

## Assessment of Respiratory Functions among the Elderly with Chronic Obstructive Pulmonary Disease on their Knowledge and Practice at the Main University Hospital in Assuit City

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### Abstract

**Background:** Chronic Obstructive Pulmonary Disease (COPD) is a common lung disease that interferes with basic functions of elderly breathing. **Aim:** to assess the respiratory functions among the elderly with COPD on the knowledge and practice. **Subjects and methods:** Descriptive cross sectional research design was used to conduct this study in Chest Departments at the Main Assuit University Hospital. Purposive sample of 169 COPD elderly was participated. Three tools were used includes: 1<sup>st</sup> tool: Elderly assessment sheet, it includes two parts (Socio-demographic & health history and Bristol COPD knowledge assessment sheet), 2<sup>nd</sup> tool: Observational checklists used to assess the practice of elderly: (breathing & coughing exercise, inhaler technique) and 3<sup>rd</sup> tool: Respiratory functions assessment sheet used to evaluate the (dyspnea grade, oxygen saturation, respiratory rate and peak flow meter). **Results:** The main age of studied sample 65.50±5.16 (60-78), 73.4% were male and 70.4% were smokers. The vast majority of studied sample had poor knowledge & practice with impaired in respiratory functions. **Conclusion:** Vast majority of the studied elderly had poor knowledge & practice which had negative impact on respiratory functions. **Recommendations:** Health education program for elderly with COPD to improve their knowledge & practice and respiratory functions is very essential to manage their disease.

**Keywords:** COPD, Elderly, Knowledge, Practice & Respiratory Functions.

### Introduction

Aging is progressive physiological changes in an organism that lead to senescence, or a decline of biological functions and of the organism's ability to adapt to metabolic stress. The number of older persons those aged 60 years or over is rising from 962 million globally in 2017 to 1.4 billion in 2030 also population aged 60 or above is growing about 3% per year (**World Population Prospects, 2018**). According to **Central Intelligence Agency, (2020)** reported that, Egypt's elderly population had reached 6.5 million and will increase in 2050 to 18.1 million elderly also, the Egyptian life expectancy 2019 is 71.90 years: 68.2 for male and 73.0 years for female.

Age related change in respiratory function as decrease functional capacity. Alveolar and alveolar-capillary surface area increases while elasticity decreases, resulting in an increase in functional residual capacity. Elderly ≥ 65 years old respiratory rate increased 16-28 breaths a minute and elderly ≥ 80 years old: 10-30 breaths per minute. Slight changes occur in swallow respiration coordination with age. In the elderly are

low levels of partial pressures of oxygen (PaO<sub>2</sub>) that occur with aging (**Bowdish, 2019**).

In addition, decreased mobility and elasticity in the lung tissue itself can lead to increased pooling of secretions, particularly in the lower lung lobes. In expiration the loss of elastic recoil leads to small airways collapse with associated air trapping and in increase in the residual volume, a normal finding in ageing. These are mechanical and cellular changes lead to increase prevalence of chronic obstructive pulmonary disease (COPD) in the elderly (**Hun Lee et al., 2016**).

COPD is a disease in the lung which the airways become narrowed. This leads to limitation in the flow of air and causing shortness of breath. It includes chronic bronchitis and emphysema which leads to the destruction of lung and airways. The most common symptoms of COPD are breathlessness, chronic cough, and sputum production. COPD patients also frequently experience exacerbations, that is, serious episodes of increased breathlessness, cough and sputum production that last from several days to a few weeks (**Global Initiative for Chronic Obstructive Lung Disease (GOLD), 2019**).

The nurses have a central role in caring for COPD elderly patients, as they are the primary health care providers, spending more time with elderly people than other professionals. The primary goals of nurse for COPD management are slowing disease progression, relieving symptoms, improving exercise tolerance, preventing and treating complications, promoting patient's participation in care, preventing and treating exacerbation and reducing mortality risk. The nurse has an important role in teaching the elderly patients with COPD how to breathe effectively (Mohamed et al., 2017).

### Significance of the study

COPD is the third cause of death and the fifth cause of disability adjusted life years in 2020. The prevalence of COPD increases with age and affects more than 300 million people worldwide and three million deaths per year especially in low and middle income countries (Roberto et al., 2020) In Egypt, COPD is a rising significant health problem and the prevalence of COPD among high-risk individuals and was estimated to be about 10% as per GOLD (Said et al., 2015).

### Aim of the study

to assess the respiratory functions among the elderly with COPD on their knowledge and practice at the Main University Hospital in Assuit City.

### Research questions

- 1- What are the score of knowledge and practice of elderly about COPD?
- 2- What are the respiratory functions of elderly about COPD?
- 3- Is there a relation between knowledge & practice of the elderly with respiratory functions and thier COPD?

### Subjects & Method

**Research design:** Descriptive research cross sectional research design was utilized in this study.

### Setting

The study was conducted at Chest Departments at the Main Assuit University Hospital.

### Sample

A purposive sample calculated according the total number of COPD elderly patients admitted Chest Departments at the Main Assuit University Hospital was 400 cases in 2017. By using software EPI/ info version 3.3 with confidence interval 90%, it estimated to be 162+ 7 to avoid drop out. The total number of sample (169) COPD elderly was enrolled in the study.

### Tools of the study

Three tools used in this study:

**(Study tools):** the 1<sup>st</sup> tool elderly assessment sheet, the 2<sup>nd</sup> tool observational checklists and 3<sup>rd</sup> tool respiratory functions assessment sheet).

### Tool (1): Patients' assessment sheet, it included two parts

#### Part 1: Socio-demographic characteristics & health history of elderly:

**A- Socio-demographic characteristics (El-Gilany et al., 2012):** El-Gilany scale used to assess socio-demographic characteristics includes: seven domain, educational and cultural domain for both (husband and wife), occupation, family, economic, family possessions, home sanitation and health care domain.

