



Effectiveness of structured teaching program on knowledge regarding pulmonary rehabilitation among patients with chronic obstructive pulmonary disease at a selected hospital

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Abstract

Introduction: Chronic obstructive pulmonary disease is a chronic condition that negatively affects several patient-centered outcomes. The burden of chronic obstructive pulmonary disease has increased recently in developing countries. On the other hand, structured or non-structured rehabilitation services for chronic obstructive pulmonary disease patients are not routinely available in our countries. Pulmonary rehabilitation is an essential component of care for people with chronic obstructive pulmonary disease, this study aimed to emphasize the emerging benefits of pulmonary rehabilitation in chronic obstructive pulmonary disease population by patient education on pulmonary rehabilitation. With this intention, the present study attempts to assess the effectiveness of structured teaching program on knowledge regarding pulmonary rehabilitation among patients with chronic obstructive pulmonary disease at a selected hospital.

Methodology: One group pretest-posttest design, non-probability convenient sampling technique selected 50 chronic obstructive pulmonary disease diagnosed patients were selected from selected hospital, a knowledge questionnaire was given in pre-test to assess the knowledge, following which structured teaching program was given and after ten days post-test was given using knowledge questionnaire.

Results: The study found that patients had inadequate knowledge with a mean was 12.45 ± 0.55 in pretest and in the posttest mean knowledge score was 25.00 ± 2.48 signifies the effectiveness of structured teaching program.

Conclusion: The study concluded that structured teaching program was significantly effective in improving the knowledge of chronic obstructive pulmonary disease patients regarding pulmonary rehabilitation.

Keywords: Effectiveness; structured teaching programme; pulmonary rehabilitation; chronic obstructive pulmonary disease

Introduction

Breathing is vital for life, which happens automatically. A human being breathes about 16-24 breaths per minute. Respiration is the transport of oxygen from the outside air to the cells within tissues, and the transport of carbon dioxide in the opposite direction refers as cellular respiration. The metabolic process by which an organism obtains energy by reacting oxygen with glucose to give water, carbon dioxide, and Adenosine Tri Phosphate [1].

Respiratory disease is a medical tear that encompasses pathological conditions affecting the organ and tissues that make gas exchange possible in higher organism and influence the condition of the upper respiratory tract, trachea, bronchi, bronchioles, alveoli, pleura and pleural cavity, the nerves and muscles of breathing [2].

Lukman *et al* describes that Chronic obstructive pulmonary disease can occur because of increased airway resistance secondary to bronchial mucosal oedema or smooth muscle contraction. It may also be a result of decreased elastic recoil, as seen in emphysema. Decreased elastic recoil results in a decreased driving force to empty the lung [3].

When someone acquires chronic condition, expectations, life's meaning and purposes are all threatened. The prevalence of chronic disease is showing an upward trend in most of the countries and about one third of the population are affected with chronic illness [4].

Chronic obstructive pulmonary disease is a type of obstructive lung disease where the airways become damaged causing them to narrow. The world department reported that chronic obstructive pulmonary disease is an umbrella term for diseases that impair lungs and leave people feeling breathlessness.

Currently 64 million people affected with chronic obstructive pulmonary disease worldwide, in India almost 24 million adults who are over the age of 40. Chronic obstructive pulmonary disease is predominantly a disease of the men and only 40% of cases in India occur among women. Much more than a smoker's cough, it will become the third leading cause of death by 2030 [5].

Pulmonary rehabilitation plays a key role in the management of chronic obstructive pulmonary disease. Pulmonary rehabilitation is a multidimensional continuum of services, directed to persons with pulmonary disease and their families usually by an interdisciplinary team of specialists, with the goal of achieving and maintaining the individual's maximum level of independence and functioning in the community [6].

