

Research Article

A Study to Evaluate Nursing Intervention Package on Self-efficacy, Dyspnoea and Quality of Life among COPD Patients, Residing in Selected Districts of Rajasthan

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A B S T R A C T

Introduction: COPD is an emerging threat to the world as it affects the lives of individuals by decreasing their quality of life. In the current context, nurses can play an important role in the management of COPD by promoting an active lifestyle and some lifestyle modifications.

Aim: To evaluate the effectiveness of the nursing intervention package on self-efficacy, dyspnoea and quality of life among COPD patients.

Settings and Design: Quantitative experimental approach, and pre-experimental one-group pre-test and post-test research design were used. The study was conducted at 9 selected hospitals in various districts of Rajasthan.

Method: 240 COPD patients were selected by non-probability, convenient sampling technique. Pre-test data were collected by socio-demographic proforma, General Self Efficacy Scale, Dyspnoea-12 Scale, and St. George's Respiratory Questionnaire. After the pre-test, a nursing intervention package was administered by the researcher and post-test data was collected using the same research tools.

Results: The obtained pre-test mean score of self-efficacy was 23.63 (SD = 4.548) whereas, in the post-test, mean score was 33.14 (SD = 2.969). The pre-test and post-test mean scores of dyspnoea were 18.51 (SD = 5.266) and 8.12 (SD = 3.290) respectively and the pre-test and post-test mean scores of quality of life were 71.06 (SD = 12.707) and 52.44 (S = 7.698) respectively.

Conclusion: The investigator concluded that the nursing intervention package was effective in reducing dyspnoea and improving self-efficacy and quality of life in COPD patients.

Keywords: Self-efficacy, Dyspnoea, Quality of Life, Nursing Intervention Package, COPD, COPD Rehabilitation

Introduction

Breathing is vital and fundamental to each life. It is the most important function of our body for normal living. Each day we breathe about 18000 to 21,000 times. An individual can survive only for 1 to 3 minutes without breathing. One respiratory cycle accounts for about 8-10 seconds for each breath.¹ Respiration can be affected by short-term infections and long-term respiratory diseases. Respiratory diseases such as chronic obstructive pulmonary disease and asthma are the major health problems in India. Previous surveys showed that Chronic Obstructive Pulmonary Disease (COPD) was ranked the 5th biggest killer disease worldwide but this burden has increased and now it is the 3rd leading cause of death worldwide.² World Health Organization stated, "chronic obstructive pulmonary disease is a lung disease characterised by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible".³ Recently, the Indian Council of Medical Research (ICMR) identified that the overall incidence of COPD is 4.25% among the Indian population and 5.0 and 3.2 per cent respectively in men and women of, and over 35 years of age. It was the major reason of the mortality rate in India.^{3,4}

Chronic obstructive pulmonary disease is responsible for progressive respiratory deterioration, which is accompanied by coughing and expectoration, worsening lung function, and dyspnoea.⁵ The acute exacerbations of COPD become more frequent with the severity of COPD and smoking.⁶ In 2008, COPD was the third leading cause of mortality in America and it was the leading cause of chronic lower respiratory tract disorders.⁶ Recent surveys and studies showed that COPD has become a serious public health problem, and it is expected to become a more severe problem and the third leading cause of death in the world by 2030.⁵ Deterioration of lung function due to COPD causes morbidity, mortality and decreased QoL (Quality of Life) in patients with COPD, and the frequency of symptoms is related to a rapid decline with pulmonary function.⁷

COPD is highly associated with a substantial socio-economic burden. A variety of symptoms and their influence on patients result in the daily burden of COPD. Its most common symptoms are dyspnoea, cough, and sputum production, and less common but worrying symptoms are wheezing, chest tightness, and chest congestion. COPD symptoms like dyspnoea are linked with a clinically meaningful decline in QoL, overall health status, and prognosis of individuals with a disease. Its symptoms progressively compromise the patient's ability to function normally in terms of their day-to-day and physical activities and impair the efficacy of life. Moreover, increased COPD symptom burden is associated with decreased QoL.⁸

The quality of nursing care for the patient with COPD should

be ensured based on evidence-based practice and a holistic approach. Today nursing seems to be more creative, and nurses incorporate critical thinking and analysis in rendering comprehensive care to patients. This critical analysis helps them to identify the problems of the patient in its early stage and institute appropriate interventions.⁹ According to the studies, literature, and books, some nursing diagnoses and related interventions can help a COPD patient to control the disease and prevent its progression.

