and unavailability of information resources about the disease and its effect. It reflects a deficiency in providers' educational role. After implementation of the program, patients' knowledge demonstrated significant improvement; this asserts the assumption that the lack of knowledge was due to lack of educational activities provided to the patients', and indicate the meeting of the patient information needs would fill this gap of knowledge. In patients' knowledge, this improvement persisted during the follow-up period with no decline in any of the areas of knowledge. This result was widely close to **(Manchana1, & Mahal, 2014)**who reported that, the mean knowledge scores were higher post program and all the follow up visits as compared to the baseline.

In agreement with this**, Rai et al. (2012)** mentioned that the asthmatic patient needs knowledge about the disease process, precipitating factors, treatment, preventive measures, and guidelines for self-care and use of ventilator aids. This further highlights the importance of developing and implementing self management educational program for increasing patient's knowledge about management of asthma attack in order to maintain health and prevent complications**.**

Investigating the relationship between patient knowledge and socio-demographic characteristics toward bronchial asthma the present study finding indicated that, there were statistically significant associations between knowledge and demographic characteristics, a positive statistically significant relation between post program knowledge score and educational level, age, and urban residence. However, no statistically significant relation was found between males and females. This finding may be explained as unsatisfactory knowledge was common among illiterate patients, who cannot find work and with low income. So, better education means better occupation, enough income, and more health. These results are congruent with those of **Chang et al. (2010),** who reported that, there was a significant relation between knowledge and educational level, age, and also the found that males had more satisfactory knowledge than females

As regard patients' practices related to asthma have also improved after implementation of the present study self-management program. The improvement has even been sustained after a two-month follow-up. This improvement involved performing breathing exercises. This success of the program may be attributed to the fact that the procedures were practiced under supervision and guidance of the researcher with demonstration and re-demonstration using real objects. This in agreement with **Msihali et al (2011)** who emphasized the importance of training and reinforcing correct technique before patients' are discharged home, with provision of written asthma action plan.

As detected from this study, results regarding to the relation between total practice and some variables in the study group pre, post, and follow up implementation of the self management program. It pointed a positive statistically significant relation between post program practice score and education level, age, occupation, and residence, (p<0.001). Which means that the educated patients, age 40-50, manual worker, living in urban area has high score of high score of practice.

While ***Taha & Ali (2011)*** contradicted with these results, as they report that patient's age, sex, education, residence, and duration of illness had no influence.

Concerning total self efficacy pre, post, follow-up intervention of self-management program, there was highly statistically significant difference between total self efficacy pre, post, and follow-up self- management program. This might be due to patient self-confidence is built on the vicarious experience and verbal persuasion which plays an important role in providing self-motivation and adjusting self-behavior.

Conclusion

There is significant difference in the pre-test and post-test knowledge scores, which show that exposure to educational intervention, has significant effect in improving the individual subject's knowledge. Present study shows that the knowledge level of asthma patients regarding the self management of asthma shows that there was a significant raise in the overall performance, which shows that exposure to structured asthma education on knowledge and practices further motivate and bring modifications in the behavior of the individuals, which can be utilized to get control over asthma and to reduce frequency of acute attacks. Overall, the study has indicated that there is statistically significant difference between total knowledge, total practice, and total self efficacy pre/post//follow up self management program. Accordingly, the studied patients have a higher mean knowledge scores post self-management program, a higher mean practices scores and a higher mean self efficacy scores post self-management program

Recommendations:

- Further studies have to be carried out in order to assess the effectiveness self management program on patients' adherence to the prescribed therapeutic management.
- An illustrated instruction booklet in simple language concerning bronchial asthma self management is to be designed and distributed in chest outpatient clinics.
- Nursing staff acquire perceptive knowledge of self efficacy skills and supply the concept of self efficacy intervention in clinical practice to fulfill this essential nursing function.

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