Pulmonary rehabilitation program provide rehabilitation in inpatient, outpatient, or home settings, using at least three sessions weekly for at least 6 weeks. The programs usually consist of exercise training, education, and psychosocial/behavioral components. Upper extremity exercises and instruction on breathing technique are included in most rehabilitation programs and reduce dyspnea. Decreases in the

sensation of dyspnea, increased functional exercise capacity, and enhanced quality of life of patients with chronic obstructive pulmonary disease are established benefits of pulmonary rehabilitation. Enrollment in a pulmonary rehabilitation program is encouraged for all appropriate candidates with chronic respiratory impairment, particularly for those with severe chronic obstructive pulmonary disease [7].

Pulmonary rehabilitation improves the sense of control of a patient over their disease, as well as their emotions [8]. Pulmonary rehabilitation also encourages active participation in health care, leads to a better understanding of the physical and psychological changes that occur with chronic illness, and helps patients and their families explore ways to cope with those changes [9]. Through the education process, patients can become more skilled at collaborative self-management and more adherent to their treatment plan [10].

Material and methods

The present study aims to assess the level of knowledge on pulmonary rehabilitation among patients with chronic obstructive pulmonary disease and to assess the effectiveness of structured teaching program regarding pulmonary rehabilitation among patients with chronic obstructive pulmonary disease. One group pretest-posttest design was used, fifty patients diagnosed with

chronic obstructive pulmonary disease were selected by non-probability convenient sampling technique, a structured knowledge questionnaire was designed which had content validity index of 0.90 and reliability of 0.88, the questionnaire consisted of two parts: Demographic variable included age, gender, religion, marital status, education, occupation, monthly income, duration of pulmonary illness, presence of family history of chronic obstructive pulmonary disease, duration of smoking and Knowledge questionnaire included Concepts of chronic obstructive pulmonary disease and pulmonary rehabilitation; Respiratory muscle training; Nutritional counseling; Measures for cessation of smoking; Stress relaxation and energy conservation techniques. Thirty knowledge questionnaires were designed each correct response scored one marks and wrong response scored zero, so maximum score was 30 and minimum score was zero. Based on the scores the knowledge level categorized as inadequate knowledge (below 50%); moderate knowledge (between 51% to 75%) and adequate knowledge (76% to 100%). The study initially conducted pretest using structured knowledge questionnaire following this, structured teaching program administered and finally after ten days gap posttest conducted using same structured knowledge questionnaire. The collected scores were complied, analyzed using SPSS 16.0 version.

Results

Table 1: Finding relating to the demographic variables

Sl No	Variables	Frequency	Percentage n=50	
1.	Age in years	40 to 50	15	30.00
		51 to 60	12	24.00
		61 to 70	14	28.00
		71 and above	09	18.00
2.	Gender	Male	30	60.00
		Female	20	40.00
3.	Religion	Hindus	25	50.00
		Muslims	10	20.00
		Christians	05	10.00
		Others	10	20.00
4.	Marital status	Married	30	60.00
		Divorced	05	10.00
		Widower	05	10.00
		Widow	10	20.00
5.	Education status	No formal education	05	10.00
		Secondary education	13	26.00
		Higher secondary education	12	24.00
		Graduation	10	30.00
		Graduation and above	05	10.00
6.	Occupation	Unemployed	10	20.00
		Government employee	25	50.00
		Private employee	15	30.00
7.	Monthly income	Less than 10,000/-	25	50.00
		10,001/- to 20,000/-	15	30.00
		More than 20,001/-	10	20.00
8.	Duration of pulmonary illness	Less than one year	08	16.00

		One to five years	30	60.00
		More than six years	12	24.00
9.	Family history of chronic obstructive pulmonary disease	Yes	35	70.00
		No	15	30.00
10.	Duration of smoking	Less than 10 years	20	40.00
		More than 10 years	30	60.00

Table 2: Findings relating to the distribution of pretest and posttest knowledge score and mean% enhancement

SI No	Aspects	Pre-test			Post-test			Mean % Enhancement t n=50
		Mean	Standard Deviation	Mean %	Mean	Standard Deviation	Mean %	
1.	Concept of chronic obstructive pulmonary disease & pulmonary rehabilitation	3.50	0.90	35.00	9.25	0.65	92.50	57.50
2.	Respiratory muscle training	2.25	0.44	45.00	3.50	0.30	70.00	25.00
3.	Nutritional counselling	2.00	0.65	40.00	3.75	0.68	75.00	35.00
4.	Measures for cessation of smoking	2.30	0.87	46.00	4.00	0.35	80.00	34.00
5.	Stress relaxation & energy conservation techniques	2.40	0.55	46.00	4.50	0.50	90.00	44.00
	Overall knowledge score	12.45	3.41	48.00	25.00	2.48	83.34	35.34

