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A STUDY TO EVALUATE THE EFFECTIVENESS OF COMPUTER ASSISTED TEACHING PROGRAMME ON KNOWLEDGE REGARDING HOME CARE MEASURES TO PREVENT ACUTE EXACERBATION AMONG PATIENTS WITH COPD AT SC HOSPITAL HASSAN.

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ABSTRACT

Back ground and objectives:

Chronic obstructive pulmonary disease (COPD) is a type of obstructive lung disease characterized by chronically poor airflow. The term chronic obstructive pulmonary disease encompasses two types of obstructive airway diseases namely chronic bronchitis, and emphysema. Patients with COPD may have a predominance of one of these conditions, but in reality it is often difficult to determine because the conditions usually coexist. Periods of acute worsening of this disease termed 'exacerbation' which greatly affects the quality of life and health of patients with COPD is therefore placing a greater burden on the health service. It has been estimated that patients with COPD suffer one to four exacerbations per year, and up to 70% of the direct health care costs associated with the disease are due to severe exacerbations, particularly those requiring hospitalization.

Methods:

A Quantitative evaluative approach with pre-experimental one group pre-test post-test design was used with convenient sampling technique, 40 study participants were selected from Sri Chamarajendra Hospital, Hassan. Data were collected by using structured interview schedule with 44 items. Computer assisted teaching programme was administered after conducting pre test and post test was conducted after 7 days. Data was analyzed by using descriptive and inferential statistical technique.

Results:

The data analysis revealed that, the mean percentage of post-test knowledge scores (71.25 %) was higher than the mean percentage of pre-test knowledge scores (36.75%). The calculated 't' value(15.96) is greater than the table value (t_{39}=2.02, 0.05). It showed a significant difference between mean pre and post- test knowledge scores. Calculated χ^2 values showed significant associations between marital status and number of years after diagnosis of COPD and their post-test knowledge scores.

Interpretation & Conclusion

The study concluded that computer assisted teaching programme was an effective method of increasing the knowledge of COPD patients regarding home care measures to prevent acute exacerbation of COPD.

Key words: *Effectiveness, CATP, Knowledge, COPD, Exacerbation, Home care measures.*

INTRODUCTION

"An ounce of prevention is worth more than a million pounds of cure."

-DAVID AGUS

Breathing or the need for air is the basic need of every individual and all the people in this world. Breathing is something that occurs to us automatically, spontaneously, naturally. Healthy airways and air sacs in the lungs are elastic. This elastic quality helps to retain the normal structure of the lung and helps to move the air quickly in and out. There are certain health problems in which the free and sufficient access to air is denied. It may be due to unhealthy living habits like smoking or due to some internal pathology.[1]

Chronic obstructive pulmonary disease (COPD) is a type of obstructive lung disease characterized by chronically poor airflow. The term chronic obstructive pulmonary disease encompasses two types of obstructive airway diseases namely chronic bronchitis, and emphysema. Patients with COPD may have a predominance of one of these conditions, but in reality it is often difficult to determine because the conditions usually coexist.[2]

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Periods of acute worsening of this disease termed 'exacerbation' which greatly affects the quality of life and health of patients with COPD will therefore place a greater burden on the health service. An acute exacerbation is sudden worsening of COPD symptoms characterized by increased shortness of breath, increased sputum production, a change in the color of the sputum from clear to green or yellow, or an increase in cough that typically lasts for several days. It may be triggered by an infection with bacteria or virus or by environmental pollution. As COPD progresses as exacerbations tend to become more frequent, the average being about 3 episodes per year.[3]

According to WHO, the fourth leading cause of mortality and twelfth leading cause of disability in the world is Chronic Obstructive Pulmonary Disease. By the year 2020 it is estimated that COPD IS the third leading cause of death and fifth leading cause of disability. chronic obstructive pulmonary disease (COPD) and asthma which together may account for an estimated burden of about 100 million individuals in India.[4]

A field survey was conducted for Chronic Obstructive Pulmonary disease (COPD) epidemiology in the rural field practice area of Kempegowda Institute of Medical Sciences, Bangalore, India, which covered a population of 44,387 to find out the prevalence of COPD in adult above 35 years. The prevalence was found to be increasing with an increase in age.[5]

