Effect of Orem's Self-Care Behavior Model on Quality of Life of Elderly Patients with Chronic Obstructive Pulmonary Disease

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Abstract

Background: In terms of health, chronic obstructive pulmonary disease (COPD) is a major problem. It is a major global cause of illness and mortality. It is anticipated that by 2030, it will rank third globally in terms of both mortality and disability. **Aim:** The study aimed to evaluate the effect of Orem's self-care behavior on the quality of life of elderly patients with chronic obstructive pulmonary disease in Benha City. **Methods:** This study used a quasi-experimental (pre/post-test) design. 100 elderly patients with chronic obstructive pulmonary disease comprised the purposive sample for the study, which was done at the outpatient clinics of the chest hospital in Benha City, Egypt. The data were gathered using a self-administered questionnaire, an observational checklist for older people practicing COPD, the Quality-of-Life Scale (QOLS), and the COPD Self-Care Behavior Scale (COPDSC). **Results:** After the model was implemented, there were improvements in self-care behavior for 55% of the elderly patients who had been studied, satisfactory practices for 81%, and good total quality of life scores for 72% of them (p<0001). **Conclusions:** This study resulted in the conclusion that Orem's self-care behavior had a positive effect on elderly patients' knowledge, practices, and quality of life regarding the chronic obstructive pulmonary disease. The study recommended that elderly patients with COPD should participate in a continuous self-care behavior program to enhance their knowledge, behavior, and practices.

Keywords: Quality of Life, COPD, Elderly, and Orem Self-Care Behavior Model

Introduction:

A significant public health issue, chronic obstructive pulmonary disease (COPD) is a leading global cause of morbidity and mortality in the elderly population. It is a common disease that may be prevented and treated. It is currently the fifth leading cause of death worldwide., while in 2030, it is expected to overtake all other causes of death. The term "COPD" is used to denote a progressive lung illness that includes emphysema and chronic bronchitis and is linked to an enduring restriction of airflow. Because of ongoing exposure to risk factors and an aging population, the disease's burden is anticipated to rise in the ensuing decades. Establishing a connection between COPD and older patients' health-related quality of life is crucial since elderly persons with COPD experience deterioration in their physical, social, and psychosocial aspects of life in addition to a decline in daily physical activity. (**Mohamed, 2019**).

People with COPD have incapacitating bodily symptoms such as dyspnea, coughing, sputum, and exhaustion brought on by a growing restriction of airways and a progressively decreased oxygen supply. Along with the physical symptoms, persons with COPD experience psychological symptoms including

despair and anxiety, which have a significant impact on their Quality of Life (QOL) **(Matarese et al., 2020).**

Basic three components in human biology, including age, sex, race, genetic inheritance, and physiological function, as well as environmental and lifestyle factors, are the main contributors to the development of COPD. These risk factors or factors determine the prevalence and incidence of COPD. Sedentary lifestyles, smoking, diabetes, obesity, dyslipidemia, high-fat diets, high blood pressure, and stress are the key factors that contribute to the growing prevalence of COPD globally and within the region, particularly in Egypt. The main risk factors include smoking, Diabetes mellitus, which affects 48% of males and 4% of women, obesity, which affects 7.8% of urban residents, 5.6% of rural agricultural residents, and 2.5% of rural desert residents, which affects 55.6% of Egyptians; and hypertension, which affects nearly 31% of Egyptians, with a hypertension mortality rate of 25% to 50% **(Baker &Fatoye, 2019).**

Additionally, two serious COPD consequences that can be fatal are respiratory failure and insufficiency. Lung infections, pneumothorax, poor gas exchange, heart issues, atrial fibrillation, weakened arms and legs, sleep issues, diabetes, depression, and anxiety **(Farag et al., 2018).**

The QOL is a crucial domain for assessing the impact of chronic diseases. Using general or disease-specific questionnaires that cover physical, psychological, and social variables, health-related QOL can be evaluated. Because of restrictions on physical activity and frequent symptoms, elderly patients with COPD have a lower quality of life in terms of the physical aspect of health compared to the psychological and social health components. Therefore, when considering interventions to enhance the QOL of COPD patients, the focus must be given to the improvement of physical health as well as other aspects impacting QOL. Additionally, enhancing psychological and social functioning, which are also linked to a

reduction in overall quality of life **(Mohamed, 2018).**

Self-care refers to a person's effective, learned, informed, and objective behaviors that are displayed in real-world situations by that individual or by his or her family members. Self-care aims to control the factors that have an impact on a patient's performance about their performance in life, health, and well-being. The whole set of abilities and knowledge that a person possesses and applies to his or her practical efforts has an impact on his self-care behavior. Because it highlights people's active, not passive, engagement in their healthcare, self-care is seen as an essential and beneficial notion. Promoting self-care was a technique that many health organizations and healthcare practitioners examined to lower the high costs of medical services **(Craven et al., 2019).**

To prevent, control, and manage the disease's negative social, psychological, and physical effects, COPD patients must follow a comprehensive pharmaceutical regimen and engage in daily self-care activities. The self-care practices of people with COPD evolve throughout time in response to their physical and mental health, disease-related cognition, and social support. These actions intensify as the disease worsens and the burden of the disease rises. As a result, patients with COPD must adjust their self-care routines frequently to take into account changing surroundings. The most popular self-care practices attempt to reduce COPD's physical effects. **(Clari et al., 2017).**

One of the most comprehensive self-care theories, Orem's Self-Care Model (OSCM), offers a useful therapeutic roadmap for organizing and putting excellent self-tenet care into practice. According to Orem, nurses can assist people to regain their capacity to care for themselves by giving direct care and compensating educational support anytime this capacity is compromised in them. Orem claims that the nurse's role has been expanded to include that of a change agent and facilitator **(Hemmati et al., 2018).**

A person with COPD should participate in all aspects of their therapy and be able to perform self-care tasks due to the chronic nature of their condition. Self-care, which includes self-monitoring of nutrition, quitting smoking, and engaging in regular physical activity, is essential for the control and treatment of COPD. Teaching individuals with COPD self-care skills is essential since a significant portion of daily care is done by the patient or a family member **(Wang et al., 2018)**.