Objectives of the Study

1. To assess the level of self-efficacy, dyspnoea and quality of life among COPD patients
2. To evaluate the effectiveness of selected nursing interventions on self-efficacy, dyspnoea and quality of life among COPD patients
3. To find out the association of self-efficacy, dyspnoea and quality of life among COPD patients with selected sociodemographic variables

Subjects and Method

- **Research Approach:** Quantitative experimental approach was used to evaluate the nursing intervention package
- **Research Design:** Pre-experimental one-group pre-test and post-test research design was used
- **Research Setting:** The study was conducted at 9 selected hospitals in various districts of Rajasthan
- **Target Population:** The population of the present study comprises all COPD patients admitted to the hospital
- **Sampling Technique:** Non-probability, convenient sampling technique was used for selecting samples for the study
- **Sample Size:** 240 COPD patients were selected, who met the designated set of criteria and gave informed consent
- **Study Duration:** July 2019 to October 2022

Inclusion and Exclusion Criteria for Sample Selection

The following criteria were established for sample selection:

Inclusion Criteria

- Patients diagnosed with COPD and admitted in a hospital
- Patients who had comorbidity conditions like hypertension, diabetes, or coronary artery disease
- Patients who could converse in either Hindi or English
- Patients aged 40 years or above
- Patients who were accessible during data collection

Exclusion Criteria

- Patients with a terminal illness
- Patients who were admitted in the Intensive Care Unit (ICU)

- Patients who had undergone major surgery or were planned for major surgery
- Patients who were suffering from major mental illnesses, schizophrenia, mental retardation, personality disorder etc

Ethical Clearance

Ethical permission for this research project was obtained from the Human Research Ethics Committee (HREC) of Geetanjali University, Udaipur. The committee granted an Ethical Clearance Certificate with reference number GU/HREC/EC/2019/1669 on Feb 1, 2019.

Description of the Final Tool

In this study, sociodemographic proforma, General Self-Efficacy Scale (GSE), Dyspnoea-12 Scale and St George's respiratory questionnaire were used by the researcher to evaluate the nursing intervention package regarding self-efficacy, dyspnoea, and quality of life among COPD patients.

Plan for Data Analysis

Data were analysed by applying descriptive and inferential statistics. The findings were presented in the following sections:

Section I: Distribution of respondents according to sociodemographic variables

Section II: Level of self-efficacy, dyspnoea and quality of life score among COPD patients

Section III: Effectiveness of nursing intervention package on self-efficacy, dyspnoea and quality of life among COPD patients

Section IV: Association between pre-test score of self-efficacy, dyspnoea and quality of life with selected sociodemographic variables

Results

Section I: Distribution of Respondents according to Sociodemographic Variables

Table I. Description of Sociodemographic Variables

S. No.	Sociodemographic Variables	Group	Frequency (f)	Percentage (%)
1.	Age (years)	41-50	50	20.83
		51-60	55	22.92
		61-70	90	37.5
		>70	45	18.75
2.	Gender	Male	91	37.92
		Female	149	62.08
3.	Religion	Hindu	102	42.50
		Muslim	89	37.08
		Christian	49	20.42
4.	Type of family	Nuclear	121	50.42
		Joint	89	37.08
		Extended	30	12.50
5.	Area of residence	Urban	69	28.75
		Semi-urban	111	46.25
		Rural	60	25.00
6.	Educational qualification	Non-formal	59	24.58
		Primary	26	10.83
		Secondary	64	26.67
		Graduate and above	91	37.92
7.	Occupation	Unskilled workers	19	7.92
		Skilled workers	55	22.92
		Desk workers	59	24.58
		Business	23	9.58
		Others	84	35.00