**Scoring system:**-The socioeconomic status assessed using a scale comprised seven domains with a maximum score of 84 and a higher score indicating better socioeconomic status. Socioeconomic scores were classified into 4 levels, scores <42 (very low), 42< 63 (low), 63< 71.4 (moderate) and 71.4-84 (high social level). **Validity and reliability:** The socioeconomic status scale is valid and reliable (r = 0.93).

#### B- Heath history includes

- 1- Present history as present complaints, duration of disease, and date of current admission & date of current hospital discharge.
- 2- Past history as previous hospital admissions, previous chest surgery and chronic diseases as hypertension, diabetes, liver disease, kidney disease, GIT disorders and musculoskeletal problems).
- 3- Previous family history of COPD.
- 4- Patient exposure to risk factors as environmental or occupational hazards.

#### Part 2: Bristol COPD Knowledge Questionnaire (BCKQ) (White et al. 2006):

-It used to assess level of knowledge regarding COPD which included 13 domains, each consisted of five items: disease pathophysiology, risk factors, symptoms, cause of dyspnea, sputum, exacerbations, exercise, smoking, vaccination, bronchodilators, antibiotics, oral steroid therapy and inhaled steroid therapy. **Validity and reliability:** The BCKQ demonstrated good test-retest reliability of r = 0.71.

The researchers added others questions for assessment of knowledge to meet the purpose of the study. It included questions about structure & age-related changes in respiratory system, also healthy life style used to improve respiratory function for COPD elderly patients such as good nutrition, healthy sleeping, and measures to reduce respiratory infection & air ways irritation and difficulty in breathing based on the following literature (Knight & Nigam, 2017, Miller, 2019, Bowdish, 2019, Yorke et al., 2017, Smeltzer and Bare, 2016, Rawal & Yadav, 2015, Du et al., 2018 & Miravittles & Anzueto, 2017).

**Scoring system:** Scoring system of patient's knowledge was done as follows, each correct answers was given one grade, while no answer or did not know

was scored zero. Each set of questions was summed up to get the total score for patient's knowledge. Total score of Bristol COPD Knowledge Questionnaire ranged from 0-65 points + the questions added by researchers was 72 points. The total knowledge score ranged from 0-137. The total level of knowledge was categorized as follows: less than or equal to 50% was graded as poor or unsatisfied, 50% <75% score was graded as fair or satisfied, and  $\geq 75\%$  score was graded as good (Ibrahim & Abd El-Maksoud, 2018).

**Tool II: Observational Check lists:** This tool used to assess the practice of elderly patients for following skills:

- A. Breathing retraining exercise (Pursed lip breathing and Diaphragmatic breathing):** It used to assess and help patient to adapt dyspnea, decreasing the work of breathing, improving oxygenation, increasing the efficiency of breathing patterns and promoting patient control of breathing (Sarkar et al., 2019).
- B. Inhaler techniques (Using a metered- dose inhaler and using a dry powder inhaler with capsule):** It used to assess how the COPD patients use their inhalers properly (American Lung Association, 2018).
- C. Airway clearance (Breathing and coughing exercise):** It used to assess the body's ability to clearing mucus from the lungs. Controlled coughing loosens, moves mucus and is most effective method for COPD patients' to reduce risk of infection if the mucus isn't cleared (Dimitrova et al., 2017).
- D. Body position to reduce shortness of breath (Sitting, Standing and sleeping position):** It used to assess the body's ability to adjust with dyspnea in different position (Smeltzer and Bare, 2016).

#### Scoring system

Scoring of the checklist of each item was made using 2-point ranging from 0 to 1, where "0" indicates that the skill was not done and "1" done. Each technique was assigned a score, with a total score of 43. The total score was distributed as for breathing retraining exercise was 9 grades, airway clearance techniques was 6 grades, body position to reduce dyspnea 11 grades for three positions and for using inhaler was (17) grades. The total level of practice score was categorized as: < 50% of the total score was considered poor, from 50% <75% was considered fair, and from 75% and more was considered good (Ibrahim & Abd El-Maksoud, 2018).

**Tool III: Respiratory function assessment sheet; it will include five parts:** It used to assess the respiratory function for COPD elderly patients'.

**Part 1: A modified medical research council dyspnea a scale** used to assess dyspnea in daily living. It includes five levels (0-4) of various physiological activities that are graded from none to the highest level of dyspnea. The descriptions were as follows: none (0), mild (1), moderate (2), severe (3), and very severe dyspnea (4) (Nishiyama et al., 2010).

**Part 2: Respiratory rate for elderly:** Respiratory rates generally are faster and shallower in elderly: a normal rate is 16-25 breaths / minute in elderly (Meiner, 2018).

**Part 3: Pulse oximetry** is a small sensor that is placed on a finger and sends out light pulses. Normal oxygen saturation for most healthy elderly people level is 95-100 %. Potential hypoxemia is deficiency in oxygen reaching tissues in the body when oxygen saturation level of 92 % (Jubran, 2015).

**Part 4: Incentive Spirometer** is designed to encourage the user to take deep breath and clear the sputum from the lungs. Air flow passes through the chamber into single channel; it raises each of 3 balls depending on the flow inhaled per second. Different colors of ball used for easy identification of the flow rates 600ml/sec, 900ml/sec, and 1200ml/sec (Restrepo et al., 2011).

**Part 5: Peak flow meter** is device used to measure how air flows from the lungs a portable, inexpensive and hand-held. List a scale, starting with zero (0) liters per minute (L/min) ending with 800 L/min at the top. In other words, the flow meter measures the ability to push air out of the lungs (American Lung Association, 2018).

#### Method

##### Administrative design

An official agreement approval was obtained from the Dean of the Faculty of Nursing, to the head of Chest disease Department. This letter included a permission to carry out the study and explained the purpose of the study.

##### Pilot study

Pilot study was carried out before starting of data collection on 10% of elderly patients in a selected setting to examine the applicability, the feasibility and clarity of the developed tools. Also to estimate the time needed and not excluded from the study.

