

Effect of Implementing Respiratory Guidelines on Asthmatic Patients

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Abstract

Background: Asthma is a common health problem lead to impaired quality of life and disability **Aim:** Was to evaluate the effect of implementing respiratory guidelines on asthmatic patient. **Subjects and Method: Design:** A quasi-experimental study was conducted at Chest Intensive Care Unit at Tanta University Hospitals. **Subjects:** Purposive sample of 60 adult patients with asthma and divided into two equal groups 30 patients in each group. **Group 1**(study group) and **group 2** (control group). **Tools of the study:** Two tools were used **tool (I) Structure Interview Schedule, Tool II Respiratory functions assessment sheet. Results:** There was a statistical significant improvement in the level of patients knowledge about asthma ,the majority of study group (83.3%) improved to mild persistent asthma, the majority (96.7%) of the study group changes from abnormal breathing sound to clear sound, more than two third (70%) of study group improved in dyspnea scale to first grade. **Conclusions:** The results concluded that implementation of respiratory guidelines associated with a significant improvement in the total mean scores of patients' knowledge, asthma severity and spirometry readings in study group rather than control group **Recommendations:** It was recommended to consider respiratory guidelines when planning a routine care for asthmatic patient , apply the respiratory guidelines on a larger probability sample acquired from different geographical areas in Egypt for generalization.

Key words: Respiratory practice, Guidelines and Asthma

Introduction

Globally, asthma is one of the most prevalent non-communicable diseases ⁽¹⁾. It is one of the most common causes for Intensive care units admission for medical care ⁽²⁾. It is an incurable disease of the airways which differ in frequency and severity from person to person ⁽³⁾. Across the world, asthma is a highly prevalent disease it has been estimated 262 million people are suffering from asthma currently and there were 461000 deaths because of asthma according to the latest World Health Organization in 2019, may be living with asthma by 2025 ⁽⁴⁾.The World Health Organization (WHO) estimates about 250 000 deaths from asthma every year mainly in low and middle income countries ⁽⁵⁾. In Egypt, asthma is estimated to be 6.7% among adults ⁽⁶⁾.

The causes of asthma are not very clear and unknown yet, but environmental factors can play a main role and it can be inherited and run-in families as well ⁽⁷⁾. Scientists are still discovering and exploring what exactly causes asthma, but some known important factors in the development and progressing of asthma which is genetics, allergies, respiratory infections, and environment ⁽⁸⁾. Some common asthma triggers such as dust mites, smoking, stress, environmental and allergens, perfume smell, pillows, outdoor air pollution, exercise, pets, flu, and humidity, these triggers differ from one person to another ⁽⁹⁾.

Respiratory clinical guidelines provide nursing staff with evidence-based guidance for practice, clinical guidelines also provide an opportunity to identify the knowledge and

technical and non-technical skills required by respiratory ward-based registered nurses⁽¹⁰⁾.

The common technical skills identified in the majority of guidelines to improve asthmatic patient outcomes⁽¹¹⁾. Include assessing the physiological status of the patient through pulse oximetry, hemodynamic parameter, lung function, respiratory rate, heart rate, lung function using spirometry and peak flow tools, oxygen delivery devices, arterial blood gases, sputum assessment, and administration of intravenous and drug therapy⁽¹²⁾.

The non-technical skills relate to the delivery of care planning and education support to patient and family⁽¹³⁾. Therefore, the core areas in the guidelines reviewed that are patient focused on understanding, teaching and learning techniques; counseling patients to change behaviour and organizational and management skills for the delivery of care. In addition to patient related non-technical skills, professional development of ward-based nurses may include training associated with the implementation of new respiratory monitoring equipment and new standards for practice in clinical guidelines⁽¹⁴⁾.

Significance of the study

Asthma is one of the most common causes for intensive care units admission for medical seeks each year⁽²⁾. The World Health Organization (WHO) estimates about 250 000 deaths from asthma every year mainly in low and middle income countries⁽³⁾. In Egypt, asthma is estimated to be 6.7% among adults⁽⁴⁾. The nurses on the hospitals don't concern with respiratory practice guidelines so that it is important to implement respiratory guidelines of asthmatic patient to help patients improve their condition.

The aim of the study

Was to determine the effect of implementing respiratory guidelines on asthmatic patients

Research hypothesis:

Asthmatic patients who are managed by respiratory guidelines expected to have improvement in pulmonary function.