8.	Monthly family income (INR)	< 10000	13	5.42
		10001-20000	48	20.00
		20001-30000	67	27.92
		> 30000	112	46.67
9.	Smoking status	Non-smoker	128	53.33
		Active smoker	67	27.92
		Passive smoker	45	18.75
10.	History of previous illness	None	112	46.67
		Hypertension	59	24.58
		Coronary artery disease	31	12.92
		Diabetes mellitus	38	15.83
11.	Years of suffering from COPD (years)	≤ 3	107	44.58
		4-6	100	41.67
		7-9	19	7.92
		>9	14	5.83
12.	Duration of hospitalisation (days)	≤ 3	78	32.50
		4-6	110	45.83
		7-9	52	21.67
13.	Family history of COPD	Yes	60	25.00
		No	180	75.00

Table 1 shows the sociodemographic variables of the participants.

Section II: Level of Self-Efficacy, Dyspnoea and Quality of Life Score among COPD Patients

Data revealed that 64.17% of participants had moderate self-efficacy followed by 35.83% who had high self-efficacy. In post-test, majority of the participants i.e., 97.09% had high self-efficacy, followed by only 2.91% who had moderate self-efficacy. In the pre-test, 72.5% had moderate dyspnoea, followed by 14.58% who had severe dyspnoea, and only 12.92% who had mild dyspnoea whereas in the post-test, majority of participants i.e., 91.66% had mild dyspnoea, and only 8.34% had moderate dyspnoea. 79.58% had low QoL, followed by 20.42% having medium QoL in the pre-test whereas, in the post-test, majority of the participants i.e., 78.33% had medium QoL, followed by 21.67% having low QoL.

Section III: Effectiveness of Nursing Intervention Package on Self-Efficacy, Dyspnoea and Quality of Life among COPD Patients

The pre-test mean score of self-efficacy was 23.63 (S = 4.548) whereas, in the post-test, mean score was 33.14 (SD = 2.969) and mean difference was 9.51 with t = 28.077 (p = 0.001, significant) (Figure 1). Dimension-wise, the self-efficacy score showed that the pre-test mean score of intellectual dimension was 23.3 (SD = 5.9) whereas in

the post-test, mean score was 32.4 (SD = 3.7) and mean difference was 9.1 with t = 20.24 (p = 0.001, significant). In focus dimension, the pre-test mean score was 22.1 (SD = 5.4) whereas in the post-test, mean score was 32.3 (SD = 3.5) and mean difference was 10.2 with t = 24.56 (p = 0.001, significant). In coping dimension, the pre-test mean score was 23.3 (SD = 3.7) whereas in the post-test, mean score was 32.9 (SD = 3.8) and mean difference was 9.6, with t = 28.04 (p = 0.001, significant).

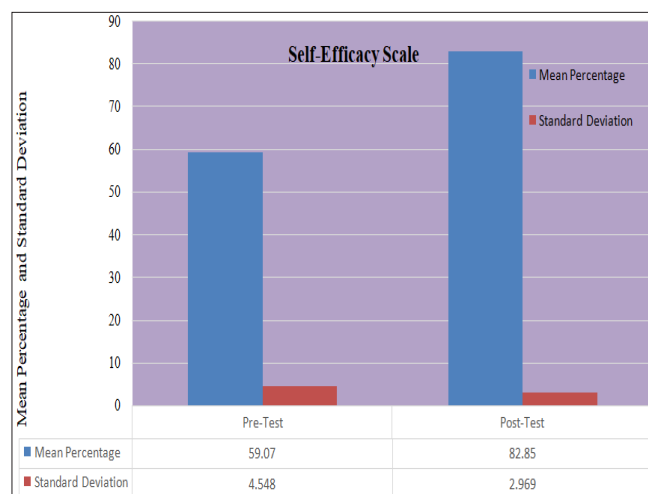


Figure 1. Effectiveness of Nursing Intervention Package on Self-Efficacy among COPD Patients