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The community health nurse is essential for delivering high-standard, efficient, and secure patient care. Effective COPD management plans call for a multidisciplinary team of healthcare specialists and an integrated approach across primary and secondary care. The emphasis of the recommendations is on the necessity of ensuring that patients receive high-quality treatment wherever they are seen. Even though the data is currently limited, people may benefit from receiving specialized treatment, whether it is provided in a hospital or community setting. According to a growing number of studies, nurse-led consultations, and interventions for the treatment of COPD may improve patients' health and quality of life **(Øfsti et al., 2020).**

the study's significance:

Globally, chronic obstructive pulmonary disease is regarded as a serious community health issue and a significant contributor to morbidity and mortality (Franssen et al., 2018). Three million Egyptians, or around 8% of the population, have COPD. The prevalence ranged from 3.3% to 10% among studies. Men had a prevalence incidence of 6.7%, and women had a rate of 1.5%. According to estimates, 14.2% of senior patients have COPD, compared to 9.9% of people under the age of 40. A rapidly aging population is predicted to increase COPD morbidity and mortality rates. COPD is a growing serious health issue in Egypt, although data on its prevalence, morbidity, and mortality are still scarce (Ibrahim & Abd El-Maksoud, 2018). Therefore, To find out how Orem's self-care behavior was affected by the quality of life for elderly COPD patients, the researchers chose to perform the study.

Aim of the study:

The study aimed to evaluate the effect of Orem's self-care behavior on the quality of life of elderly patients with chronic obstructive pulmonary disease in Benha City.

Research hypothesis:

The following research hypothesis was developed to achieve the study's aim: In comparison to their pre-model implementation, Orem's self-care behavior will increase older patients' knowledge, behaviors, and quality of the life-related chronic obstructive pulmonary disease.

Subject and Methods:
Research design:

The quasi-experimental pre/posttest research design was utilized to carry out this study. Without randomly assigning individuals to conditions or ordering of conditions, in quasi-experimental research, an independent variable is changed. It can be made with one or more groups and can solely use the post-test or include both the pretest and post-test assessment. The quasi-experimental design includes a range of non-randomized or partially randomized pre-post intervention studies [1].

Setting:
The study was carried out at the connected

Benha City outpatient clinics of the Chest Hospital. The fact that many elderly patients with chronic obstructive pulmonary disease sought treatment at this hospital, that medication was provided without charge, and that each old patient had a follow-up card led the researchers to choose this location.

Subjects:

In this study, a purposive sample was used. Over the last six months since the study's start, 100 elderly patients in all have visited the outpatient clinics. They were chosen according to the set of criteria: their age above 60 years old, having three stages of chronic obstructive pulmonary disease, independence, and being accepted to participate in the study.

Collecting data tools:

A structured interview questionnaire is **the first tool**. Following a review of relevant studies, the researchers created it. There were three parts**:**

Part 1 focused on the studied elderly patient's socio-demographic characteristics such as age, sex, marital situation, educational level, occupation, location of residence, income each month, and family structure.

Part 2 focused on the medical history of the elderly patient with chronic obstructive pulmonary disease and includes **A-** Past medical history, which comprised answers to four questions on the beginning of COPD, previous COPD-related hospitalizations, risk factors for COPD, and complaints of any other health problems. **B-** Current medical history, which questioned four items: the patients' current symptoms, the stages of COPD, living with a smoker, and smoking.

Part 3 focused on the elderly patient's knowledge of chronic obstructive pulmonary disease and included nine questions, including the definition of COPD, its causes, symptoms, risk factors, methods of diagnosis, management, and medications used to treat it. It also asked about COPD complications and prevention methods.

Scoring system:

Each question received a score of two if it was answered correctly and completely, one if it was correctly and incompletely, and zero if it wasn't correct or don't know. The distribution of the total knowledge scores equaled 18, was as follows: good if the score of the total knowledge equal or exceeded 75% (($\geq$14), average if it fell between 50 and 75% (9–14), and poor if it fell below 50% (less than 9) point.

Tool (II): An observational checklist that was adopted from **Perry et al. (2018)** and concerned with elderly patients' practices regarding COPD contained 12 items that were separated into 1): a six-step deep breathing and coughing exercise technique 2) Using an inhaler technique which included six steps.

Scoring system:

The elderly patient practices were scored using the following formula: (1) score for done, (0) for not done. If the total practice score was below 60% (score of 7 points), it was termed unsatisfactory, and if it was equal to or above 60% (score of 12 points), it was termed satisfactory.

Tool (III): Quality of Life Scale (QOLS) for Elderly Patients with COPD, which contained 20 questions adjusted by the researchers to evaluate the effect of physical, psychological, and social status on quality of life in Elderly Patients **(Ninot et al., 2013).** On a three-point scale, measurements were taken. With the following grading on a Likert scale: always (2); sometimes (1); and never (0). There were eight questions about physical status, eight questions about psychological status, and four questions about social status.

Scoring system:

The total quality of life scores was calculated as 40 points. A score of >75% (>30) was regarded as good, a score of 50-75% (20-30) was rated average, and a score of 50 (20) was considered poor.

Tool (IV): COPD Self-Care Behavior Scale, which included 32 items modified by the researchers and adapted from (**Xiaolian et al., 2002**) to assess COPD patients' self-care behavior, 15 items assessing self-care for meeting universal self-care requirements, and 17 items assessing self-care for meeting health deviation self-care requirements. The scale was scored using a five-point Likert-type system as follows: Never (0), rarely (1), sometimes (2), often (3), and always (4).

Scoring system:

There are two categories totaling 128 points on the Self-Care Behavior Scale. If the total score was equal, or greater than 60% (77 points), the behavior was considered positive; if it was lower than 60% (77 points), the behavior was considered negative.

Content validity of the tools:

To assess the tools' content validity, the current study was presented to five academic nursing staff members in community health nursing. The academic nursing specialists' assessments of the appropriateness of the material and the clarity of the sentences guided the recommended adjustments.

The Tools' Reliability:

By administering the same tools to the same participants under identical circumstances on one or more occasions, the researchers were able to test the tool's internal consistency and reliability. The results of multiple tests were compared (test-retest reliability). The Cronbach alpha coefficient test was used to determine reliability, and the results are shown in the tables below, indicating the tools' generally accepted dependability. The scores for knowledge are 0.90, practices are 0.85, life quality is 0.82, and self-care behavior is 0.93.

Ethical Considerations:

All ethical issues were assured; elderly patients were personally contacted to explain the study's goals, secure their best cooperation, and guarantee the privacy of the collected data. The study's elderly participants were told by the researchers that their participation was voluntary, and the questionnaires were anonymous. The elderly patients had the complete right to leave the study at any moment.

