ANXIETY AND DEPRESSION AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASES IN PULMONOLOGY UNIT OF NOBEL MEDICAL COLLEGE TEACHING HOSPITAL

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ABSTRACT

Introduction

Anxiety and Depression is a common comorbidity in chronic obstructive pulmonary disease patients. Impaired lung function is a risk factor for depression In COPD patients, reduced recreational activities and social Isolalation is a major risk factor resulting in anxiety and depression.

Objective

The objectives of this study is to evaluate the prevalence of Anxiety and Depression among the COPD patients at Pulmonology unit of Nobel Medical College Teaching Hospital.

Methodology

A hospital based cross- sectional research design was used for the study. A total of 185 patients with previously diagnosed COPD. Data were collected by using a face to face interview technique in patients to evaluate anxiety and depression using Nepali version of Hospital Anxiety and Depression Scale questionnaire at Nobel Medical College Teaching Hospital, Biratnagar, Nepal from May to August 2020. Data analysis were done by descriptive and inferential statistics.

Results

A total of 185 patients participated in the study, 157 patients (84.9%) had anxiety, 107 patients (57.8%) had depression and 102 patients (55.1%) had both anxiety and depression. There was statistically significant association of anxiety and depression in COPD patients with age, religion, occupation, smoking status, duration of illness, history of previous hospitalization, number of hospitalization in previous year, type of family, domiciliary oxygen therapy.

Conclusion

The study concluded that anxiety and depression had been most prevalent in COPD patients. Therefore health personnel working in the Pulmonology unit should be aware the early assessment and treatment of anxiety and depression of chronic obstructive pulmonary diseases patients.

KEY WORDS

Anxiety, chronic obstructive pulmonary diseases, depression

INTRODUCTION

Chronic obstructive pulmonary disease is a progressive life-threatening lung disease that causes breathlessness and predisposes to exacerbations and high illness.[1] COPD is currently fifth leading cause for death word wide.[2]

The global prevalence of COPD over 40 years is 10.1%; higher in male with prevalence of 11.8% and in female with prevalence of 8.5%.[3] In Nepal, COPD accounts for 33% of non communicable disease among the age classify of 51-80 years which is comparatively above global prevalence among adults over 40 years.[4]

Anxiety and depression accept a variety of mental conditions. They are acknowledged as common mental disorders. A study was done in Nepal showed that "crude prevalence of anxiety was 22.7 % and depression 11.7%. The age and gender–adjusted prevalence of hospital anxiety and depression was 16.1% and depression 4.2%".[5]

A study was done in China showed that 7.2 % Depression and Anxiety 5.3% This study concluded that high prevalence of anxiety and depression in COPD outpatients.[6] A study conducted in Kathmandu and Okhaldhunga, Nepal showed that 63.3%, 69.2% and 39.8% , 35.5% were suffered from the anxiety and depression in the COPD patients.[7,8]

Nepal being a culturally diverse country, the impact of mental illness in health may vary in different communities. Therefore it is important to identify those who have clinically significant anxiety or depressive symptoms and its associated factors. Thus, this study is aimed at assessing the prevalence of depressive and anxiety among the COPD patients in hospital and determine association between them.

METHODOLOGY

A hospital based cross-sectional research design was adopted and study was done in Nobel Medical College and Teaching Hospital, Biratnagar from May to August 2020. This study was started after acquiring approval from the Institutional Review Committee of Nobel Medical College. A total of 185 patient was taken as a sample by using non probability convenient sampling technique. Sample size was calculated using the formula n = z2pq/ l2 (Cochran, 1997) with 10% error, sample size is calculated to be 185. After obtaining the formal permission from the hospital, purpose of the study was explained to the patient and they were explained about the study. Following this, an informed consent was obtained from each participant. inclusion criteria for respondents in the study were as follows: respondents if they history have COPD for more than two years and aged above 40 years. We excluded the respondents who had a pre existing chronic health problems, previously diagnosed psychiatric problems, not willing to participated in the study. respondents confidentiality was maintained by using coding their personal identity information in all forms. The average time required to complete the interview was about 20-30 minutes with the Nepali version of Hospital Anxiety and Depression Scale (HADS) questionnaire.[9] A face to face interview based questionnaire was use to collect the information regarding the socio-demographic variables of the patient such as age, sex, religion, educational status, marital status, type of family, occupation, smoking status, duration of illness, history of previous hospitalization, status of hospitalization in last year, domiciliary oxygen therapy.