The pre-test mean score of dyspnoea was 18.51 (SD = 5.266) whereas in the post-test, mean score was 8.12 (SD = 3.290) and mean difference was 10.39 with $t = 28.324$ ($p = 0.001$, significant) (Figure 2). Dimension-wise, in the case of physical dimension, dyspnoea score showed a pre-test mean score of 15.3 (SD = 5.0) whereas, in the post-test, mean score was 7.3 (SD = 3.3). The mean difference was 8.0 with $t = 20.69$ ($p = 0.001$, significant). In psychological dimension, the pre-test mean score was 14.6 (SD = 5.2) whereas, in the post-test, mean score was 6.4 (SD = 3.0) and mean difference was 8.2 with $t = 21.16$ ($p = 0.001$, significant).

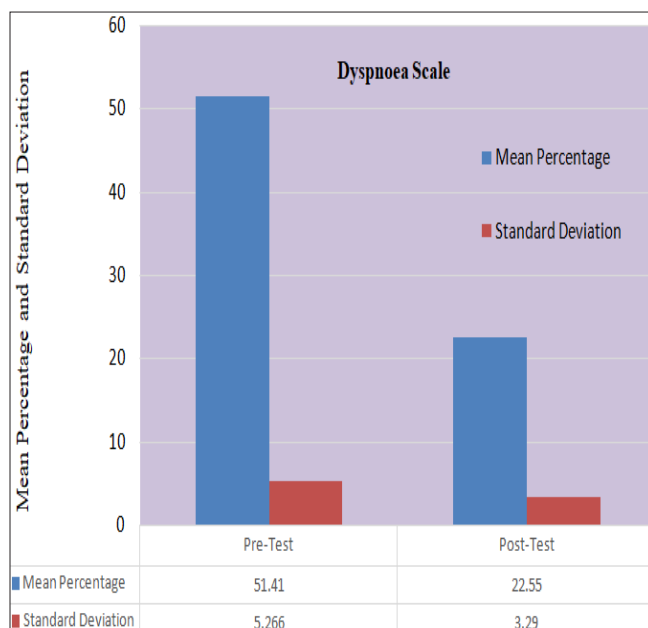


Figure 2. Effectiveness of Nursing Intervention Package on Dyspnoea among COPD Patients

The pre-test mean score of QoL was 71.06 with SD = 12.707 whereas, in the post-test, mean score was 52.44 with SD = 7.698. The mean difference was 18.62 with $t = 20.158$ ($p = 0.001$, significant) (Figure 3). Dimension-wise, St George's Respiratory Questionnaire Score showed that the pre-test mean score was 69.35 (SD = 15.92) whereas in the post-test, mean score was 59.98 (SD = 11.03). The mean difference was 9.37 with $t = 7.5$ ($p = 0.001$, significant). In the activity domain, the pre-test mean score was 72.19 with SD = 13.43 whereas, in the post-test, mean score was 55.72 with SD = 9.15. The mean difference was 16.47 with $t = 15.70$ ($p = 0.001$, significant). In impact domain, the pre-test mean score was 67.05 (SD = 13.21) whereas, in the post-test, mean score was 41.39 with SD = 9.17. The mean difference was 25.66 with $t = 24.72$ ($p = 0.001$, significant). Hence it was statistically proved that the nursing intervention package was quite effective to improve self-efficacy and QoL and was able to decrease dyspnoea in COPD patients.