##### Data collection (Field work)

The researcher introduced self and explained purpose of the study to the elderly in the chest department. Oral consent taken from the elderly patients after explanation the purpose of the study. The assessment was done in the 169 COPD elderly patients. The length of interview to fill the interview sheet (about 30 to 40 minutes) for each patient depending upon their understanding and response.

The average number of elderly which interviewed was 10 cases per week, and 30-35 elderly patients / month. The study started from February 2019 to June 2019.

### Ethical consideration

Research proposal was approved from Ethical Committee in the Faculty of Nursing. There is no risk for study subject during application of the research. Patients advised of their right to withdraw from the study at any point. Confidentiality and anonymity was assured. The study was followed common ethical principle in clinical research.

### Statistical analysis

The data were tested for normality using the Kolmogorov-Smirnov test and for homogeneity variances prior to further statistical analysis. Categorical variables were described by number and percent (N, %), where continuous variables described by mean and standard deviation (Mean, SD). Compare between continuous variables by t-test and Anova test. A two-tailed  $p < 0.05$  was considered statistically significant. Pearson's correlation coefficient was used to test correlation between variables. All analyses were performed with the IBM SPSS 20.0 software. Graphs were done for data visualization and using Microsoft Excel 2010.

### Results

**Table (1):- Distribution of the studied sample regarding to their Socio-demographic characteristics at the Main Assuit University Hospital, 2019.**

Items	N= 169	
	No.	%
<b>Age</b>		
60 ≤ 65 year	108	63.9
>65 year	61	36.1
Mean± SD ( Range)	65.50±5.16 (60-78)	
<b>Sex</b>		
Male	124	73.4
Female	45	26.6
<b>Marital status</b>		
Married	129	76.3
Widow	40	23.7
<b>Educational level</b>		
Illiterate	114	67.5
Read and write	26	15.4
Primary	10	5.9
Secondary "3-5" years	13	7.7
Intermediate 2 year Institute	6	3.6
<b>Occupation</b>		
Non-working "house wife"	44	26.0
Unskilled manual worker	17	10.1
Skilled manual worker "farmer"	72	42.6
Trades- business	19	11.2
Semi-professional- clerk *(12 male and 1female)	13	7.7
Professional	4	2.4
<b>Residence</b>		
Urban slum	2	1.2
Rural	145	85.8
Urban	22	13.0
<b>El-Gilany scale for socioeconomic level</b>		
Very low social level	152	89.9
Low social level	17	10.1
Mean± SD	21.36±7.36	

Table (2): Distribution of the studied sample regarding to their health history at the Main Assiut University Hospital, 2019.

Items	N= 169	
	No.	%
<b>1-*Present complain</b>		
Dyspnea	169	100.0
Cough	169	100.0
Wheeze	145	85.8
Fatigue	107	63.3
Anorexia	97	57.4
Chest pain	16	9.5
<b>2- Characteristics of cough and sputum</b>		
<b>Type of cough</b>		
Productive	169	100.0
<b>Time of cough</b>		
All day	123	72.8
In the morning	12	7.1
Nocturnal	34	20.1
<b>Color of sputum</b>		
White	124	73.4
Yellow	34	20.1
Green	11	6.5
<b>Consistency of sputum</b>		
Thick	164	97.0
Thin	5	3.0
<b>Amount of sputum (ml/day)</b>		
Large	95	56.2
Moderate	67	39.6
Small	7	4.1
<b>3-Length of hospital stay for current hospital admission</b>		
≤10 days	49	29.0
10 - 20 days	101	59.8
>20 days	19	11.2
Mean± SD	13.94±4.92	
<b>4-Body Mass Index</b>		
BMI less than 19	5	3.0
BMI 19 to less than 21	39	23.1
BMI 21 to less than 23	39	23.1
BMI 23 or greater	86	50.9

\*More than one answer.

Table (3): Distribution of the studied sample regarding to their past history at the Main Assuit University Hospital, 2019.

Items	N= 169	
	No.	%
<b>1- *Comorbidities</b>		
Hypertension	109	64.5
Diabetes Mellitus	79	46.7
GIT disorders	34	20.1
Musculoskeletal problems	16	9.5
Liver diseases	15	8.9
Renal disorders	10	5.9
<b>2- Smoking</b>		
<b>A- Smoking habits</b>		
Smoker	119	70.4
Non smoker	18	10.7
Passive smoker	32	18.9
<b>B-Types of smoking</b>		
Cigarette	61	51.3
Shisha	56	47
Other (Cannabis)	2	1.7
<b>C-Smoking index (pack per year)</b>		
Mild smoker ≥ 10 packs	0	0.0
moderate smoker ≥ 10-20 packs	9	5.3
Heavy smokers ≥ 20 packs	110	65.1
	<b>(Mean± SD)</b>	
<b>3-No. of hospital admissions (during last year)</b>	2.99±1.1	
<b>4-No. of emergency unit admissions (during last year)</b>	4.72±1.35	
<b>5-No. of respiratory infection (during last year)</b>	2.77±0.75	
<b>6- Duration of COPD/year</b>	7.49±3.7	
<b>7-Previous family history of COPD.</b>	3.09±1.03	

\*More than one answer.