Subjects and Method

Research design: Quasi- experimental research design was utilized in this study

Setting: The study was conducted at Chest Intensive Care Unit affiliated to Tanta University Hospitals, Gharbia governorate, Egypt. The capacity of this settings was (15) beds.

Subjects: Purposive of 60 adult patients with diagnosis of asthma were selected based power analysis calculation on software program, and was divided into two equal groups (30) patients in each as follow.

Group I (study group) received care with respiratory practice guidelines of asthma beside hospital routine care.

Group II (control group) received hospital routine care for patients with asthma.

Inclusions criteria

- Adult as both sexes (18-60years).
- Newly admitted patients within 24 hours.
- Patient who able to communicate.
- Patient with moderate asthma grade.

Tools of data collection:

Two tools were used in this study to collect data related to study.

Tool 1 Structure interview schedule

This tool was developed by the researcher based on relevant literature review^(15,16) to assess asthmatic patients and consisted of three parts.

Part (1) Patient's Socio-demographic Characteristics

It included data regard age, sex, marital status, educational level, occupation and residence.

Part (2) Medical History Questions⁽¹⁵⁾

This part included previous and current patient history regarding asthma attack.

Part (3) Patients knowledge assessment sheet about asthma⁽¹⁶⁾ as; basic knowledge about bronchial asthma, actions of medication in bronchial asthma control, measures to control worsening bronchial asthma, measures to minimize exposure to asthma triggers, the appropriate use of metered dose inhaler and the accurate use of *Peak expiratory flow ratemeter*.

Scoring system:

Three level of scoring for questions were used; Correct and complete answer scored (2), Correct and incomplete answer scored (1) and incorrect and don't know scored (0)

Total scores of patients' knowledge score was classified as follow;

High knowledge scores (75 -100%), fair knowledge scores (65->75%) and low scores (< 65%).

Tool II Respiratory functions assessment sheet

This tool was developed by the researcher based on relevant literature review and consisted of four parts to assess severity of asthma, pulmonary functions and dyspnea^(20,21).

Part (1) Cardio Pulmonary Parameters It included vital signs, breathing sound and spirometric function.

Part (2) The Asthma Severity Assessment Scale developed by Japanese guidelines for adult asthma (2017)⁽¹⁷⁾ to assess asthma severity.

Part (3) Medical Research Council (MRC) Dyspnea Scale

Developed by the Global Initiative for Chronic Obstructive Pulmonary Disease (2012)⁽¹⁸⁾. To assess the severity of dyspnea and graded the effect of dyspnea on daily activities using a MRC grading scale from 1-5.

Part (4) Arterial blood gases (ABGs)

METHOD:

The study was accomplished through the following steps:

1. Administrative process

1. An official approval from the faculty of Nursing was delivered to the appropriate authorities in the selected area to conduct the study.

Permission to conduct the study was obtained from the director of Chest Intensive Care Unit at Tanta University Hospitals

2. Ethical and legal consideration:
Approval from ethical comity to conduct this study.

- Informed consent was obtained from every conscious patient included in the study

after explanation the aim of the study and assuring them of the confidentiality of collected data.

- Confidentiality was maintained by the use of code number instead of name and the right of withdrawal is reserved. Privacy of the studied patients was maintained.

3. Tool development

All Tools were developed in Arabic except tool II (part 4) after reviewing recent literature and then tested for content and construct validity by a jury of five experts in the Critical Care Nursing, biostatistics and Medical surgical Nursing.

4. Content validity

All tools of the study were tested for content validity by the jury of 5experts in the field of Critical Care Nursing, Biostatistics and Medical-Surgical Nursing.

5. Reliability

Alpha Cronbach's test was used to test tool I reliability and reliability factor was Part (2) Medical History was 0.846, part (3) Patients knowledge assessment was 0.861.

Alpha Cronbach's test was used to test tool II reliability and reliability factor was Part (1) Cardiopulmonary Parameters was 0.825, part (2) The Asthma Severity Assessment Scale was 0.839, part (3) Medical Research Council (MRC)Dyspnea Scale=0.823.

1. A pilot study:

A Pilot study was conducted on (10%) from patients to the clarity, feasibility and applicability of the tools

2. Data collection

3. The collection of the data for the present study was carried out within the period from April 2021to October 2021.

4. The present study was conducted through four phases (assessment, planning, implementation and evaluation)

1. Assessment phase

Assessment of the baseline data for asthma carried out for patients of both groups study and control after admission using all tools by the researcher to assess the patients who meet the inclusion criteria and will be included in the study.