A prospective study was conducted among 186 patients with COPD with one or more admissions for acute exacerbations in a tertiary care hospital at Jawaharlal Nehru Medical College, Belgaum, Karnataka, India in 2015 to ascertain failures rates following Acute Exacerbation of COPD (AECOPD) and to evaluate factors associated with frequent readmissions. The results revealed that out of 186 COPD patients admitted for AECOPD, 54% had one or more readmission, and another 45% had two or more readmissions over a period of 3 years.[6]

COPD Exacerbations are best managed by early treatment and education including action plan as a part of overall effort to educate patients about self-management techniques especially those with severe exacerbation. Reducing the frequency and severity of acute exacerbations could potentially reduce the mortality inherent to COPD. [7]

STATEMENT OF THE PROBLEM

"A STUDY TO EVALUATE THE EFFECTIVENESS OF COMPUTER ASSISTED TEACHING PROGRAMME ON KNOWLEDGE REGARDING HOME CARE MEASURES TO PREVENT ACUTE EXACERBATION AMONG PATIENTS WITH COPD AT SC HOSPITAL HASSAN."

OBJECTIVES OF THE STUDY

1. To assess the existing knowledge regarding home care measures to prevent acute exacerbation among patients with COPD.
2. To evaluate the effectiveness of Computer Assisted Teaching Programme on knowledge regarding home care measures to prevent acute exacerbation among patients with COPD.
3. To find the association between post test knowledge level and selected demographic variables of patients with COPD.

HYPOTHESIS OF THE STUDY

H_1: There is a significant difference between mean pre-test knowledge score and mean post test knowledge score of patients with COPD.

H_2: There is a significant association between post test knowledge level and selected demographic variables of patients with COPD.

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RESULTS

SECTION I : ANALYSIS OF PRE-TEST KNOWLEDGE SCORES OF RESPONDENTS

Analysis of pre-test knowledge scores of COPD patients regarding home care measures to prevent acute exacerbation of COPD

TABLE 1: Aspect wise pre test mean, median, SD, mean % and CV of knowledge scores of respondents on home care measures to prevent acute exacerbation of COPD. N=40

No	*Knowledge Aspects*	*Statements*	*Max score*	*Respondents knowledge*				
				Mean	Median	SD	Mean %	CV
1	General information and causes of acute exacerbation of COPD	9	9	4.12	4	1.11	45.77	26.94
2	Warning signs and clinical features of acute exacerbation of COPD	7	7	2.82	3	1.15	40.28	40.78
3	Home care measures to prevent acute exacerbation of COPD	28	28	9.22	9	3.26	32.92	35.35
4	Combined	44	44	16.17	15.5	4.86	36.75	30.05

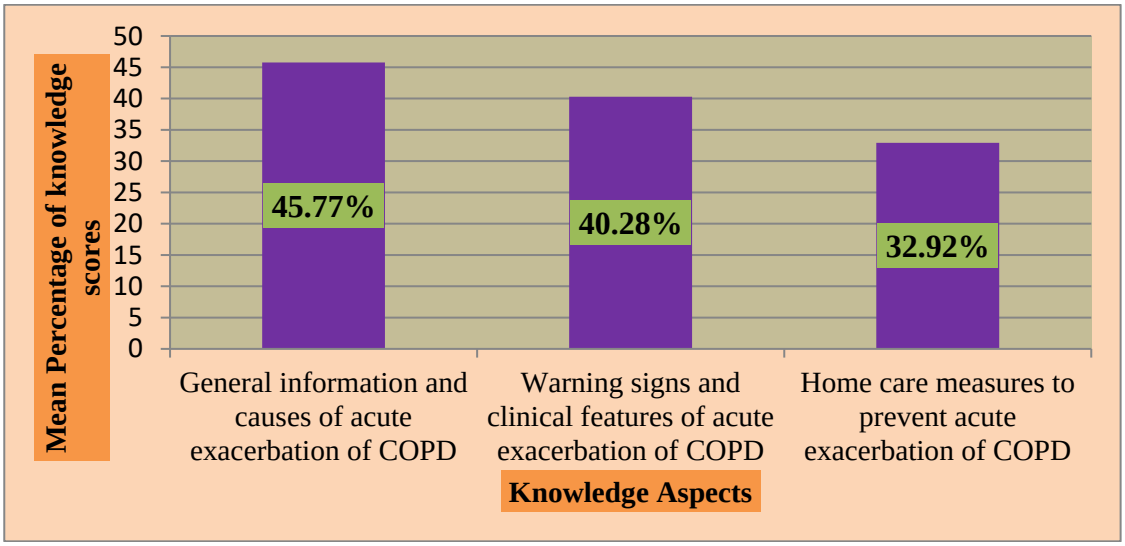

Figure 1: Aspect wise pre test mean % of knowledge scores of respondents on home care measures to prevent acute exacerbation of COPD.