Pilot study:

10% (N=10) of the elderly patients who were being studied participated in the pilot study, which tested the feasibility of the research process as well as the applicability and clarity of the study tools. Each sheet took roughly 30 minutes to fill, according to the estimate. The sample from the pilot study was incorporated into the overall sample without any changes.

Administrative approval:

To obtain permission for data collection, The administration of Benha Chest Hospital received a formal letter from the dean of the nursing college at Benha University.

Fieldwork:

The four phases of the current study's implementation were assessment, planning, implementation, and evaluation.

Phase of assessment and planning:

After getting official approval to carry out the study, the researchers interviewed the elderly patients before outlining its objectives and soliciting their involvement. After that, interviews with the elderly patients were conducted to evaluate their sociodemographic characteristics as well as their knowledge, behaviors, and quality of life in relation to chronic obstructive pulmonary disease. The data gathered during this phase served as the baseline for the creation of the educational program and was employed in subsequent comparisons to calculate the effect the impact of Orem's implementation of self-care behavior.

Phase of implementation:

The model was put into use over the course of a year, from May 2019's beginning to April

2020's end. The Benha Chest Hospital's outpatient clinics are where the approach was put into practice. Through six sessions, the topic material has been covered sequentially (four theoretical sessions and two practical sessions). Each session lasted between 30 and 45 minutes, including breaks for conversation. On average, 3-5 elderly patients were treated using the model each day, and the post-test was completed immediately.

Over the course of two weeks, two days per week (Saturday and Tuesday), each group participated in six separate sessions that lasted from 9:00 am to 12:00 noon. in addition to the pre- and post-test period of one week. The researchers occasionally collaborated with two groups on the same day. The researchers welcomed and introduced themselves to the elderly patients at the start of the first session, gave them a brief overview of the model and its goals, and then went over the basics of the respiratory system's anatomy and physiology, risk factors, and symptoms of chronic obstructive pulmonary disease using language that was simple enough for their educational level.

The researchers covered the physical, psychological, and social quality of life for patients with chronic obstructive pulmonary disease as well as high-risk individuals, methods of diagnosis, treatment, and medications used in the treatment of chronic obstructive pulmonary disease, complications, methods of prevention, the appropriate diet, and the importance of exercise for chronic obstructive pulmonary disease. They also covered the steps of deep breathing exercises. Discussion, inspiration, and reinforcement were utilized in sessions to enhance learning. Each session began with a recap of the previous session and a description of the goals of the new topics. Every participation was helpful to the researchers. The elderly patients took part in a conversation to clear up any misunderstandings at the conclusion of each session. They were also told the time of the subsequent session.

Phase of evaluation:

The post-test was used immediately by the researchers to evaluate the new knowledge they had gained following the model's implementation. In order to compare the differences in the elderly patient's knowledge, practice, quality of life, and self-care behavior immediately following the model's implementation, post-test questionnaires, which had the identical formats as the pre-test, were employed.

Analytical statistics:

All data will be organized, tabulated, and subjected to the proper statistical test for analysis. The Statistical Package for Social Science (SPSS) version 20 was used to analyze the data, which included calculating the frequencies and percentages, mean and standard deviation, and The Chi-square test (x2), linear correlation coefficient (r), and matrix correlation are used to examine statistical significance and relationships and to determine the relationship between the variables. Statistical significance was defined as a p-value of 0.05, highly significant as a p-value of 0.001, and insignificant as a p-value of >0.05.

Results:

The sociodemographic characteristics of the elderly patients under study are shown in **Table 1**. It was evident that 37% of the elderly patients under study were between the ages of 60 and 65, with a mean age of67.8±6.12 and 58% of them were males and 60% of were married.. In terms of education level, 61% of the elderly patients in the study were illiterate, 43% of them were retired, and They were largely rural (76%). 80 percent of patients in the study were living with their family and 83% had an income that covered their medication costs.

The past medical history of the elderly patients under study are shown in **Table 2**, which demonstrates that 60% of them had COPD for at least five years prior to their initial diagnosis and had been admitted to the hospital more than three times due to the condition. 64% of the

elderly patients in the study had bronchial asthma as children and reported having heart disease or blood vessel problems, such as hypertension.

The current medical history of the elderly patients under study is shown in **Table 3**, which also indicates that all of them complained of dyspnea, 56% of them had moderate severity stage II COPD, and 52% of them lived with smokers.

In **Table 4**, which details the smoking habits of elderly male patients, it can be noticed that all 89.6% of the patients smoked cigarettes. However, 57.2% smoked one pack or more each day. In terms of previous smoking, 90.5% of the elderly patients in the study had smoked for longer than ten years.

Figure 1 shows that 8% of the elderly people in the study demonstrated high levels of total knowledge prior to the model's implementation, and that number rose to 55% after the model's implementation.

According to **Figure 2**, 89% of the elderly patients in the study learned about COPD from the health team, followed by 59% of them from family and friends, and only 42% of them from the media

Figure 3 shows that, prior to the model's implementation, 27% of the elderly patients studied had satisfactory total COPD practices scores; after the model's implementation, this number increased to 81%.

Figure 4 demonstrates that whereas 29% of the elderly patients in the study had good total quality of life scores prior to the model's implementation, that number rose to 72% after the model's implementation.

Table 5 demonstrates that, both before and after the model's implementation, the studied elderly patients' overall self-care behaviors improved significantly (P- value<0.001).

According to **Table 6,** there was a statistically significant relationship between the total

knowledge score of the elderly patients under study and their age, sex, education level, employment, and place of residence after the model was implemented (P<0.05). While after the model's implementation, there was an insignificant relationship between their total knowledge score and their marital situation and income.

According to **Table 7**, there was a statistically significant relationship between the total practice score of the elderly patients under study and their income, occupation, and education levels post-model implementation (P <0.05). Although there was no relationship between the total practices score of the elderly patients under study and their age, sex, marital situation, and place of residence pre and post the model's implementation.

Table (8) shows that following; the model's implementation, there was a statistically significant relationship (p <0.05) between the total quality of life score of the elderly COPD patients studied and their age, sex, marital situation, and income. While there was no relationship between the total quality of life score of the elderly COPD patients studied and their level of education, occupation, or place of residence before and after the model's implementation.

According to **Table 9**, there was a positive statistically significant correlation between the total exercise score and total knowledge level of the elderly patients under study before and after the model's implementation (P < 0.05).