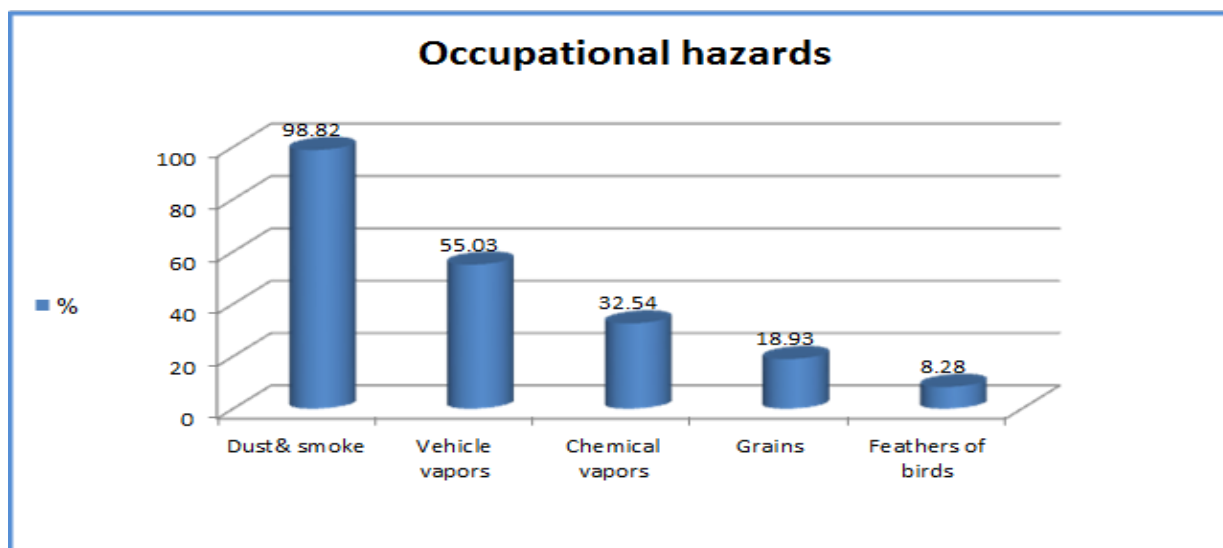


Figure (1): Risk factors of the studied sample regarding to occupational hazards at the Main Assuit University Hospital, 2019.

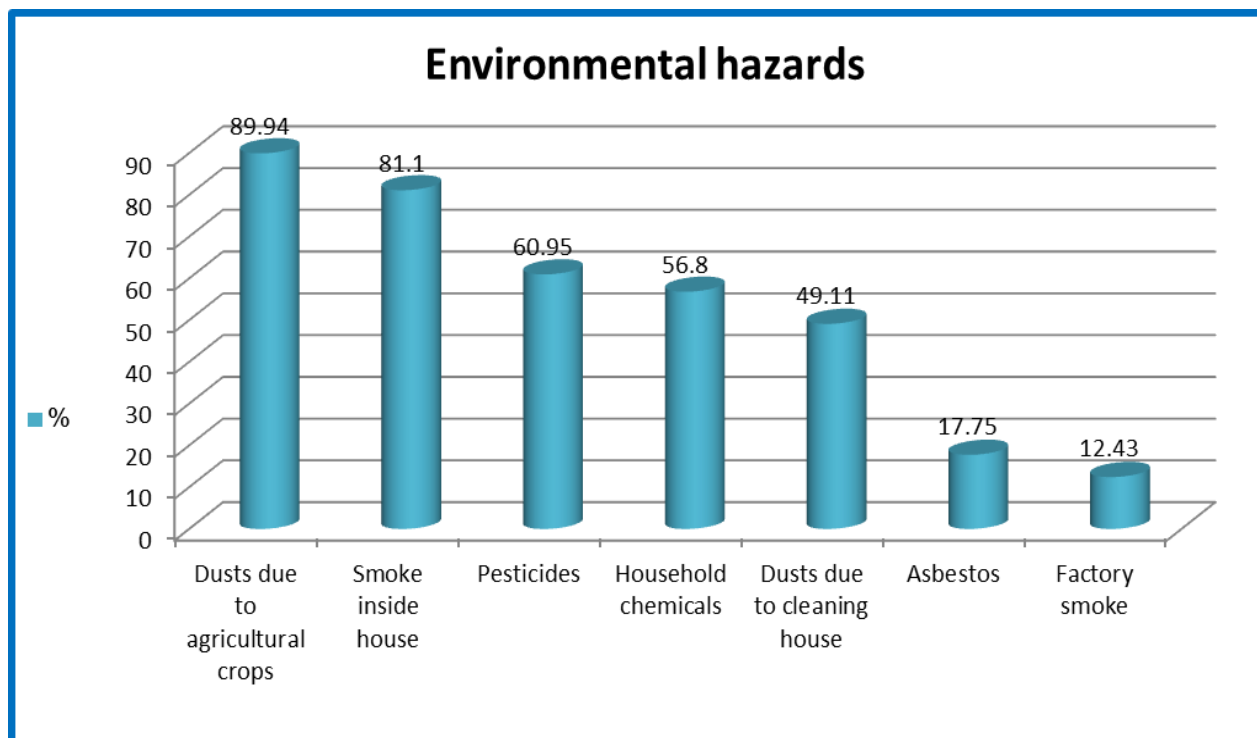


Figure (2): Risk factors of the studied sample regarding to environmental hazards at the Main Assuit University Hospital, 2019.