Table 2 shows the distribution of pretest and posttest knowledge scores and mean% enhancement, the mean % enhancement is 57.50 for concept of chronic obstructive pulmonary disease and pulmonary rehabilitation; 25.00 for respiratory muscle training; 35.00 for nutritional counseling; 34.00 measures for cessation of smoking and 44.00 for stress relaxation and energy conservation techniques respectively. Overall, there were 35.34 improvements from the baseline knowledge score.

Table 3: Findings relating to effectiveness of structured teaching program on knowledge regarding pulmonary rehabilitation

SL No	Knowledge Score	Mean	Standard Deviation	't' Value	p Value	Interference n=50
1.	Pretest	12.45	0.55	23.30	≤ 0.001	Significant
2.	Posttest	25.00	2.48			

Table 3 shows that the structured teaching program was significantly effective at t value 23.30, p value ≤ 0.001 with pretest Mean ± Standard deviation of 12.45 ± 0.55 and posttest Mean ± Standard deviation of 25.00 ± 2.48 respectively.

Table 4: Findings relating to the categorization of knowledge level regarding pulmonary rehabilitation in pretest and posttest

SI No	Categorization OF Knowledge Level	Pretest Scores		Posttest Scores n=50	
		Number	Percentage	Number	Percentage
1.	Inadequate (Less than 50%)	40	80.00	NIL	0.00
2.	Moderate (51 to 75%)	10	20.00	NIL	0.00
3.	Adequate (More than 75%)	NIL	0.00	50	100.00
	Total	50	100.00	50	100.00

Table 4 depicts the categorization of knowledge level regarding pulmonary rehabilitation among chronic obstructive pulmonary disease patients, it is observed that in pretest 40 (80.00%) of patients had inadequate knowledge, 10 (20.00%) of patients had moderate knowledge on pulmonary rehabilitation and none of them have adequate knowledge. In posttest after structured teaching program almost all 50 (100.00%) of patients gained adequate knowledge in pulmonary rehabilitation.

Discussion

The present study aimed to assess the knowledge and effectiveness of structured teaching program of patients diagnosed with chronic obstructive pulmonary disease regarding pulmonary rehabilitation. The study found that majority of the patients was in age group of 40 to 50 years, which is the most vulnerable age for pulmonary diseases, these findings were similar to the findings of the study [11]. The present study findings showed that majority of the patients were male, this finding is similar to the findings of the study. Most of the patients were Hindus, majority of them were married, the education status revealed that most of them had formal education, were employed having monthly income ranges between rupees 10000 to 20000. The study findings showed that out of 50 patients assessed 30 of them were suffering from pulmonary disease since five years, which indicates their chronic infection, poor management and follow up.

Majority of patients had family history of pulmonary illness, the findings relating to duration of smoking habit revealed that most of the were smoking for more than ten years, the findings were similar to the finding of study [12].

The findings relating to knowledge of chronic obstructive pulmonary disease regarding pulmonary rehabilitation showed inadequate knowledge in pretest these findings were similar to the finding of the study [13].

The findings of effectiveness of structured teaching program showed significant improvement in knowledge level of patients regarding pulmonary rehabilitation, almost all of the patients had adequate knowledge level in posttest with t value 23.30 at 0.001 level of significance, these findings were similar to the findings of the study [13, 14].

Conclusion

Pulmonary rehabilitation is the essential part in the management of chronic obstructive pulmonary disease, the knowledge of the patients should be improved by regular health education program by health team members, the present study showed that structured teaching program imparted significant improvement in the knowledge level of patients, hence study similar to the present

Study should be conducted by researchers to improve the quality of management of chronic obstructive pulmonary disease.

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