According to **Table 10**, there was a significant pre- and post-model implementation positive statistical correlations between total quality of life, practices, and knowledge scores of the elderly patients under study pre and post-model implementation (P< 0.05).

According to **Table 11**, there was a positive statistically significant correlation between the total self-care behaviour score of the elderly patients under study and their total knowledge score both before and after the model's implementation (P< 0.05).

Table (1): Frequency distribution of the studied elderly patients regarding their socio-demographic characteristics (n=100).

Socio-demographic characteristics	No.	%
Age/ years		
60-<65	37	37.0
65-	29	29.0
70+	34	34.0
Mean ± SD 67.8±6.12		
Sex		
Male	58	58.0
Female	42	42.0
Marital situation		
Married	60	60.0
Widowed	38	38.0
Divorced	2	2.0
Educational level		
Can't read and write	61	61.0
Basic degree	23	23.0
Secondary degree	11	11.0
University degree	5	5.0
Occupation		
Working	20	20.0
Not working	37	37.0
Retirement	43	43.0
Location of Residence		
Urban	24	24.0
Rural	76	76.0
Monthly income	83	83.0
Sufficient	17	17.0
Not sufficient		
Living		
Alone	20	20.0
With family	80	80.0

Table (2) Distribution of the elderly patients under study in terms of their past medical histories (n=100).

Past medical history	No.	%
The beginning of COPD		
< 1year	8	8.00
1 <3 years	12	12.0
3 < 5 years	20	20.0
> 5 years	60	60.0
Previous hospitalization related COPD:		
No one	10	10.0
1	10	10.0
2	20	20.0
3+	60	60.0
* Factors that Predispose to COPD:		
Smoking	58	58.0
Exposure to second-hand smoke	50	50.0
Dust exposure	60	60.0
Infantile bronchial asthma	64	64.0
Disorders of the chest like pulmonary tuberculosis	11	11.0
Certain foods or medications can be sensitive	28	28.0
COPD family history	30	30.0
*Complain of additional health problems:		
Digestive system disorders	13	13.0
Blood vessel conditions like hypertension and heart disease	64	64.0
Endocrine conditions like type 2 diabetes	28	28.0
kidney illness	7	7.0
Rheumatic illness	4	4.0
Oncology	2	2.0

*Answers are not mutually exclusive

Table (3): Frequency distribution of the studied elderly patients in terms of their present medical history (n=100).

Present medical history	No.	%
*The current symptoms that patients are complaining of:		
Dyspnea	100	100.0
Persistent cough	85	85.0
Weight loss	11	11.0
Ankle swelling	21	21.0
the COPD stage		
Mild	31	31.0
Moderate	56	56.0
Sever	13	13.0
living with a smoker	52	52.0

*Answers are not mutually exclusive

Table (4): Frequency distribution of the studied elderly male patients with COPD regarding their smoking (n=58).

Items	No.	%
Smoking:		
Smoker	52	89.6
Stop smoking	6	10.4
*Type of smoking: N= 52		
Tobacco	52	100.0
Hookah (Shisha)	24	46.1
No. of packs of cigarettes smoked each day		
Fewer than a pack	22	42.8
one or more packs	30	57.2
Smoking History:		
< 5 years	2	3.8
5-10 years	3	5.7
>10 years	47	90.5

*Answers are not mutually exclusive
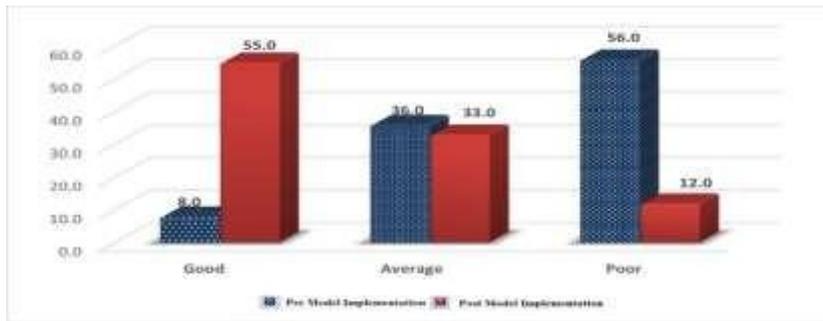
Figure (1): Percentage distribution of the 100 elderly patients studied regarding their total knowledge about COPD before and after the model's implementation.
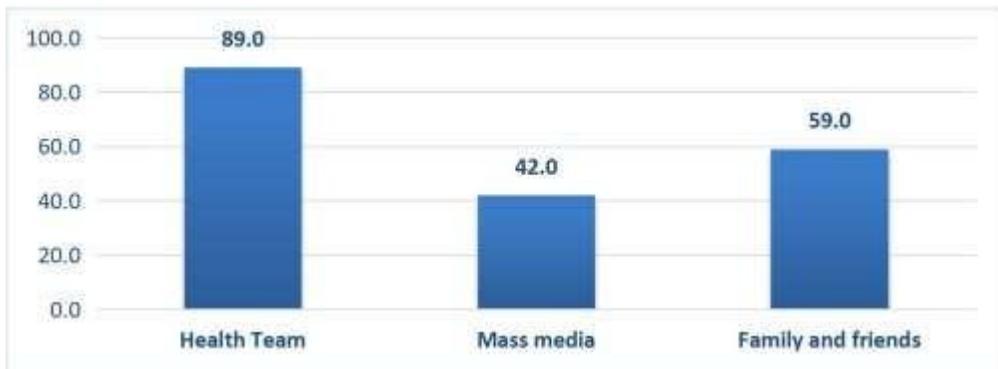
Figure (2): Percentage distribution of the studied elderly patient's COPD information sources (n = 100).
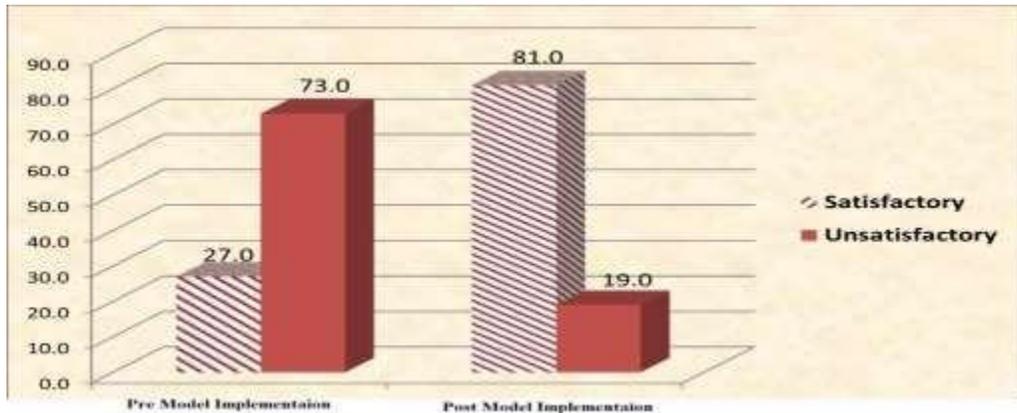
Figure (3): Percentage distribution of the studied elderly patients' total practice score pre, and post-model implementation regarding chronic obstructive pulmonary disease (n=100)
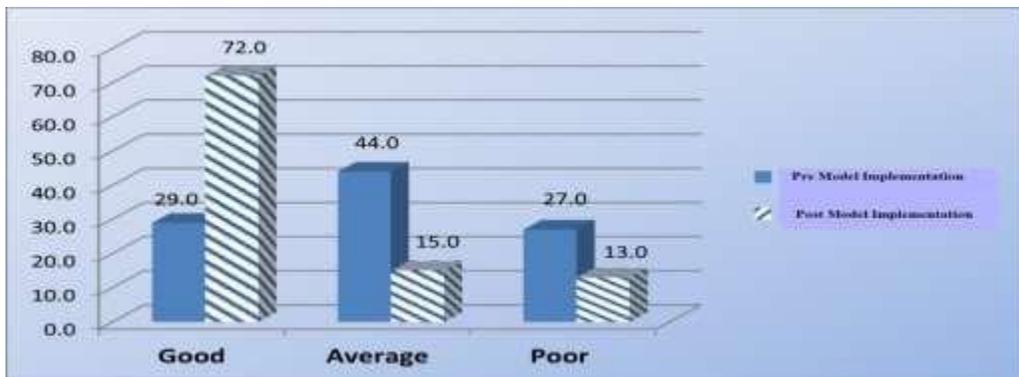
Figure 4: Percentage distribution of the studied elderly patients regarding their total quality of life score pre and post-model implementation (n=100).