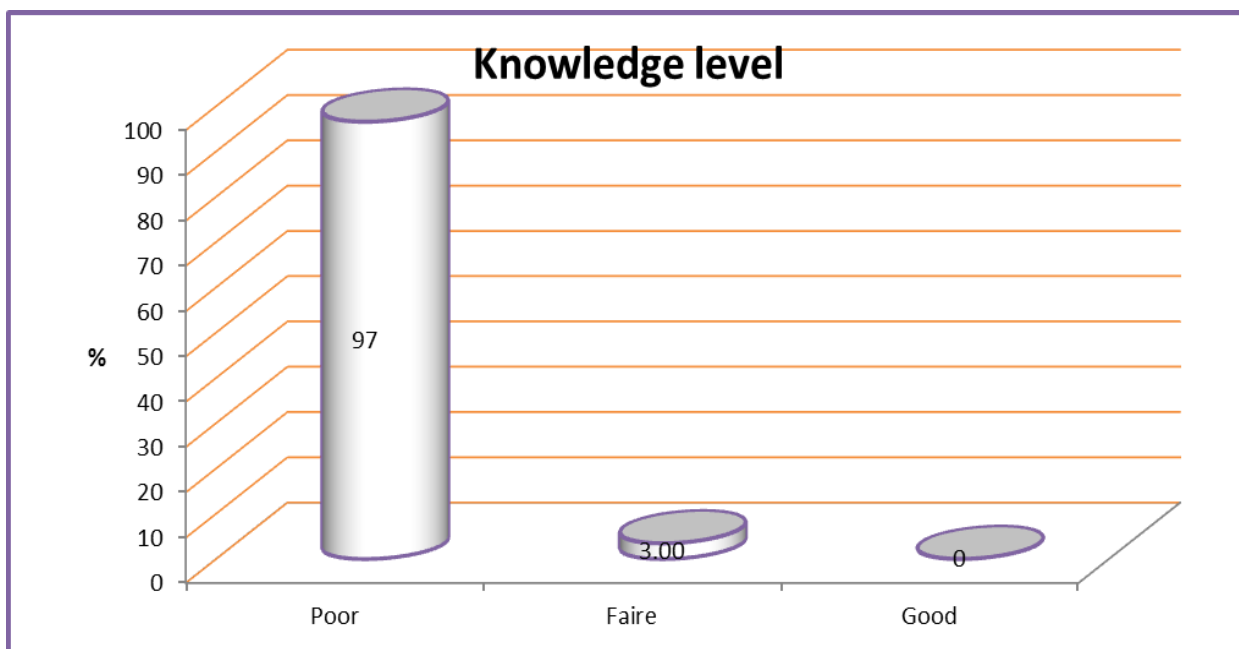


Figure (3): Total score of knowledge of the studied sample at the Main Assuit University Hospital, 2019.



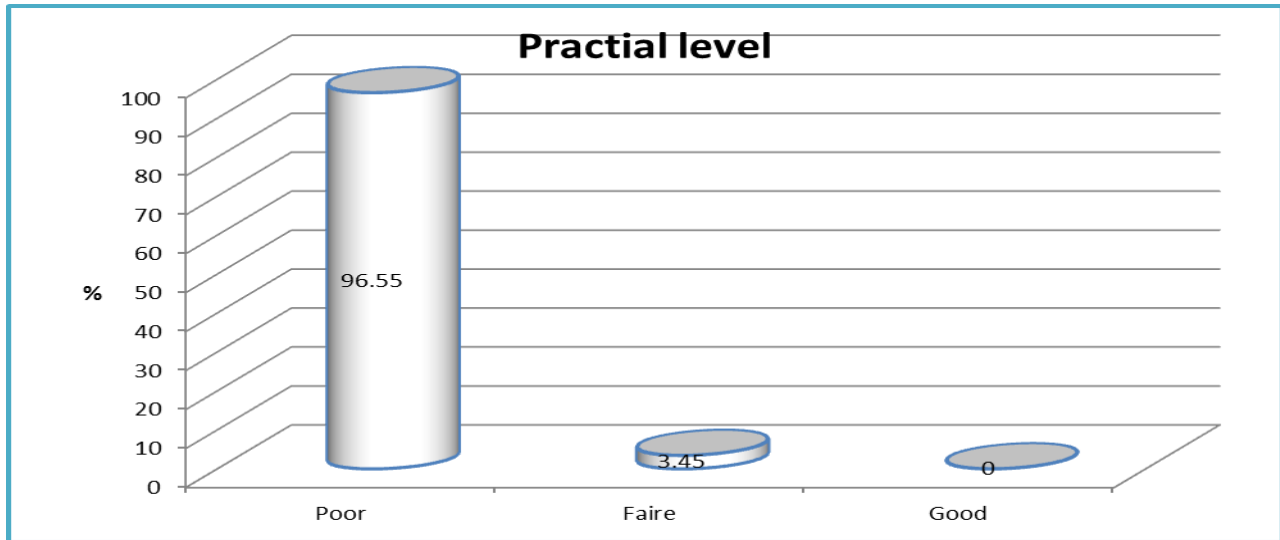


Figure (4): Total score of practice for the studied sample at the Main Assuit University Hospital, 2019.

Table (4): Respiratory functions of the studied sample at the Main Assuit University Hospital, 2019.

Items	N=169	
	No.	%
<b>Oxygen saturation:- SaO2</b>		
< 90%	147	87.0
90- 94%	22	13.0
95- 100%	0	0
	<b>Mean± SD</b>	
<b>Respiratory rate</b>	28.63±3.45	
<b>Incentive Spirometer</b>	589.35±138.46	
<b>Dyspnea scale</b>	3.53±0.5	
<b>Peak flow meter</b>	114.5±36.19	

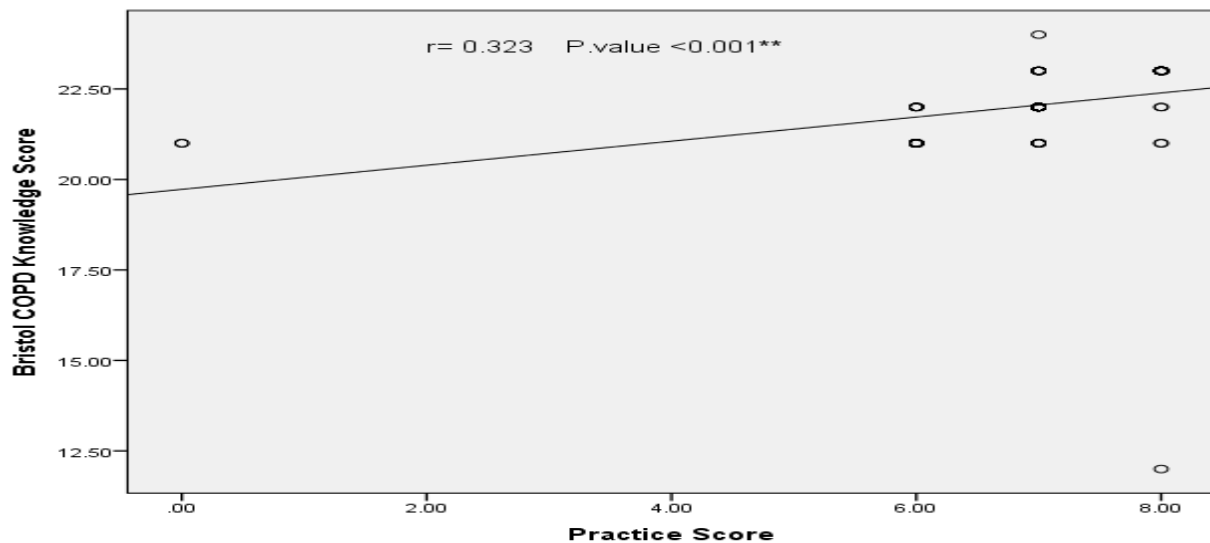


Figure (5): Correlation between total score of knowledge and total score of practice of the studied sample at the Main Assuit University Hospital, 2019.