The assessment phase includes the following:

- A purposive sample of 60 patients with asthma who fulfilled including criteria were selected and divided into two equal group 30 patients in each group. Group 1 (study group), group 2 (control group)
- Assessment of the studied patients of both groups study and control by using **tool 1 part (1), part (2), part (3) and tool ii.**

2. Planning phase

- This phase was formulated based on data from the assessment phase, literature review priorities, goals and expected outcome criteria
- When planning of patient care was put in consideration improve knowledge and respiratory function for patients.

Expected out comes

- Patients had an improvement in his or her knowledge, ABG, respiratory function, asthma severity scale and dyspnea.
- **The planning phase:** Include preparation of the content of teaching plan that was given to the patient by the researcher and preparation of the environment specified to educational program.
- **Preparing the content of the protocol of care for asthmatic patients** It was prepared by the researcher according to respiratory practice guidelines

3. Implementation phase

The researcher implemented the respiratory practice guidelines for patients of study group daily for a week that include the following

1) Monitoring of asthmatic patient⁽¹⁹⁾

Assess the patient's vital signs specially respiratory rate and heart rate, breath sounds via auscultation for wheezing, *measure* amount of oxygen in blood , lung function using spirometry, examine the skin for signs of allergic conditions, collect blood for testing ABG. This monitoring was three times on admission, after three days and post one week post implementation of respiratory guidelines.

2) Aeration interventions⁽²⁰⁾ included the following; positioning in upright position if tolerated , or elevated the head of the bed greater than 30 degree ,safe administration of

humidified oxygen via a face mask , proper using of Continuous Positive Airway Pressure (CPAP), safety method of administration nebulizer therapy

3) Chest physiotherapy⁽²¹⁾

Turning patients to change position, coughing and breathing exercise.

Asthmatic Patient Education

The content was prepared by the researcher according to literature review⁽²²⁾, for patients of study group and consisted of 4 sessions about asthma. (15-20 minute per session).

Session1: Basic knowledge about asthma courses, precipitating factor and recognition of warning signs.

Session2: Use of inhalers, management of breathing in activities of daily living.

Session3: Use of home oxygen, adequate nutrition, energy conservation techniques and domiciliary respiratory exercises.

Session4: Appropriate asthma intervention and treatment modalities, oxygen therapy.

Evaluation phase:

Evaluation was done for every patient in both groups (study and control) assessed three times as the following: after first day of admission, after three day and after one week post admission using tool I part (2) and tool II. The comparison was done between both groups to determine the effect of implementation of respiratory guidelines on asthmatic patients.

Statistical analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version26 .for quantitative data, the range, mean and stander deviation were calculated for qualitative data, comparison was done using chi-square test (X²). For comparison between means of two variables in a group, paired sample t-test was used. For comparison between means of variables during three periods of intervention, or more than two variables, the f-value of analysis of variance (ANOVA) was calculated. A Significance was adopted at P<0.05 for interpretation of results of test of significance (*).

Result

Table (1) illustrates the distribution of patients with asthma according to their socio-demographic Characteristics for both study and control groups.

The table show that more than one third of study and control groups (43.3% and 36.7%) were in the age (50-60) years old respectively, more than half (63.3%) of the patients were male in control group and more than one third (46.7%) were male in study group and about half of them were married, about more than half (53.3%) were illiterate, (40%and 36.7%) were house wife and more half (60%and 56.7%) of the patient were from urban. It can be noticed that there was no significant difference among studied and control group regarding age, sex, marital status, educational level, occupation and residence as P-Value equal 0.853, 0.194, 0.729, 0.944, 0.853 and 0.793 respectively.

Table (2) Illustrates total mean scores of knowledge domains of the study and control group patients about asthma throughout periods of the study.

The table revealed that there was a statistical significant improvement in the level of knowledge regarding knowledge about asthma among study and control group throughout intervention periods of the study with $P < 0.05$.

Table (3) Illustrates the mean scores and stander deviation of cardiopulmonary parameters of patients with asthma for both studied group during the study period.

It was found the mean score of Spiro-metric function for patients of both studied groups the table revealed that there was a statistical significant improvement in the level spirometric measures between study and control group at the end of the week as p. value $< 0.0001^*$.