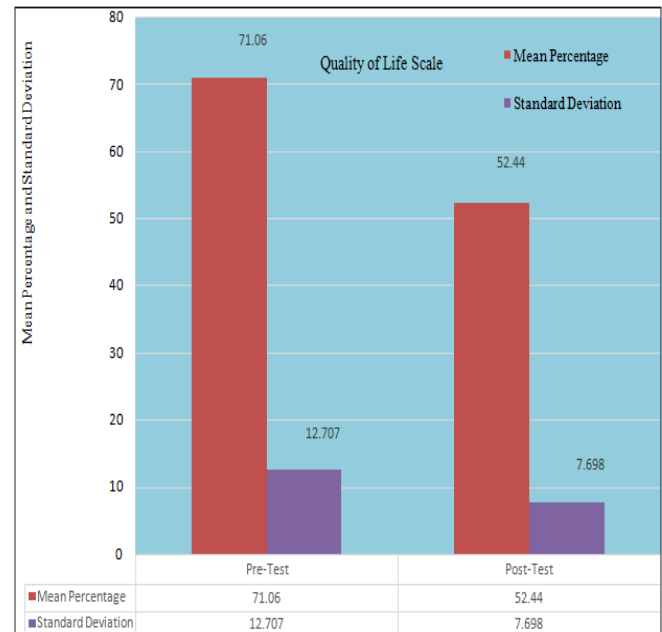


Figure 3. Effectiveness of Nursing Intervention Package on Quality of Life among COPD Patients
Section IV: Association between Pre-test Score of Self-Efficacy, Dyspnoea and Quality of Life with Selected Sociodemographic Variables

It was observed that the obtained chi-square value was lower than the table value, so there was no association between the self-efficacy, dyspnoea and QoL scores and all selected variables ($p > 0.05$, non-significant).

Discussion

The results of our study are comparable to a few studies done in the past. A study conducted by Ng et al. in Macau to evaluate the effectiveness of a self-management educational programme on self-efficacy in patients with COPD revealed that obtained pre-test mean of the experimental group was 3.00 and the post-test mean score was 3.50 ($p = 0.015$, significant). In the control group, the pre-test mean score was 3.30 (2.60-3.60) and the post-test mean score was 3 ($p = 0.32$, non-significant). So, there was a significant relationship between the effect of self-care model and the score obtained on the level of self-efficacy among COPD patients.¹⁰

Another similar study conducted by Paulsamy et al. at Khamis Mushayit, Asir Province, Saudi Arabia revealed the efficacy of controlled breathing exercises on dyspnoea among COPD patients. The data showed that the obtained pre-test mean score of the experimental group was 8.47 (SD = 1.82) and the post-test mean score was 2.14 (SD = 1.63). The mean difference was 6.33 with $t = 2.64$ ($p < 0.05$, significant). In the control group, the pre-test mean score was 8.65 (SD = 1.42) and the post-test mean score

was 6.01 (SD = 1.41). The mean difference was 2.64 with $t = 2.07$ ($p < 0.05$, significant). So, there was a significant relationship between the effect of controlled breathing exercises on dyspnoea and the score obtained on the level of dyspnoea among COPD patients.¹¹

A similar study was conducted by Sasirekha in Cuddalore district, Tamil Nadu, India. It showed the effectiveness of selected nursing interventions on the quality of life among COPD patients. The data revealed that the obtained pre-test mean score of the experimental group-I was 47.67 (SD = 2.82) whereas, in the post-test-I, mean score was 40.79 (SD = 2.22). The mean difference obtained was 6.88. In post-test-II, the mean score was 38.64 (SD = 2.33) and the mean difference was 9.03. In the experimental group-I, repeated measures ANOVA F-test showed that the mean QoL score had a statistically significant difference between pre-test and post-test-I and II ($F = 160.76$, $p < 0.001$, significant). Similarly, the data obtained from the experimental group-II showed that the pre-test mean score was 46.97 (SD = 5.05) whereas, in the post-test-I, the mean score was 38.64 (SD = 2.79) and the mean difference was 8.33. In post-test-II, mean score was 36.83 (SD = 2.75) and mean difference was 10.14. In the experimental group-II, repeated measures ANOVA F-test showed that the mean QoL score had a statistically significant difference between pre-test and post-test-I and II ($F = 153.84$, $p < 0.001$, significant). So, there was a significant relationship between the effect of selected nursing interventions and the score obtained on the level of QoL among COPD patients.¹²

Conclusion

In this study, 240 COPD patients were selected by non-probability convenient sampling technique. The researcher concluded that self-efficacy and quality of life improved and dyspnoea decreased by successful application of the nursing intervention package. The researcher recommends that this nursing intervention package can be used to educate and provide nursing care in hospitals and household settings.

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Conflict of Interest: None

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