Table 1 and figure 1 shows the aspect wise mean, median, SD, mean % and CV of pretest knowledge scores of respondents in different aspects of structured interview schedule. The highest (45.77%) mean percentage of knowledge scores of respondents was found in the aspect of 'general information and causes of acute exacerbation of COPD', followed by 40.28% in the aspect of 'warning signs and clinical features of acute exacerbation of COPD' and 32.92% in the aspect of 'home care measures to prevent acute exacerbation of COPD'. The overall mean percentage of knowledge scores of pretest was 36.75%

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SECTION II : ANALYSIS OF POST-TEST KNOWLEDGE SCORES OF RESPONDENTS

Analysis of post-test knowledge scores of COPD patients regarding home care measures to prevent acute exacerbation of COPD.

TABLE 2: Aspect wise post test mean, median, SD, mean % and CV of knowledge scores of respondents on home care measures to prevent acute exacerbation of COPD. N=40

No	Knowledge Aspects	Statements	Max score	Respondents knowledge				
				Mean	Median	SD	Mean %	CV
1	General information and causes of acute exacerbation of COPD	9	9	6.2	6	0.93	68.88	15
2	Warning signs and clinical features of acute exacerbation of COPD	7	7	5.15	5	0.92	73.57	17.86
3	Home care measures to prevent acute exacerbation of COPD	28	28	19.97	21	3.92	71.32	19.62
4	Combined	44	44	31.35	33	4.90	71.25	15.62

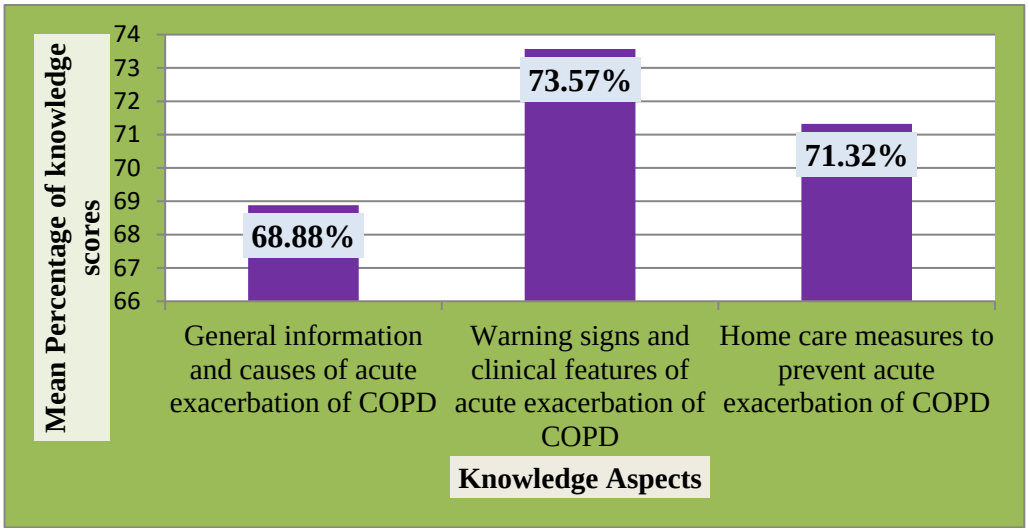

Figure 2: Aspect wise post test mean % of knowledge scores of respondents on home care measures to prevent acute exacerbation of COPD.