Table (4) Illustrates distribution of both studied patients group according to their

breathing sound throughout periods of the study.

It was found that after one week, the majority of the study group changes to clear sound (96.7%) however less than three quarter of control group change to normal clear sound (73.3%) with significant difference between two groups after one weak as p-value (0.026*).

Table (5) Illustrates distribution of both studied patients group according to a severity assessment scale throughout periods of the study.

It was found that the majority of study group (83.3%) after one week improved to mild persistent asthma with significant difference between two groups as P-value (0.001*).

Table (6) Illustrate distribution of both studied patients group according to Medical Research Council (MRC)Dyspnea Scale throughout periods of the study.

It was found that more than two third (70%) of study group improved to first level according to dyspnea scale and there is no significant difference between two groups.

Table (7) Relation between socio demographic characteristics of the studied patients for both studied groups and their total knowledge score throughout periods of study.

The table revealed that there was no significant relation between socio demographic characteristics of the studied patients for both study groups and their total knowledge score at $P > 0.05$.

Table (8) Relation between asthma severity of the studied patients for both study groups and their total knowledge score throughout periods of study.

The table revealed that there was no significant relation between asthma severity of the studied patients for both study groups and their total knowledge score at $P > 0.05$.

Table (9) Relation between dyspnea grade of the studied patients for both study groups and their total knowledge score throughout periods of study.

The table revealed that there was no significant relation between **dyspnea grade** of the studied patients for both study groups and their total knowledge score at $P > 0.05$.

Table (1): The distribution of patients with asthma according to their socio-demographic Characteristics for both study and control groups

Socio-demographic Characteristics		Studied patients(n=60)				X ²	P-value
		Study		Control			
		N	%	N	%		
Age	18< 30	5	16.7	6	20	0.787	0.853
	30 – <40	4	13.3	4	13.3		
	40 – <50	10	33.3	7	23.3		
	50 – 60	11	36.7	13	43.3		
	Mean ± SD	44.0 ± 9.9		44.6 ± 10.6			
Sex	Male	14	46.7	19	63.3	1.684	0.194
	Female	16	53.3	11	36.7		
Marital Status	Single	5	16.7	3	10	0.633	0.729
	Married	14	46.7	16	53.3		
	Widow	11	36.7	11	36.7		
Education level	Illiterate	16	53.3	16	53.3	0.381	0.944
	Read & write	11	36.7	10	33.3		
	Secondary	1	3.3	2	6.7		
	High education	2	6.7	2	6.7		
Occupation	Employee	10	33.3	9	30.0	0.318	0.853
	Manual worker	8	26.7	10	33.3		
	House wife	12	40.0	11	36.7		
Residence	Rural	12	40.0	13	43.3	0.069	0.793
	Urban	18	60.0	17	56.7		

Table (2): Total mean scores of knowledge domains of the study and control groups about asthma throughout periods of the study

Total knowledge score		Studied patients(n=60)				X ²	P-value
		Study(n=30)		Control(n=30)			
		N	%	N	%		
After admission	High	0	0	0	0	0.082	0.774
	Fair	2	6.7	1	3.3		
	Low	28	93.3	29	96.7		
After three days	High	16	53.3	0	0	52.800	0.001*
	Fair	14	46.7	12	40		
	Low	0	0	18	60.0		
After one week	High	14	46.7	0	0	26.118	0.001*
	Fair	16	53.3	18	60.0		
	Low	0	0	12	40		

Table (3): The mean scores and stander deviation of cardio pulmonary parameters of patients with asthma for both studied group during the study period