**Table (5): Correlation between total score of knowledge and total score of practice in relation their respiratory functions of the studied sample at the Main Assiut University Hospital, 2019.**

Respiratory functions	Knowledge	Practice
	R ( P. value)	R ( P. value)
Oxygen saturation SaO2	0.017(0.874)	0.012(0.912)
Respiratory rate	-0.009(0.938)	0.066(0.544)
Incentive Spirometer	0.079(0.467)	0.089(0.414)
Dyspnea scale	-0.107(0.323)	-0.213(0.048)*
Peak flow meter	0.092(0.399)	0.079(0.469)

**Table (1):** Showed distribution of the studied sample regarding to their socio-demographic characteristics at the Main Assiut University Hospital. The mean ages of the studied elderly was (65.50±5.16) years old, (73.4%) were male, (67.5%) were illiterate and (85.8%) were living in rural area.

**Table (2):** Cleared that distribution of the studied sample regarding to their health history, it was evident that dyspnea and cough were the main complain for COPD elderly patients (100%).

**Table (3):** Illustrated that distribution of the studied sample regarding to their past history, it was observed that hypertension was the most common comorbidities of the studied elderly (64.5%), followed by diabetes mellitus (46.7%), and (70.4%) of studied elderly were smokers.

**Figure (1):** Showed that risk factors to COPD; regarding to occupational hazards to dust & smoke were the most common exposed (98.82%).

**Figure (2):** Illustrated that risk factors to COPD; regarding to environmental hazards. The majority of COPD elderly patients were exposed to dusts due to agricultural crops and smoke inside house (89.94%).

**Figure (3):** Exhibited that vast majority of the studied elderly had poor knowledge

**Figure (4):** Presented that vast majority of the studied elderly had poor practice.

**Table (4):** Revealed that 87% low oxygen saturation less than 90% and severe dyspnea.

**Figure (5):** Presented that there was significantly positive correlation decrease between total score of knowledge and total score of practice.

**Table (5):** Illustrated that there was significantly positive correlation decrease between total score of knowledge and total score of practice with their respiratory function in all item except increase level of dyspnea when reduce level of knowledge and practice.

## Discussion

COPD is a respiratory condition that develops from long-term exposure to air pollutants and through smoking. The worldwide prevalence of COPD is increasing especially among elderly. With age, the respiratory system morphological and functional resistance weakens, leading to an increase in morbidity

(Kotaki et al., 2019). Dyspnea is the main symptom and causes progressive loss functional capacity until even the simplest activities of daily living are affected. In patients with COPD, it is important for them to know about their disease and its management for a better therapeutic outcome, as patients' awareness enables them acquire better self-management skills, and improves their quality of life (Franssen et al., 2018).

Therefore, this study was conducted to assess the respiratory functions among elderly with COPD on their knowledge and practice.

Based on the results of the present study, the socio-demographic characteristics of the studied sample revealed that more than half of studied population range from (60 ≤ 65) years old. This was in agreement with Mohamed et al., (2017) the study done in Egypt, who reported that the age of more than half of the patients with COPD were more than 60 years. This may explained by effect of age related changes in respiratory system.

Regarding gender, more than two thirds of the studied sample was males and excessive smokers. This is in harmony with Mohamed et al., (2017) at Egypt, who mentioned that more than half of their study subjects were male and current smokers. This explained due to tobacco is considered a major risk factor and important initial diagnostic for COPD and the frequent occupational exposures to irritating in work environment.

Regarding residence, the current study showed that majority of the studied sample was living in rural area; the same finding is in accordance with Ibrahim & Abd El-Maksoud, (2018) at Egypt who stated that three quarters of their study subjects were living in rural areas and one quarter was living in urban. Another Egyptian study done by Badway et al., (2016) indicated that the prevalence of COPD is more between rural than urban population. This is related to inadequate health services in these places; moreover, patients in these areas are exposed to many chemical substances used in farming and building in addition to fumes from burning agriculture wastes and dry plants and this increases the risk of chest diseases.

Concerning occupation, more than one third of the studied sample was farmers; the same finding is in the same line with **Badway et al., (2016)** who mentioned that the high prevalence of COPD among farmers this due to exposure to irritants at their work places causing serious lung damage as most of those patients were working in the agriculture sector, exposure to air pollutants, rice grass burning, using wood, and agricultural crop residues, which lead to greater destruction of airway with more chest symptoms.

The result of present study revealed that, the majority of the studied sample were very low socioeconomic level of study control group and had no financial support. Socioeconomic status (SES) is a strong social determinant of health. This finding was in agreement with foreign study done by **Grigsby et al., (2016)** who stated that, lower financial status is an important risk factor for respiratory disorder with incidence and increase cases of COPD. Low income makes the patient unable to seek medical advice and to buy the medication.

The current study demonstrated that hypertension and diabetes mellitus are the most comorbidity of the studied sample with COPD. These results were similar to the findings of an Egyptian study done by **Farag et al., (2018)** at Cairo mentioned that hypertension and diabetes mellitus are the most recorded comorbidities of the patients with COPD. Comorbidity is highly prevalent in COPD elderly patients and 84% of patients have one or two comorbidity factors.