Table 2 and figure 2 shows the aspect wise mean, median, SD, mean %, and CV of posttest knowledge scores of respondents in different aspects of structured interview schedule. The highest (73.57%) mean percentage of knowledge scores of respondents was found in the aspect of 'warning signs and clinical features of acute exacerbation of COPD', followed by 71.32% in the aspect of 'home care measures to prevent acute exacerbation of COPD' and68.88% in the aspect of'general information and causes of acute exacerbation of COPD'. The overall mean percentage of knowledge scores of pretest was 71.25%

SECTION III : COMPARISON OF PRETEST AND POSTTEST KNOWLEDGE OF COPD PATIENTS REGARDING 'HOME CARE MEASURES TO PREVENT ACUTE EXACERBATION OF COPD' AND EVALUATION OF EFFECTIVENESS OF COMPUTER ASSISTED TEACHING PROGRAMME.

For the purpose of hypotheses testing the following null hypothesis was stated.

H_{01}: There is no significant difference between mean pre test knowledge scores and mean post test knowledge scores of patients with COPD.

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TABLE 3- Aspect wise mean%, CV of pre test, posttest and enhancement knowledge scores on 'home care measures to prevent acute exacerbation of COPD' and calculated paired't' test values. N=40

No.	Knowledge Aspects	Respondents Knowledge (%)						Paired 't' Test
		Pre test		Post test		Enhancement		
		Mean%	CV	Mean%	CV	Mean%	CV	
I	General Information & Causes of acute exacerbation of COPD	45.77	26.94	68.88	15	23.00	74.39	8.62*
II	Warning signs and clinical features of acute exacerbation of COPD	40.28	40.78	73.57	17.86	33.14	51.74	12.88*
III	Home care measures to prevent acute exacerbation of COPD	32.92	35.35	71.32	19.62	38.39	42.32	15.14*

(t = 2.02, P=0.05, df = 39)

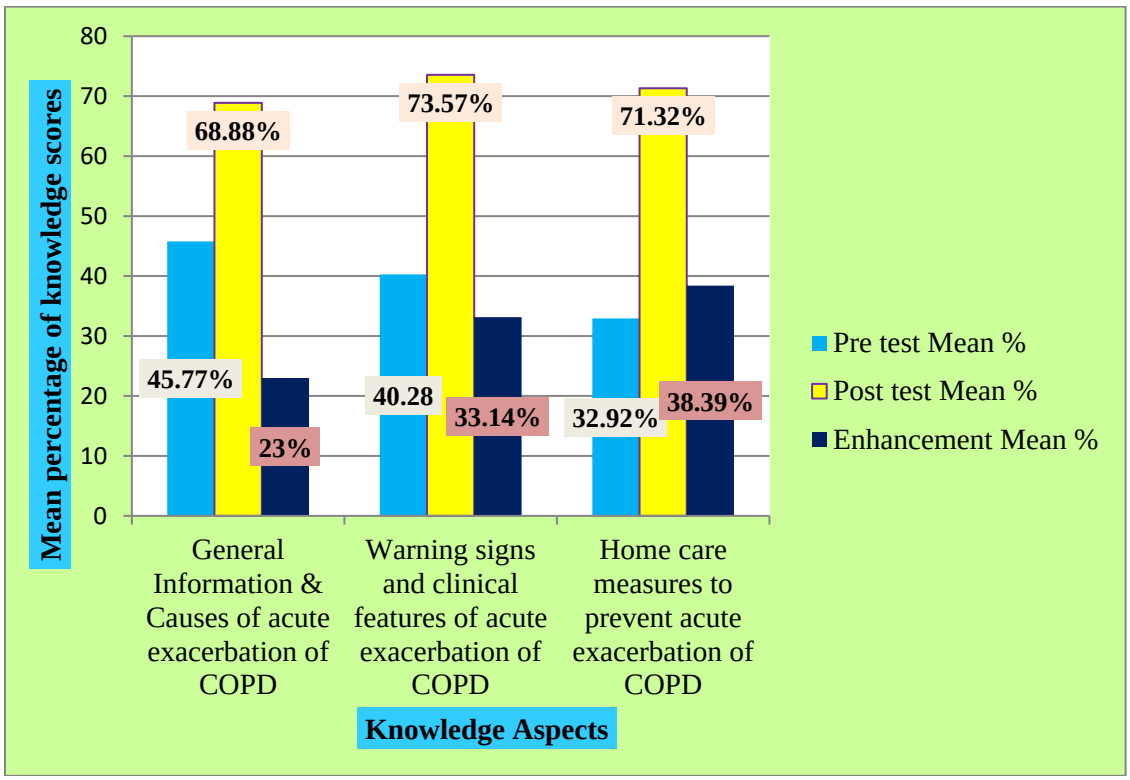

Figure 3: Aspect wise comparison between pretest and post test mean % knowledge scores on home care measures to prevent acute exacerbation of COPD.