Table 5: Comparison of the studied elderly patients' self-care behavior dimensions between pre- and post-model implementation (n= 100).

Self-care behavior	Pre-model implementation (Positive) Mean± SD	Post model implementation (Positive) Mean± SD	Paired t-test	
			t	P-value
Self-care behavior for Meetin Universal self-care Requisites.	23.330±7.633	44.080±3.334	-49.829	<0.001**
Self-care behavior for Meeting health deviation self-care requisites.	17.930±4.464	23.500±3.090	-9.790	<0.001**
Total self-care behavior	62.500 ± 7.436	94.830±3.569	-32.405	<0.001**

Table (6): Relation between the studied elderly patients' socio-demographic characteristics and their total knowledge score pre and post-model implementation (n=100).

Socio-demographic characteristics	Total knowledge score												Pre Chi-Square		Post	
	Pre-model implementation						Post-model implementation						x^2_1	p-value	x^2_2	p-value
	Poor (n=56)		Average (n=36)		Good (n=8)		Poor (n=12)		Average (n=33)		Good (n=55)					
	No	%	No	%	No	%	No	%	No	%	No	%				
Age:																
<65	19	33.9	14	38.9	4	50.0	4	33.3	14	42.4	19	34.5	16.70	0.03*	6.40	0.17
65-	15	26.8	14	38.9	0	0.0	2	16.7	13	39.4	14	25.5				
70+	22	39.3	8	22.2	4	50.0	6	50.0	6	18.2	22	40.0				
Sex:																
Male	33	58.9	20	55.6	5	62.5	6	50.0	18	54.5	34	61.8	10.17	0.041*	0.80	0.66
Female	23	41.1	16	44.4	3	37.5	6	50.0	15	45.5	21	38.2				
Marital situation:																
Married	30	53.6	24	66.7	6	75.0	6	50.0	24	72.7	30	54.5	2.76	0.59	4.66	0.32
Widowed	25	44.6	11	30.6	2	25.0	6	50.0	9	27.3	23	41.8				
Divorced	1	1.8	1	2.7	0	0.0	0	0.0	0	0.0	2	3.5				
Educational Level																
Can't read and Write	37	66.1	21	58.3	3	37.5	9	75.1	18	54.5	34	61.8	4.83	0.56	13.1	0.02*
Basic degree	10	17.8	10	27.8	3	37.5	1	8.3	10	30.3	12	21.8				
Secondary degree	6	10.7	3	8.3	2	25.0	1	8.3	4	12.2	6	10.9				
University Degree	3	5.4	2	5.6	0	0.0	1	8.3	1	3.0	3	5.5				
Occupation																
Working	13	23.2	7	19.4	0	0.0	1	8.3	7	21.2	12	21.8	4.34	0.36	11.1	0.038*
Not working	21	37.5	14	38.9	2	25.0	5	41.7	12	36.4	20	36.4				
Retirement	22	39.3	15	41.7	6	75.0	6	50.0	14	42.4	23	41.8				
location of Residence																
Urban	9	16.1	12	33.3	3	37.5	4	33.3	8	24.2	12	21.8	4.44	0.108	10.7	0.046*
Rural	47	83.9	24	66.7	5	62.5	8	66.7	25	75.8	43	78.2				
Monthly Income:																
Sufficient	47	83.9	29	80.6	7	87.5	9	75.0	28	84.8	46	83.6	0.301	0.86	0.64	0.72
Not Sufficient	9	16.1	7	19.4	1	12.5	3	25.0	5	15.2	9	16.4				

*Statistically significant difference (P > 0.05), x^2_1= between socio- demographic characteristic and pre model implementation, x^2_2= between socio-demographic characteristic and post model implementation

Table (7): Relation between the studied elderly patients' socio-demographic characteristics and their total practice score pre- and post-model implementation (n=100).