The present study noted that the most common risk factors of COPD in the studied sample related to occupational hazards were dust and smoke. In the same line **Saad & Desoky, (2018)** who found more than two third of studied patients had occupational exposure in their work environment. Concerning environmental hazards, the majority of COPD elderly patients were exposed to dusts due to agricultural crops and smoke inside house. In the same line **Mohammad et al., (2018)** at Assuit found that the most common risk factors of COPD were smoking, air pollution and dust. This may relate to low socioeconomic in addition of poor housing, poor education, poor nutrition and working in agriculture these are the most important risk factors contributing to develop of COPD.

As regards signs and symptoms of COPD, the whole studied sample suffered from dyspnea and chronic cough, and the majority of them complained large amount sputum. These results were similar to the findings of, an Egyptian study done by **Badway et al. (2016) & AlKarn et al., (2018)** at Assuit they reported that, the majority of COPD patients had dyspnea, cough, wheezing chest, sputum, and restlessness. These symptoms were strongly associated with the presence of COPD. This reflects the chronicity of the

disease and the frequent exposure acute exacerbations that may progress to respiratory failure.

Regarding the patients' level of knowledge, the findings of the present study indicated that, the majority of the COPD patients had poor knowledge regarding management of COPD. These findings were consistent with **Sharma et al., (2016) & Fromer, (2014)** they reported that most of the COPD patients had less knowledge regarding COPD. Additionally, **Mohamed et al. (2017)** reported that none of the studied group had satisfactory knowledge. According to **Jiaet al., (2018)** also who founded the knowledge on COPD was poor in COPD patients and need more measures should be taken to improve patients' knowledge on COPD. This is related to illiteracy, lack of health literacy about prevention and COPD management. Inadequate health services in rural places and lack of studies that aim to improvement elderly knowledge about COPD.

As regard patients' total practice, there was poor level of practice of COPD elderly participants. These findings were in accordance with **Amer et al., (2018)** they reported that most of the COPD patients had poor practice regarding COPD. This is related to shortage of nursing staff, over load in providing nursing procedure insufficient nurse preparation to teach elderly the breathing exercise and increase numbers of elderly with COPD in chest disease department.

The current study founded that, there were significant positive correlation between decrease the total score of knowledge and practice. These findings were in consistent with **Fouad et al., (2016)**, mentioned that there was relation between knowledge and practice about COPD with a significant value. This may explained when level of knowledge decrease and practice level decrease also.

## Conclusion

Based on the study findings, it is concluded that the vast majority of studied elderly had poor knowledge and practice regarding COPD which had negative impact on respiratory function. Also, the all of patients had low oxygen saturation and tachypnea.

## Recommendations

Based on the result of the present study, the following recommendations were suggested:

- Health education program for COPD patients and their family caregivers should be given with a written instruction plan for daily self-management measures.
- Providing adequate handout as booklet, simple pictures and video in the room of seminar about COPD management at Chest Disease Department.

- Future researches should be done in the field of (COPD) among elderly.

## Reference

1. **Al Karn A., Hassan W., Abo El Fadl A., & Mahmoud M., (2018):** Effectiveness of pulmonary rehabilitation on pulmonary function parameters and dyspnea in patients with stable chronic obstructive pulmonary disease, *Egypt J Bronchol*; 12(2): 149-153.
2. **Amer F., Eldakhakhny A., Ahmed A., & Taha N., (2018):** Effect of Nursing Intervention Program on Patients knowledge and practice regarding Breathlessness in patients with Chronic Obstructive Pulmonary Disease, *Zagazig Nursing Journal*; 14(1): 76-92.
3. **American Lung Association, (2018):** Inhaler Device Assessment Tool. Available at: <http://www.lung.org/>.
4. **Badway M., Hamed A., & Yousef M., (2016):** Prevalence of chronic obstructive pulmonary disease in Qena governorate. *Egyptian Journal of Chest Diseases and Tuberculosis*; 65(1): 29-34.
5. **Bowdish, D., (2019):** The Aging Lung: Is Lung Health Good Health for Older Adults, *Chest Journal*; 154 (3):391-400.
6. **Central Intelligence Agency, (2020):** Egypt Demographics Profile 2020, Available at: [https://www.indexmundi.com/egypt/demographics\\_profile.html](https://www.indexmundi.com/egypt/demographics_profile.html).
7. **Dimitrova A., Izov N., Maznev I., Vasileva D., and Nikolova M., (2017):** Physiotherapy in Patients with Chronic Obstructive Pulmonary Disease, *Macedonian Journal of Medical Science*; 5(6): 720-723.
8. **Du W., Liu J., Zhou J., Ye D., OuYang Y., & Deng Q., (2018):** Obstructive sleep apnea, COPD, the overlap syndrome, and mortality: results from the 2005–2008 National Health and Nutrition Examination Survey, *International Journal of COPD*; 2018(13),665-674.
9. **El-Gilany A., El-Wehady A., & El-Wasify M., (2012):** Updating and validation of the socioeconomic status scale for health research in Egypt. *East Mediterranean Health J*; 18(9):962-968.
10. **Farag T., Sobh E., Elsayy S., & Fahmy B., (2018):** Evaluation of health-related quality of life in patients with chronic obstructive pulmonary disease, *The Egyptian Journal of Bronchology*; 12 (3): 288-294.
11. **Fouad A., Shafik S., & Belal S., (2016):** Effect of Nursing Intervention on Activities of Daily Living of Older Adults with Chronic Respiratory Impairment, *American Journal of Nursing Science*; 5(4): 129-140.
12. **Franssen F., Smid D., Deeg D, Huisman M., Poppelaars J., Wouters E., & Spruit M., (2018):** The physical, mental, and social impact of COPD in a population-based sample: results from the Longitudinal Aging Study Amsterdam, *npj primary care respiratory medicine*;28, (30): 1-6.
13. **Fromer L., (2014):** Diagnosing and treating COPD: understanding the challenges and finding solutions, *International Journal of General Medicine*; 4 (2): 729–739.
14. **Global Initiative for Chronic Obstructive Lung Disease (GOLD), (2019):** Global strategy for diagnosis, management and prevention of COPD. Available at: <http://www.goldcopd.com>.
15. **Grigsby M., Siddharthan T., Chowdhury M., Siddiquee A., Rubinstein A., Sobrino E., Miranda J., Bernabe-Orti A., Alam D., & Checkley W., (2016):** Socioeconomic status and COPD among low- and middle-income countries, *International Journal of Chronic Obstructive Pulmonary Dis*,11(5): 2497–2507.
16. **Hun Lee S., Yim S., & Kim H., (2016):** Aging of the respiratory system, *Kosin Medical Journal*; 31(1):11-18.
17. **Ibrahima R., & Abd El-Maksoud M., (2018):** Effect of educational programs on knowledge and self-management of patients with chronic obstructive pulmonary disease, *Egyptian Nursing Journal*; 15:246–257.
18. **Jia G, Ming Lu, Rui Wu, Yahong Chen, & Wanzhen Yao, (2018):** Gender difference on the knowledge, attitude, and practice of COPD diagnosis and treatment: a national, multicenter, cross-sectional survey in China, *International Journal of Chronic Obstructive Pulmonary Dis*;13(2): 3269–3280.
19. **Jubran A., (2015):** Pulse Oximetry: Uses, Readings, and How It Works. Available at: <http://www.healthline.com/health/pulse-oximetry#takeaway>.
20. **Knight J., & Nigam Y., (2017):** Anatomy and physiology of ageing 2: the respiratory system, *Nursing Times*; 113(3): 53-55.
21. **Kotaki K., Ikeda H., Fukuda T., Yuhei K., Yuki F., Kawasaki M., Wakamatsu K., & Sugahara K., (2019):** Trends in the prevalence of COPD in elderly individuals in an air-polluted city in Japan: a cross-sectional study, *International Journal of Chronic Obstructive Pulmonary Disease*; 2019 (14):791-798.