Table 3 and figure 3 revealed the mean % and CV of pre test, post test and enhancement knowledge scores and calculated 't' value in relation to different aspects of knowledge among COPD patients. The highest (38.39%) enhancement of mean % of knowledge score occurred in the aspect of 'home care measures to prevent acute exacerbation of COPD' with pre test mean % of 32.92% and post test mean % of 71.32 and calculated 't' value was 15.14. 33.14% of enhancement of mean% of knowledge score was found in the aspect of 'warning signs and clinical features of acute exacerbation of COPD' with pre test mean % of 40.28 and post test mean % of 73.57 and the calculated 't' value was 12.88. The least (23%) of enhancement of

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mean% of knowledge score occurred in the aspect of 'General Information & Causes of acute exacerbation of COPD' with pre test mean % of 45.77 and post test mean% of 68.88 and the calculated 't' value was 8.62. Calculated 't' value with regard to all the knowledge aspects were greater than the table value (t=2.02, P=0.05, df=39). Hence with regard to all three knowledge aspects the stated null hypothesis, $H0_1$ was rejected and research hypothesis $H_1$was accepted. It was concluded that CATP was effective in enhancing the knowledge in all the three aspects regarding home care measures to prevent acute exacerbation of COPD.

TABLE 4: Comparison of overall mean, median, SD, mean % and CV of pretest and posttest knowledge scores on home care measures to prevent acute exacerbation of COPD and calculated paired 't' test value.

N=40

Aspects	Max score	Respondents knowledge					Paired t test
		Mean	Median	SD	Mean %	CV	
Pre test	44	16.17	15.5	4.86	36.75	30.05	15.96*
Post test	44	31.35	33	4.90	71.25	15.62	
Enhancement	44	15.17	14	6.03	34.47	39.74	

(t_{39} =0.02, P>0.05)

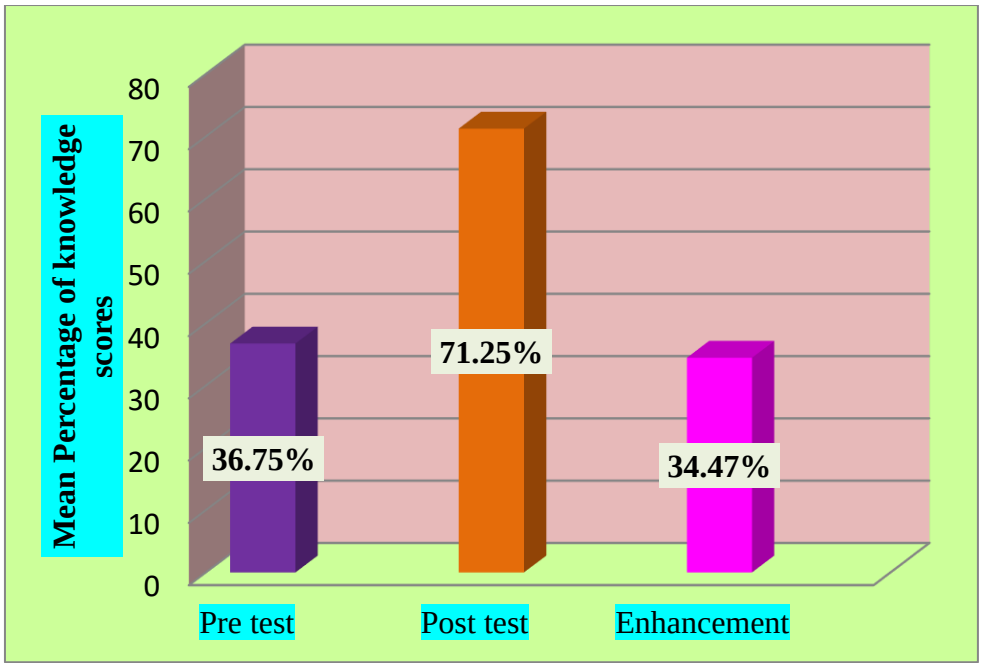

Figure 4: Comparison of overall pre test and post test mean % of knowledge scores on home care measures to prevent acute exacerbation of COPD