Cardiac parameters		Study	Control	t. test	p. value
		Mean ± SD	Mean ± SD		
Pulse rate	After admission	92.13 ± 2.16	91.87± 1.89	0.509	0.613
	after three days	82.00 ± 3.32	82.33 ± 2.83	0.418	0.677
	after one week	82.00± 3.63	82.33 ± 3.08	0.384	0.703
MAP	After admission	81.27± 8.95	78.70 ± 9.53	1.075	0.287
	after three days	81.13±8.85	78.93 ± 9.92	0.906	0.369
	after one week	81.13±9.21	78.93 ± 10.02	0.885	0.380
SpO2	After admission	91.87± 3.71	92.17 ± 4.12	0.296	0.768
	after three days	92.00 ± 3.56	93.00 ± 3.51	1.095	0.278
	after one week	93.10 ± 2.45	93.57± 2.78	0.690	0.493
RR	After admission	17.33 ± 1.09	17.53 ± 1.25	0.659	0.513
	after three days	18.00 ± 1.31	18.20 ± 1.54	0.541	0.590
	after one week	18.00 ± 1.31	18.20 ± 1.54	0.541	0.590
Spiro-metric function					
FVC	After admission	79.47±5.24	78.37±8.05	0.628	0.533
	after three days	79.60±5.27	78.60±8.61	0.543	0.589
	after one week	79.60±5.27	78.60±8.61	0.543	0.589
FEV1	After admission	72.10±3.32	72.07±4.95	0.459	0.978
	after three days	75.30±3.61	75.00±4.83	0.273	0.786
	after one week	84.33±3.56	75.97±4.86	7.728	0.001*
PEF	After admission	57.67±4.44	57.97±4.73	0.253	0.801
	after three days	59.13±4.98	59.63±4.90	0.392	0.697
	after one week	83.00±2.10	73.27±2.49	16.359	0.001*
FEV1/ FVC	After admission	63.47±0.78	63.40±1.35	0.234	0.807
	after three days	69.57±2.60	70.20±3.71	0.766	0.449
	after one week	75.93±3.26	70.57±4.52	5.279	0.001*

Table (4): Distribution of both studied patients group according to their breathing sound throughout periods of the study

Breathing sound		Studied patients(n=60)				X ²	P-value
		Study(n=30)		Control(n=30)			
		N	%	N	%		
After admission	Clear	0	0	0	0	1.191	0.551
	Crackles	6	20.0	3	10.0		
	Wheezing	19	63.3	21	70.0		
	Rhonchi	5	16.7	6	20.0		
After three days	Clear	1	3.3	0	0	1.191	0.551
	Crackles	5	16.7	3	10		
	Wheezing	19	63.3	21	70		
	Rhonchi	5	16.7	6	20		
After one week	Clear	29	96.7	22	73.3	6.379	0.026*
	Crackles	1	3.3	0	0		
	Wheezing	0	0	8	26.7		
	Rhonchi	0	0	0	0		

Table (5): Distribution of both studied patients group according to a severity assessment scale throughout periods of the study

Asthma Severity		Studied patients(n=60)				X ²	P-value
		Study(n=30)		Control(n=30)			
		N	%	N	%		
After admission	Mild Intermittent	0	0	0	0	-	-
	Mild Persistent	0	0	0	0		
	Moderate	30	100	30	100		
	Severe	0	0	0	0		
after three days	Mild Intermittent	0	0	0	0	0.218	0.640
	Mild Persistent	3	10	2	6.7		
	Moderate	27	92	28	93.3		
	Severe	0	0	0	0		
	Mean ± SD	2.50 ± 0.78		2.57 ± 0.90			
after one week	Mild Intermittent	0	0	0	0	21.702	0.001*
	Mild Persistent	25	83.3	7	23.3		
	Moderate	5	16.7	23	76.7		
	Severe	0	0	0	0		
	Mean ± SD	1.53 ± 0.51		1.47 ± 0.51			

Table (6): Distribution of both studied patients group according to Medical Research Council (MRC)Dyspnea Scale throughout periods of the study

Medical Research Council Dyspnea Scale		Studied patients(n=60)				X ²	P-value
		Study(n=30)		Control(n=30)			
		N	%	N	%		
After admission	Breathless only	0	0	0	0	0.067	0.795
	Short of breath	0	0	0	0		
	Slower than most people	16	53.3	17	56.7		
	Stop for breath walking 100 meters	14	46.7	13	43.3		
	Too breathless	0	0	0	0		
	Mean ± SD	3.47 ± 0.51		3.43 ± 0.50			
After three days	Breathless only	12	40	8	26.7	3.892	0.273
	Short of breath	13	43.3	13	43.3		
	Slower than most people	5	16.7	6	20		
	Stop for breath walking 100 meters	0	0	3	10		
	Too breathless	0	0	0	0		
	Mean ± SD	1.77 ± 0.73		2.13 ± 0.94			
After one week	Breathless only	21	70	15	50	2.800	0.247
	Short of breath	7	23.3	13	43.3		
	Slower than most people	2	6.7	2	6.7		
	Stop for breath walking 100 meters	0	0	0	0		
	Too breathless	0	0	0	0		
	Mean ± SD	1.60 ± 0.49		1.73 ± 0.45			