Socio-demographic characteristics	Total practices score								Pre Chi-Square		Post Chi-Square	
	Pre model implementation				Post model implementation							
	Unsatisfactory (n=73)		Satisfactory (n=27)		Unsatisfactory (n=19)		Satisfactory (n=81)		x^2_1	p-value	$x2_2$	p-value
	No	%	No	%	No	%	No	%				
Age												
<65	25	34.2	12	44.5	3	15.8	34	42.0				
65-	21	28.8	8	29.6	8	42.1	21	25.9	1.26	0.53	4.69	0.09
70+	27	37.0	7	25.9	8	42.1	26	32.1				
Sex												
Male	44	60.3	14	51.9	12	63.2	46	56.8	0.57	0.44	0.25	0.61
Female	29	39.7	13	48.1	7	36.8	35	43.2				
Marital situation												
Married	43	58.9	17	63.0	9	47.4	51	63.0				
Widowed	29	39.7	9	33.3	9	47.4	29	35.8	0.80	0.66	2.41	0.29
Divorced	1	1.4	1	3.7	1	5.2	1	1.2				
Educational level												
Can't read and Write	44	60.3	17	63.0	13	68.4	48	59.3				
Basic	16	21.9	7	25.9	4	21.0	19	23.5	0.71	0.86	10.9	0.041*
Secondary	9	12.3	2	7.4	1	5.3	10	12.3				
University	4	5.5	1	3.7	1	5.3	4	4.9				
Occupation												
Working	17	23.3	3	11.1	5	26.3	15	18.5				
Not working	27	37.0	10	37.0	5	26.3	32	39.5	2.13	0.34	11.2	0.032*
Retirement	29	39.7	14	51.9	9	47.4	34	42.0				
Location of Residence												
Urban	18	24.7	6	22.2	6	31.6	18	22.2	0.06	0.80	0.73	0.39
Rural	55	75.3	21	77.8	13	68.4	63	77.8				
monthly Income												
Sufficient	60	82.2	23	85.2	16	84.2	67	82.7	10.1	0.02*	16.0	0.017*
Not Sufficient	13	17.8	4	14.8	3	15.8	14	17.3				

Table (8): **Relation between the studied elderly patients' socio-demographic characteristics and their total quality of life score pre and post-model implementation (n=100).**

Socio-demographic characteristics	Total quality of life score												Pre Chi-Square		Post	
	Pre model implementation						Post model implementation						x^2_1	p-value	x^2_2	p-value
	Good (n=29)		Average (n=44)		Poor (n=27)		Good (n=72)		Average (n=15)		Poor (n=13)					
	No	%	No	%	No	%	No	%	No	%	No	%				
Age/years																
<65	11	37.9	16	36.4	10	37.0	29	40.3	3	20.0	5	38.4	1.67	0.79	13.4	0.048*
65-	6	20.7	14	31.8	9	33.4	18	25.0	7	46.7	4	30.8				
70+	12	41.4	14	31.8	8	29.6	25	34.7	5	33.3	4	30.8				
Sex																
Male	18	62.1	22	50.0	18	66.7	38	52.8	10	66.7	10	76.9	2.18	0.33	13.1	0.042*
Female	11	37.9	22	50.0	9	33.3	34	47.2	5	33.3	3	23.1				
Marital situation																
Married	20	69.0	27	61.4	13	48.1	45	62.5	7	46.7	8	61.5	7.11	0.13	12.4	0.05*
Widowed	9	31.0	17	38.6	12	44.4	25	34.7	8	53.3	5	38.5				
Divorced	0	0.0	0	0.0	2	7.5	2	2.8	0	0.0	0	0.0				
Educational Level																
Can't read and Write	16	55.2	29	65.9	16	59.3	43	59.8	10	66.7	8	61.5	5.10	0.53	2.66	0.84
Basic	9	31.0	10	22.7	4	14.8	16	22.2	3	20.0	4	30.8				
Secondary	2	6.9	4	9.1	5	18.5	8	11.1	2	13.3	1	7.7				
University	2	6.9	1	2.3	2	7.4	5	6.9	0	0.0	0	0.0				
Occupation																
Working	7	24.1	7	15.9	6	22.3	14	19.4	3	20.0	3	23.0	1.04	0.90	1.04	0.90
Not working	10	34.5	18	40.9	9	33.3	28	38.9	4	26.7	5	38.5				
Retirement	12	41.4	19	43.2	12	44.4	30	41.7	8	53.3	5	38.5				
location of Residence																
Urban	3	10.3	13	29.5	8	29.6	14	19.4	5	33.3	5	38.5	4.17	0.12	3.02	0.22
Rural	26	89.7	31	70.5	19	70.4	58	80.6	10	66.7	8	61.5				
Monthly Income																
Sufficient	24	82.8	32	72.7	27	100.0	62	86.1	12	80.0	9	69.2	2.33	0.31	8.82	0.01*
Not Sufficient	5	17.2	12	27.3	0	0.0	10	13.9	3	20.0	4	30.8				

Table (9): Correlation between the studied elderly patients' total practices score and their total knowledge level pre and post-model implementation (n=100).

	Total practices score			
	Pre-model implementation		Post-model implementation	
	r	p/value	r	p/value
Total knowledge score	0.69	0.04*	0.74	0.02*

Table (10): Correlation between the studied elderly patients' total knowledge, total practices, and total quality of life score pre and post-model implementation (n=100).

Items	Total quality of life score			
	Pre-model implementation		Post-model implementation	
	r	p-value	r	p-value
Total practices score	0.19	0.04*	0.61	0.02*
Total knowledge score	0.56	0.05*	0.41	0.04*

Table (11): Correlation between the studied elderly patients' total knowledge score and their total self-care behavior score pre and post-model implementation (n= 100)

Items	Total self-care behavior			
	Pre-model implementation		Post-model implementation	
	r	p-value	r	p-value
Total knowledge score	0.43	0.04*	0.60	0.02*

Discussion:

Middle-aged, male smokers and ex-smokers are more likely to develop the progressive, incurable lung condition known as chronic obstructive pulmonary disease (COPD). Because of exposure to more severe air pollution and a population that is ageing more quickly, the burden of COPD will increase in the coming years (Chen et al., 2018). The ability to follow COPD treatment plans and alter health-related behaviors in order to control their symptoms and lead useful lives is known as self-care behavior. In order for patients to actively engage in their own care, it is necessary to educate them about the disease and how to manage it, as well as to give them psychological support. Important chores like quitting smoking and taking drugs on a regular basis can be a part of it **(Wang et al., 2020).**

The current study aimed to evaluate the effect of Orem's self-care behavior on the quality of life of elderly patients with chronic obstructive pulmonary disease. The study revealed acceptance of the research hypothesis, indicating that elderly patient's knowledge, practices, and quality of life regarding chronic obstructive pulmonary disease were improved after implementing Orem's self-care behavior model evidenced by highly statistically significant improvement in total self-care behaviors of the studied elderly patients pre and post model implementation (p<0.001). Based on the available evidence, effective self-care can improve health and improve quality of life and reduce the need for health care. Therefore, Older people with COPD must constantly modify their self-care behaviors to adapt for changing circumstances.