Table 4 and figure 4 shows that, the overall pretest mean percentage of knowledge scores of respondents on 'home care measures to prevent acute exacerbation of COPD' was 36.75% and post test mean % was 71.25% with an enhancement of 34.47%. The calculated paired't' test value is 15.96, which is greater than the table value (t=2.02, P=0.05, df=39). Hence the stated null hypothesis H_{01} is rejected and stated research hypothesis is accepted. It was concluded that the computer assisted teaching programme was effective in increasing the overall knowledge of COPD patients regarding home care measures to prevent acute exacerbation of COPD.

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SECTION IV: ANALYSIS OF ASSOCIATION BETWEEN DEMOGRAPHIC VARIABLES WITH POST TEST KNOWLEDGE SCORES

$\chi 2$ values were calculated to test the hypothesis related to association. The Null hypothesis is stated as follows;

H_{02} – There is no significant association between post test knowledge scores of COPD patients and their selected demographic variables.

TABLE 5:Association between Demographic variables and post-test knowledge level of COPD patients regarding home care measures to prevent acute exacerbation of COPD. N=40

Demographic variables	Category	Frequency	Knowledge Level				Calculated $\chi 2$ Value	P value and df
			Below median		Above median			
			N	%	N	%		
Age in years	50-54years	7	5	71.4	2	28.6	0.88 NS	P>0.05 df=2
	55-60years	14	6	42.9	8	57.1		
	>60years	19	12	63.1	7	36.9		
Gender	Male	33	11	33.3	22	66.7	0 NS	P>0.05 df =1
	Female	7	3	42.9	4	57.1		
Religion	Hindu	28	7	25	21	75.0	2.38 NS	P>0.05 df =1
	Muslim	12	6	50	6	50.0		
Marital status	Married	32	8	25	24	75.0	5 *	P<0.05 df =1
	Widow/widower	8	6	75	2	25.0		
Educational status	Non literate	19	12	63.1	7	36.9	4.42 NS	P>0.05 df =2
	Primary education	16	6	37.5	10	62.5		
	Secondary education	5	0	0	5	100.0		
Educational status of spouse	Non literate	25	12	48	13	52.0	3.88 NS	P>0.05 df =2
	Primary education	9	2	22.2	7	77.8		
	Secondary education	6	0	0	6	100.0		
Family monthly income (in Rupees)	<5000 Rs	9	6	66.7	3	33.3	0.32 NS	P>0.05 df =2
	5000-10000 Rs	28	11	39.2	17	60.8		
	>10000 Rs	3	1	33.3	2	66.7		
Occupation	Coolie	16	4	25	12	75.0	0.76 NS	P>0.05 df =3
	Farmer.	13	6	46.1	7	53.9		
	Petty merchant	6	2	33.3	4	66.7		
	Carpenter	5	2	40	3	60.0		
No. of years after diagnosis of COPD	0-1year	13	10	76.9	3	23.1	11.62*	P<0.05 df =2
	1-2years	21	3	14.2	18	85.8		
	>2 years	6	1	16.7	5	83.3		
No of previous admissions	Nil	13	4	30.8	9	69.2	0.05 NS	P>0.05 df =2
	1 time	18	6	33.3	12	66.7		
	≥2 times	9	4	44.4	5	55.6		

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Known comorbidities	Yes	14	5	35.8	9	64.2	0 NS	P>0.05 df =1
	No	26	9	34.7	17	65.3		
Previous exposure to information resources	Yes	11	1	9.09	10	90.9	3.03 NS	P>0.05 df =1
	No	29	13	44.9	16	55.1		
Specific sources of information to which previously exposed	Contact with health personnel	8	1	12.5	7	87.5	0.26 NS	P>0.05 df =2
	Friends/relatives	3	0	0	3	100.0		
	No exposure	29	13	44.9	16	55.1		

* Significant NS- Non Significant

Table 5 reveals that the calculated χ2 values with regard to marital status (χ2=5, df=1, P<0.05) and number of years after diagnosis of COPD (χ2=11.62, df=2, P<0.05) are more than the table values at 0.05 level of significance which is suggestive of significant association of these demographic variables and post test knowledge level of respondents. Hence the null hypothesis H_{02} is rejected and research hypothesis $H_2$is accepted with regards to above mentioned demographic variables.