Table (7): Relation between socio demographic characteristics of the studied patients for both study groups and their total knowledge score throughout periods of study

Characteristics		Total knowledge score					
		study group(n=30)			control group(n=30)		
		Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD	Mean±SD
		After admission	After three days	After one week	After admission	After three days	After one week
Age	< 30	13.80±3.27	48.60±1.95	38.00±2.45	13.33±1.75	20.00±0.89	19.83±1.17
	30 – 40	14.50±3.00	47.2±0.50	34.75±1.71	11.50±3.70	19.25±4.43	19.25±4.43
	40 – 50	14.50±2.72	49.40±1.96	38.10±2.42	12.71±3.86	19.43±1.51	19.29±1.60
	50 – 60	14.09±2.84	48.00±1.55	38.27±3.23	12.08±2.22	20.23±2.77	19.92±2.69
	P value	0.967	0.139	0.163	0.723	0.837	0.935
Gender	Male	13.79±2.83	48.36±2.06	38.07±3.34	12.32±2.45	19.37±1.98	19.26±2.05
	Female	14.63±2.70	48.56±1.55	37.38±2.33	12.55±3.27	20.73±3.00	20.36±2.94
	P value	0.414	0.857	0.509	0.828	0.145	0.238
Marital Status	Single	14.21±2.81	47.86±1.41	37.57±3.16	12.44±2.42	19.38±2.45	19.19±2.34
	Married	13.20±1.92	48.20±1.30	37.40±2.30	13.00±2.00	21.67±0.58	22.00±1.00
	Widow	14.73±3.07	49.36±2.11	38.00±2.79	12.18±3.43	20.09±2.63	19.73±2.57
	P value	0.605	0.099	0.906	0.903	0.317	0.185
Education level	Illiterate	14.63±3.07	48.19±1.38	36.81±2.46	12.94±2.46	20.50±2.71	20.25±2.52
	Read & write	14.27±2.41	48.55±2.11	38.36±3.23	11.90±2.77	18.80±1.75	18.70±1.77
	Secondary	11.00±0.0	50.00±0.0	40.00±0.0	14.00±1.41	22.00±0.00	22.50±0.71
	High education	12.50±0.71	49.50±3.54	40.00±1.41	9.00±4.24	18.00±1.41	17.00±1.41
	P value	0.495	0.629	0.247	0.191	0.124	0.044*
Occupation	Employee	13.75±2.70	48.67±1.61	38.58±3.42	12.82±3.49	20.00±2.61	19.82±2.52
	Manual worker	16.25±2.05	48.50±2.20	36.63±2.62	11.80±2.39	19.20±2.53	19.10±2.77
	House wife	13.20±2.66	48.20±1.75	37.50±1.96	12.56±2.13	20.44±2.24	20.11±2.03
	P value	0.042*	0.837	0.313	0.694	0.544	0.656
Residence	Rural	14.00±2.86	48.75±1.96	39.58±2.71	12.31±2.87	20.31±2.75	20.08±2.87
	Urban	14.39±2.75	48.28±1.67	36.44±2.15	12.47±2.70	19.53±2.21	19.35±2.06
	P value	0.711	0.485	0.001*	0.874	0.397	0.428

Table (8): Relation between asthma severity of the studied patients for both study groups and their total knowledge score throughout periods of study

Asthma Severity	Total knowledge score					
	study group(n=30)			control group(n=30)		
	After admission	After three days	After one week	After admission	After three days	After one week
Mild Intermittent	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0
Mild Persistent	0.0±0.0	49.00±1.73	37.68±2.58	0.0±0.0	22.00±2.83	18.86±2.85
Moderate	0.0±0.0	48.41±1.80	37.80±4.21	0.0±0.0	19.71±2.40	19.91±2.29
Severe	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0
P value	-	0.592	0.933	-	0.207	0.322

Table (9): Relation between dyspnea grade of the studied patients for both study groups and their total knowledge score throughout periods of study

Council Dyspnea Scale (MRC)	Total knowledge score					
	study group(n=30)			control group(n=30)		
	After admission	After three days	After one week	After admission	After three days	After one week
Breathless only	0.0±0.0	48.33±2.02	38.17±2.66	0.0±0.0	20.13±2.36	19.88±2.36
Short of breath	0.0±0.0	48.46±1.71	37.39±2.95	0.0±0.0	19.77±2.09	19.59±2.50
Slower than most people	13.31±2.02	48.80±1.64	0.0±0.0	12.88±2.64	19.67±3.88	0.0±0.0
Stop for breath walking 100 meters	15.29±3.15	0.0±0.0	0.0±0.0	11.77±2.80	20.00±1.73	0.0±0.0
Too breathless	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0	0.0±0.0
P value	0.048*	0.892	0.469	0.275	0.986	0.782