In terms of the sociodemographic characteristics of the elderly patients studied, the current study found that more than one-third of them were between 60 and 65 years old, with a mean age of 67.8±6.12 years. more than half of them were males and less than two-thirds of them were married and didn't read and write, less than half of them were retired, while more than three-quarters of them lived in rural areas. Additionally, most of the elderly patients in the study lived with their family and had sufficient income to pay for their medications. (Table 1). This may be because ageing is the most prevalent risk factor for developing COPD due to the natural reduction in lung function with ageing, which may be linked to airflow restriction, and the criteria of the examined sample's age being above 60 years, which is the retirement age and due to patients in rural areas being exposed to rice grass burning, using wood, and agricultural crop residues, which causes more chest symptoms and greater airway destruction, the majority of elderly people in this age preferred to live with their families in rural areas. Additionally, living with families in overcrowded homes may spread infection among family members. More than half of the study sample were men due to the higher frequency of smoking among men, which is the primary risk factor for COPD, and all of these were regarded as substantial risk factors for COPD.

Less than two-thirds of the elderly patients studied had been diagnosed with chronic obstructive pulmonary disease (COPD) for at least five years and had previously been admitted to the hospital for COPD more than three times, according to the current study (table 2). This may be as a result of frequent respiratory tract infections as well as the frequency and severity of exacerbations

brought on by exposure to irritants and pollutants. These findings were in the same line with the study done by **Ibrahim & Abd El-Maksoud, (2018),** found that 65% of the studied patients were admitted to hospital previously for more than three times but disagreed in Period of disease where 90% of their patients had a history of the disease for more than 3 years. Also, these findings disagreed with **Hanafy et al., (2019)** who stated that less than half of their participants 47.4% over 10 years, this is the first time that COPD has been identified and only 12.7% of them entered the hospital before due to COPD**.**

According to past medical history, the current study showed that; Less than two-thirds of the elderly individuals studied in this study had bronchial asthma when they were children and complained of heart disease such as hypertension respectively (table 2). This might be due to the patient that has asthma being at high risk for COPD. These findings disagreed with the study done by **Elesawy et al., (2018),** they found that 15% of their patients suffered from bronchial asthma. Also, these findings were on the same line the study done by **Divo et al., (2018)** they noticed that 55.6% of their participants complained of hypertension and 22.1% complained from diabetes mellitus and also were supported by **(Global Initiative for Chronic Obstructive Lung Disease, (2018**) that reported that COPD often co-exists with other diseases(co-morbidities) that might have a significant impact on prognosis.

Regarding current medical history, the present study showed that all of the studied elderly patients complained of dyspnea, the majority of them complained of chronic cough and the minority of them suffered from low body weight (table 3). This might be a result of the substantial correlation between these symptoms and COPD. This result

coincided with what was found by **Badaway et al., (2016),** they declared the Prevalence of Chronic Obstructive Pulmonary Disease in Qena Governorate, Egypt, and found that most of their COPD patients had dyspnea, cough, and wheezing chest but disagreed with the study done by **Mohammed et al., (2020)** they stated that 28.3% of the patients under study were losing weight, and that approximately 75.8% of them had dyspnea, a chronic cough, and copious sputum.

Concerning the smoking habit; the majority of the elderly patients in the study smoked, all had smoked cigarettes for more than 10 years, and more than half smoked more than one pack per day, according to the current study (table 4). The fact that more than half of the patients in the study were men and that tobacco use was seen as a significant risk factor and crucial initial diagnosis for COPD may be to cause. These findings were supported by **Global Initiative for Chronic Obstructive Lung Disease, (2018)** which stated that cigarette smoking was the best-studied COPD risk factor, moreover cigarette smokers had a higher prevalence of respiratory symptoms, lung function abnormalities, and a greater COPD mortality rate than nonsmokers.

Also, supported by **the National Heart, Lung, and Blood Institute, (2018)** that announced COPD most often occurs in people with a history of smoking. These findings were incongruent with the study done by Walia et al., (2016) they noted that 17.5% of their participants were current smokers and 43.3% of them smoked a cigarette and these results also were on the contrary with the study done by Ibrahim & **Abd El-Maksoud, (2018),** they indicated that 57.5% of their patients were smokers and 62.8% of them smoked two cigarette packs per day.

The current study found that the minority of the elderly patients studied had a good total knowledge level concerning COPD before the implementation of the model, and that this percentage improved to more than half after the model's implementation. (Figure 1). This reinforces the idea that the patients' lack of educational activities was the cause of their ignorance, and it suggests that addressing the information needs of the patients will close the knowledge gap. This finding was in the same line with **Elesawy et al., (2018),** their study's mentioned that there was a highly statistically significant improvement in total patients" knowledge post guideline comparing with pre guidelines implementation. This finding also was following the study done by **Sawant et al., (2020)**, they claimed that (5%) of the studied subjects had good knowledge score pre- program implementation and this percentage increased to (60%) post-program implementation.

The current study revealed that; the majority of the studied patients acquired their information about COPD from their healthcare providers, followed by more than half from their family and friends and more than one-third from mass media. (figure 2). This finding was in the same line with study **Sobeh et al., (2019)** who revealed that the majority of the study's participants knew about COPD from the hospital's medical staff. This finding also was incongruent with **Yadav et al., (2020),** who reported most studied subjects acquired their information about COPD their family members, friends, and relatives.

According to the current study's findings regarding the elderly patients who were study's total practice scores for COPD, more than a quarter of them had satisfactory total practice scores for COPD before to the model's implementation, and this percentage rose to the majority of them following the

model's implementation. (figure 3). This might be explained by the fact that the procedures were executed with demonstration and re-demonstration utilizing actual objects, all while being supervised and guided by the researchers. These findings are supporting the research hypothesis. The findings disagreed with **Sweed et al., (2019),** who showed that only 10% of COPD patients had a satisfactory level of self-care practices pre-intervention construction. Also, these results were contrary to **Ibrahim & Abd El-Maksoud, (2018**), who reported that 4% of the studied subjects had satisfactory total practices score regarding COPD pre-program implementation and this percentage increased to 62.5% post-program implementation. Also, incongruent with **Sawant et al., (2020),** they reported that 5.46% of their participants had satisfactory total practices score regarding COPD pre- program and this percentage increased to 13.73% post-program but these results agreed with **Elesawy et al., (2018)** they showed that presence of highly statistically significant improvement in all items of practices after implementation of the nursing intervention program.