22. **Meiner S., (2018):** Gerontological Nursing, 6<sup>th</sup> Ed, Respiratory function; chapter 22, Elsevier, Pp. 422-435.
23. **Miller, C., (2019):** Nursing for wellness in older adults.8thEd. Respiratory function in older adult; chapter 5, Wolters Kluwer, Philadelphia, Pp67-71.
24. **Miravittles M., & Anzueto A., (2017):** Chronic Respiratory Infection in Patients with Chronic Obstructive Pulmonary Disease: What Is the Role of Antibiotics?, International Journal of Molecular Sciences ; 18(7): 1344.
25. **Mohamed D., Ahmed S., Mohamed A., & Abdel Rahman A., (2017):** Effect of care protocol on the knowledge, practice and clinical outcomes of patients with chronic obstructive pulmonary disease, Journal of Nursing Education and Practice; 7(2):107-116.
26. **Mohammad M., Mohammad Z., & El-Shinnawy O., (2018):** Effect of Clinical Pathway Implementation on Outcomes of Patients with Chronic Obstructive Pulmonary Disease, UN published Doctoral Thesis, Assuit University, Faculty of Nursing, and Egypt.
27. **Nishiyama O, Taniguchi H, Kondoh Y., Kimura T., Kato K., Kataoka K., Ogawa T, Watanabe F., & Arizono S., (2010):** A simple assessment of dyspnea as a prognostic indicator in idiopathic pulmonary fibrosis. EurRespir J 36:1067–1072.
28. **Rawal G., & Yadav S., (2015):** Nutrition in chronic obstructive pulmonary disease: A review, Journal of Transitional Internal Medicine; 3(4): 151-154.
29. **Restrepo R., Wettstein R., Wittnebel L., & Tracy M., (2011):** Incentive Spirometry: 2011, Respiratory Care; 56(10):1600–1604.
30. **Roberto B., Beatriz A., & Megan D., (2016):** Self-Management and Quality of Life in Chronic Obstructive Pulmonary Disease (COPD): The Mediating Effects of Positive Affect, Journal of Patient Education and Counseling, 99, (4), 617–623.
31. **Saad A., & Desoky G., (2018):** The effect of breathing exercises on the degree of dyspnea and activities of daily living for patients with chronic obstructive pulmonary disease, IOSR Journal of Nursing and Health Science (IOSR-JNHS);7(5):PP 01-16.
32. **Said A., Ewisb A., Omran A., Magdya M., & Saleeb M., (2015):** Prevalence and predictors of chronic obstructive pulmonary disease among high-risk Egyptians, Egyptian Journal of Bronchology; 9 (1): 27-33.
33. **Sarkar M., Bhardwaz R., Madabhavi I., & Modi M., (2019):** Physical signs in patients with chronic obstructive pulmonary disease, Lung India; 36(1): 38- 47
34. **Sharma M., Kumar A., & Venkateshan M., (2016):** Effectiveness of self-instructional module on knowledge of self-care management of chronic obstructive pulmonary disease among patients with chronic obstructive pulmonary disease. International Journal of Research in Medical Sciences, 4(5), 1604-1608.
35. **Smeltzer S., & Bare B., (2016):** Textbook of medical surgical nursing (10<sup>th</sup>Ed). Philadelphia: Lippincott Company, 568-96.
36. **White R., Walker P., Roberts S., Kalisky S., & White P., (2006):** Bristol COPD Knowledge Questionnaire (BCKQ): testing what we teach patients about COPD, Chronic Respiratory Disease journal, 3, 123–131.
37. **World Population Prospects, (2018):** Ageing, Available at: <http://www.un.org/en/sections/issues-depth/ageing/>.
38. **Yorke J., Prigmore S., Hodson M., Stonham C., Long H., Bellhouse S., Fletcher M., & Edwards S., (2017):** Evaluation of the current landscape of respiratory nurse specialists in the UK: planning for the future needs of patients, BMJ Open Respiratory Research ; 4(1):1-8.