Discussion

Asthma is a serious health problem throughout the world. people with asthma may need to receive emergency health care and they may be admitted to hospital for treatment and monitoring⁽²³⁾. In the most severe cases, asthma can lead to death⁽²⁴⁾. It is important for patients affected by asthma to learn about the diagnosis to improve their understanding of asthma as well as their ability to manage and control it effectively, and provides individual patient guidance, financial assistance for treatment, or specific recommendations on choosing a treatment facility⁽²⁵⁾. So, this study was aimed to determine the effect of implementing respiratory guidelines of asthmatic patient.

Concerning socio demographic characteristics. In relation to age the present study showed that about more than third of the studied patients in both study and control group respectively were in the age group between 50-60 years old with mean age is (44.6 ± 10.6) (44.0 ± 9.9) . It justified by aging is considered as one of the factors in worsened asthma control, asthma in older adult's patient can cause serious health problems if untreated appropriately^(26,27).

This finding was in agreement with **Federmanetal (2019)**⁽²⁸⁾ who conducted a Study to investigate the effect of a self-management support intervention on asthma outcomes in older adults with asthma in inpatient departments at primary health center in New York City and found that about half of the studied patients were age ranged from 51-60years old .Similarly, study by **Nguyen et al. (2018)**⁽²⁹⁾ who conducted a study to evaluate information on asthma self-management among adult asthma patients in Ho Chi Minh City, Vietnam showed that the mean of age for studied patients was 47.5 ± 9.9 years.

Regarding sex, the findings of the present study clarified that (more than one third and about two third of the studied patients of both study and control group were male, from the researcher point of view this might be due to most of men are worker and exposed to asthma

triggers. This finding was matched with **Eissaetal, (2020)**⁽³⁰⁾ who performed a study to evaluate outcome of an educational program on bronchial asthma self-management at chest hospital at Menoufia governorate and found that about more than half of the studied patients were male.

Regarding to associated symptoms of asthma. The current study findings showed that more than two third of patients of both study and control group suffered from two symptoms and more as cough, wheezing, shortness of breathing and chest tightness. In this regard, **Yang et al. (2020)**⁽³¹⁾ was in the line with this study, as they conducted a study to assess frequency of signs and symptoms in persons with asthma showed that symptoms of bronchial asthma associated with more than one symptoms cough, wheezing and dyspnea. Moreover, **Ibrahim et al. (2019)**⁽³²⁾, conducted a study to assess the effect of an educational program regarding self-care management behaviors for patients with bronchial asthma at Al-masah El bahary hospital they found that about half of studied patients suffered from two symptoms and more , cough, wheezing, and dyspnea.

As regard aggravating factors for asthma. It obvious from the current study that the majority of studied patients of both study and control group informed that the most common aggravating factors for asthma are smoke, respiratory infection, weather changes and perfumes. These results supported with **Ibrahim et al. (2019)**⁽³²⁾, who reported that more than half of patients informed that the most common triggers for asthma attack were pollen from tree, flu, perfumed. Additionally **Dahramage et al. (2019)**⁽³³⁾, who a surveyed the epidemiology of asthma in children and adult and confirmed that the most common triggers for asthma were pollen allergen, respiratory infection , smoke ,perfumes and house dust.

Regarding the patients' knowledge it was observed that initially most of patients had low awareness and knowledge about asthma, low level of knowledge about the basic

knowledge of disease, actions of medication, deal with worsening bronchial asthma , how to avoid asthma triggers, use of Inhaler, PEFr meter. But after implement the guidelines improved knowledge of patients with a statistical significant progression in the patients' knowledge among study and control group. This findings supported by **Abd el-fatah et al. (2020)**⁽³⁴⁾ who recoded that lower percentage of study participants had good knowledge pre-program implementation then there was a statistically significant progression in the patients' knowledge of the study subjects post the implementation of the program. Likewise, **Elbur et al. (2017)**⁽³⁵⁾ conducted a study to manage and control of asthma among adult patients in King Faisal medical complex reported that overall, patient's responses to the items of his program revealed wide gaps in knowledge of asthmatic patients about the disease, the role of various medications and strategies to prevent asthma attacks.