According to the current study, less than one-third of the studied elderly patients had good total quality of life score before to the model's implementation, but this number percentage increased to more than two-thirds after the model's implementation. (figure 4). This result coincided with what was found by **Abd El-Aziz, (2020),** who found that more than two-thirds of their participants had good total scores of quality of life post-intervention. Also, this result agreed with **Wang& Kim, (2019),** who reported that 72.7% of their subjects improved their QoL post-intervention because they have a better understanding of their health or are more at ease taking their medications or managing their symptoms.

Concerning the studied patients' self-care behavior, the current study showed that; there were a highly statistically significant improvements in total self-care behaviors of the studied elderly patients' before and after model implementation (p<0.001) (table 5). This might be due to most subjects in the present study were not seriously ill. 31% of them were at stage I and 56% of them at stage II of COPD and The majority of these patients were physically able to do self-care, and their COPD had been present for an average of five years or more. and They may have acquired self-care techniques through experience. This finding was supported by **Shirvani et al., (2020),** who found that elders with COPD had good self-care behavior pre and post programs. Also agreed with the study done by **Wang et al., (2017),** who reported that both before and after the model's implementation, the study's participants' overall total self-management had significantly improved.

The current study shows that there was a statistically significant relationship between the studied elderly patients' total knowledge score and their socio-demographic characteristics and their total knowledge score. and their age, sex pre-model implementation, educational level, occupation, and their residence post model implementation P<0.05 (table 6). These results agreed with **Wang et al., (2016),** who revealed a significant relationship between the patients' total knowledge level and their socio-demographic characteristics as age and location of residence P <0.05.

Additionally, the results of the current study indicated that there was no significant relationship between the elderly patients' total knowledge score and their marital situation and income before and after the model's implementation (table 6). These results were at disagreement with **Folch-Ayora**

et al., (2019), who informed that there was no statistically significant correlation between the participants' total knowledge score and their marital situation and income. P>0.05.

As regards the relation between the studied elderly patients' socio-demographic characteristics and their total practices score, the present study showed that there were statistically significant relations between the studied elderly patients' total practices score and their educational level, occupation, and income post-model implementation P<0.05 (table 7). This might be since more educated patients can have better access to information about their health conditions and be more aware and understand the treatment plan. These findings agreed with **Mohammed et al., (2020)** who reported that there was a statistically significant relationship between their studied patients' total practices score and their educational level because more than one-third of their participants were secondary education (39.2%). Also, these findings were in the same line with **Mohammed et al., (2017),** who discovered that there was a significant relationship between the total score of the practice of their subjects and their level of education, occupation, and income after the intervention implementation. This was related to illiteracy, and a lack of health literacy about prevention, and COPD management. Inadequate health services in rural places and a lack of studies that aim to improve elderly knowledge and practices about COPD but after the implementation of the educational program, the level of knowledge and practices were improved. These results were also supported by **Ibrahim & Abd El-Maksoud, (2018),** who noticed that there was no statistically significant relationship between their subjects' age, sex, marital situation, and their practices regarding COPD self-management at all stages of the program.

Regarding the relationship between the total quality of life score of the elderly patients under study and their sociodemographic characteristics, the present study showed that there were statistically significant relations between the studied elderly patients with COPD total quality of life score and their age, sex, marital situation, and income post-model implementation. While there was insignificant relation between the studied elderly patients with COPD total quality of life score and their educational level, occupation, and residence pre and post-model implementation (table 8). These results agreed with the **Lee et al., (2017),** reported that there were statistically significant relation between the studied subjects' age and their quality of life and there were insignificant relation between their residence and their quality of life and also agreed with the study done by **Jarab et al., (2018),** confirmed that there were statistically significant relation between the studied patients' age, gender and their quality of life and also with the study done by Farag et al., (2018), discovered that there was a statistically significant positive correlation between age and health related QoL score with a strong linear relationship across all domains.

Pre- and post-model implementation, there was a positive statistically significant correlation between the studied elderly patients' total practice score and their total knowledge score, according to the current study's findings about this relationship. (table 9). This may be because ongoing education for the elderly has a good impact on knowledge and practice levels. These findings were in line with the research conducted by **Labieb et al., (2020),** established a significant positive correlation between the studied group's total knowledge score and its total practice score (pre, 2 months and 6

months of nursing protocol application). Additionally, these findings supported **Fouad et al., (2016),** found a relationship between knowledge and practice about COPD with a significant difference between the study group and the control group at pre, post, and follow-up.

The current study revealed a positive statistically significant correlation between the studied elderly patients' total quality of life score, their total practices score, and their total knowledge score before and after model implementation (table 10). This could be because to the quality of life being affected by the knowledge and practices level, if the patient has a good level of knowledge leads to good practice which leads finally to good quality of life. These results corresponded with **Abd El-Aziz, (2020)** who reported a positive statistically significant correlation between the overall quality of life scores of the elderly patients under study and their total practices, knowledge scores before and post-intervention implementation.

Concerning the correlation between the studied elderly patients' total knowledge score and their total self-care behavior score, the current study showed that there was a positive statistically significant correlation between the studied elderly patients' total self-care behavior score and their total knowledge score pre and post-model implementation (table 11). This could be because patient behavior toward self-management increases with patient awareness of the disease, and vice versa, with patient knowledge of the disease serving as the primary determinant of patient behavior. The more information people have, the more likely they are to make health-promoting decisions. These findings agreed with the study done by **Bugajski et al., (2020),** reported that there was significant correlation between self-care behavior and knowledge score pre and post-intervention implementation and also

coincided with what was found by **Yang et al., (2019),** indicated that the scores for self-management behavior and COPD knowledge showed a significant positive relation (P< 0.01) according to the Pearson correlation analysis. This implies that a patient's level of self-management behavior corresponds to their level of knowledge of COPD.

Conclusion and recommendations:

This study concluded that Orem's self-care behavior had a good effect on older patients' understanding of chronic obstructive pulmonary disease, practices, and quality of life. The study recommendation includes elderly COPD patients should participate in a continuous self-care behavior program to improve their knowledge, behaviors, and practices. In order to prevent COPD complications, it further stressed the importance of offering assistance and suitable follow-up treatment for COPD patients in all outpatient clinics in chest hospitals by a specialized team.

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