Calculated χ2 values with regard to age (χ2=0.88, df=2, P>0.05), gender (χ2=0,df=1, P>0.05), religion (χ2=2.32, df=1, P>0.05), educational status (χ2=4.68, df=2, P>0.05), education status of spouses (χ2=3.38, df=2, P>0.05), family monthly income (χ2=0.32, df=2, P>0.05), occupation (χ2=0.76, df=3, P>0.05), number of previous admission (χ2=0.05, df=2, P>0.05), presence of comorbidities (χ2=0, df=1, P>0.05), previous exposure to the information resources regarding home care measures to prevent acute exacerbation of COPD (χ2=3.03, df=1, P>0.05), specific source of information (χ2=0.26, df=2, P>0.05) are less than the table values at 0.05 level of significance at specific degrees of freedom, hence the stated null hypothesis H_{02} is accepted and research hypothesis H_2 is rejected with regard to these demographic variables.

IMPLICATIONS

The results obtained from the study helped the researcher to derive certain implication. The implications of this study are important in the areas of nursing education, nursing practice, nursing administration and nursing research.

Nursing practice: Most of COPD patients are not aware regarding home care measures to prevent acute exacerbation of COPD. Thus, the information provided through computer assisted teaching programme regarding home care measures to prevent acute exacerbation of COPD,helps them to improve their knowledge regarding exacerbation and its prevention and they can apply it in their daily living. **Nursing education:** The findings of the present study justify the use of computer assisted teaching programme in nursing education to educate the public. Nursing students can make the use of computer assisted teaching programme to educate the patients admitted in hospital as well as in the community who are suffering from COPD regarding prevention of acute exacerbation of COPD. The computer assisted teaching programme stimulates interest and motivates patients towards learning.

Nursing research:

Similar type of teaching programme can be prepared to provide education regarding prevention of acute exacerbation of COPD and can be tested for their effectiveness. A more extensive and intensive study can be conducted in this area by using different methods of teaching, settings, samples and sampling technique **Nursing administration:** The nurse administrator can take initiative to plan and implement health education programme with the help of Computer Assisted Teaching programme on various health aspects to improve the knowledge of the general population towards prevention of diseases and promotion of health.

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REFERENCES

1. Breathing [Internet]. [Updated 2015 Mar 3; cited on 2015 Feb 1]. Available from URL: http://en.wikipedia.org/wiki/Breathing
2. Smettzer SC, Bane BG, Hinkle LJ, Cheever HK. Brunner and Suddarth's text book of medical surgical nursing, 11th ed. New Delhi: Lippincott Willians and Wilkins publication; 2008.
3. Nabil Al, Mark FG. Acute exacerbation of chronic obstructive pulmonary disease. BCMJ [Internet]. 2008 Apr 3 [cited on 2015 Feb 2];50(3):138-142. Available from URL:http://www.bcmj.org/article/acute-exacerbation-chronic-obstructive-pulmonary- disease
4. COPD Statistics [Internet]. 2010 [updated 2012 July 15; cited on 2015 Feb 10]. Available from URL: http://www.copd-international.com/library/statistics.htm
5. Parasuramalu BG, Huliraj N, Prashanth KS, Gangaboraiah, Ramesh MN, Srinivasa BC. Prevalence of chronic obstructive pulmonary disease and its association with tobacco smoking and environmental tobacco smoke exposure among rural population. Indian J Public Health [Internet]. 2014 [cited 2015 Feb 9];58:45-9. Available from URL: http://www.ijph.in/text.asp?2014/58/1/45/128166
6. Suhas HS, Deepak KT, Sharma R. Failures rates following Acute Exacerbation of COPD (AECOPD) and to evaluate factors associated with frequent readmissions.Indian J Chest DisAllied Sci [Internet]. 2011 May 13 [cited on 2016 Mar 3];48: 23-29. Available from URL:http://medind.nic.in/iae/t06/i1/iaet06i1p23.pdf
7. Staying healthy and Avoiding Exacerbation [Internet]. 2011 Nov 4 [cited on 2015 Feb 19]. Available from URL: http://copd.about.com/od/copdexacerbation/tp/preventingcopdexacerbation

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