Additionally **Abbas et al. (2019)**⁽³⁶⁾ , reported that the lower percentage of the participants had good knowledge pre-program and improved after program. Similarly with **Elbanna, et al. (2017)**⁽³⁷⁾ who reported that most participants had good knowledge scores after the program application with a statistically significant difference in the total score of knowledge pre and post the program.

Regarding spirometer measurement the current study found that the guidelines interventions improved the lung function of older asthmatics patients in study group compared with control group specially in FEV,PEF after implement respiratory guidelines. This finding matched with **Felix et al. (2021)**⁽³⁸⁾ who studied the clinical, functional and inflammatory evaluation in asthmatic patients after a simple short-term educational program and found that the interventions improved the lung function of older asthmatics. Also, **Paoletti et al. (2020)**⁽³⁹⁾, conducted a study about the effect of an educational intervention delivered by pharmacists on adherence to treatment, disease control and lung function in patients with

asthma They found that the interventions improved the lung function of older asthmatics. Also, with **Elbanna et al. (2017)**⁽³⁷⁾ showed that the bronchial asthma education program improved pulmonary function measurements.

Concerning to the severity of asthma, the current study clarified that the patients for both study and control group initially were with moderate asthma according to a severity assessment scale with statistical significance improvement in asthma severity grades among study group participants about the majority of patient become with mild asthma compared with control group after implementation of respiratory guidelines.

This study matched with **Abd el-fatah et al. (2020)**⁽³⁴⁾, who reflected that there was statistical significance improvement in grades of asthma among study participants after the implementation of the modified nursing program compare before the program.

Moreover, in agreement with **Bayomi et al. (2018)**⁽⁴⁰⁾ who recorded a study on the effect of nursing intervention program on nurses knowledge, practices, and patients outcomes with bronchial asthma at chest ICU and the chest department at Zagazic University Hospitals, who reported a significant improvement of asthma severity scale compared with baseline.

Regarding Dyspnea scale. The current study showed that the dyspnea scale of the study group was improved significantly after application of respiratory guidelines initially more than half of studied patient were with dyspnea grade three and more than one third were in dyspnea grade four ,then after one week of implementing of respiratory guidelines more than two third of patients of study group improved to dyspnea grade I. This findings in the line with **Zampogna et al. (2020)**⁽⁴¹⁾ who studied the effectiveness of pulmonary rehabilitation in severe asthma noticed that about half of studied patients with asthma had dyspnea grade three before education, which decreased significantly after education.

Concerning relation between knowledge, socio demographic characteristics. The study

revealed that there was no significant relation between socio demographic characteristics and knowledge of the studied patients for both study groups the result was disagreed with **Ibrahim et al. (2019)** ⁽³²⁾ Who found that there was significant relation between socio demographic characteristics and knowledge.

As regard relation between knowledge, asthma severity and dyspnea grade. The study illustrated that there was no significant relation between knowledge, asthma severity and dyspnea grade this result was in the same line with **Mohamed et al. (2018)** ⁽⁴²⁾ who found that there was no significant relation between knowledge, asthma severity and dyspnea grade.

Conclusion

Based on the finding of the current study, it can be concluded that:

The present study provides supporting application of respiratory guidelines on asthmatic patient.

Regarding patients' knowledge about asthma the present study concluded that there was a significant improvement in total means scores level of knowledge for study group patients rather than control group. Also, regarding asthma severity there was a significant improvement of study group compared to control group.

Additionally regarding spirometric readings and breathing sound there was significant improvement in patients' condition for study group compared to control group.

Recommendation

Based on the findings of the current study recommendations are suggested as follows:

Recommendation for patients:

1. A Standardized continuous assessment, documentation of asthmatic patient a cornerstone prior application of respiratory guidelines.
2. Respiratory guidelines should be considered when planning a routine care for asthmatic patient.
3. Distribute guideline booklet for patients.

Recommendations for administration policy of the hospital:

1. Practical workshop on respiratory guidelines is deemed and have a positive impact for caring for asthmatic patient.
2. Written policy and guideline should be available regarding structures, time planning for application of respiratory guidelines

Recommendations for further research studies:

Apply the respiratory guidelines on a larger probability sample acquired from different geographical areas in Egypt for generalization

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