Anxiety and Depression were screened using Nepali version of hospital anxiety depression rating scale. Nepali version HADS scale is valid and reliable tool to measure depression and anxiety among the COPD patients.[9] It is a 14 items questionnaire equally divided into the anxiety related items and depression related items. For each item the maximum score is three and minimum score is Zero. The scoring for anxiety and depression is done separately on a total score of twenty-one each. The score of seven and below is considered normal whereas the score above eleven and above considered abnormal or symptomatic. The score of 8-10 is considered borderline abnormal.[10]

The data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 22. Descriptive statistics such as frequency and percentages were used for categorical variables and mean and standard deviation was used for continuous variables. The relationship of various factors with anxiety and depression was analysed using Chi- square test, Logistic regression analysis was done to find out the most significant association factor to anxiety and depression.

RESULTS

A total of 185 respondents diagnosed with COPD were included in the study. The mean age of respondents was 66.92± 8.90 years and their age ranged from 46 to 92 years. Similarly, majority of respondents 84.3% were male and 62.9% were following Hindu religion and 14.6% were Christian. Regarding the educational status majority of respondents 70.3% were illiterate and most of the respondents 80.5% were married. Regarding occupation, only 27.0% was involved in income generating occupation currently. Regarding monthly income 53.5% respondents had >30000 rupees per month. Approximately, (61.1%) respondents were from joint family. About 35.1% respondents were current smokers. Likewise, 61.6% patients had less than 10 years duration of illness, 79.5% had previously hospitalized and history of hospitalization in last year was among 82.7%. Likewise, 25.9% respondents had domiciliary oxygen therapy.

Table 1 presents the prevalence of anxiety, depression and both anxiety and depression. Out of 185 respondents, 157 patients (84.9%) had anxiety and 107 respondents (57.8%) had depression. These respondents had a HADS score of 8 or more than 8 and 102 patients (55.1%) had both anxiety and depression using HADS scale.

Table 2 presents the factors which were significantly associated (p value< 0.05) with anxiety in COPD respondents there was significant association between age (p = 0.001), Religion (p = 0.000), occupation (p = 0.012), smoking status (p = 0.041), duration of illness (p = 0.000), history of previous hospitalization (p = 0.003), number of hospitalizations in the previous year (p =0.009) with anxiety. Further no significant

association was observed between sex (p = 0.056), educational status (p = 0.230), marital status (p = 0.204), monthly income (p = 0.099), type of family (p = 0.223) and domiciliary oxygen therapy (p = 0.901).

Table 1: Score of Anxiety and Depression in COPD respondents (n= 185)

Variables	N	%
Anxiety		
Present	157	84.9
Absent	28	15.1
Level of Anxiety		
Normal condition (Score 0-7)	28	15.1
Border line Disorder (Score 8-10)	66	35.7
Abnormal case (Score 11-21)	91	49.2
Mean of Total score: 10.51±3.379		
Depression		
Present	107	57.8
Absent	78	42.2
Level of Depression		
Normal condition (Score 0-7)	78	42.2
Border line Disorder (Score 8-10)	30	16.2
Abnormal case (Score 11-21)	77	41.6
Mean of Total score: 8.75 ± 4.668		
Both anxiety and depression		
Present	102	55.1
Absent	83	44.9

Table 2: Association between Socio-Demographic and Clinical Variable of respondents and Anxiety (n=185)

Variables	Present No (n=157)	Absent No (n= 28)	Chi-square P value
Age Group (in Years)			
Less than 60	18	0	0.001*
60-70	99	11	
70 and more	40	17	
Sex			
Male	129	27	0.056
Female	28	1	
Religion			
Hinduism	114	6	0.000*
Islam	26	12	
Christian	17	10	
Educational status			
Literate	44	11	0.230
Illiterate	113	17	
Marital Status			
Married	124	25	0.204
widow/widower	33	3	
Occupation			
Currently working	37	13	0.012*
Currently not working	120	15	
Smoking Status			
Current smoker	61	4	0.041*
Ex-smoker	82	21	
Non-smoker	14	3	
Duration of Illness			
Less than 10 Years	109	5	0.000*
10 and more	48	23	
No. of hospitalization in previous year			
Less than 2 times	125	28	0.009*
2 and more times	32	0	
Monthly Income			
10,000-20.000	14	0	0.099
21,000-30,000	57	15	
>30,000	86	13	
Type of Family			
Nuclear	42	12	0.223
Joint	99	14	
Extended	16	2	
Domiciliary Oxygen therapy			
Yes	41	7	0.901
No	116	21	

**p-value significant at (p<.05).*

Table 3: Most significant associated factor for anxiety among COPD respondents by logistic regressions (n=185)

Variables	B	S.E.	Adjusted odds Ratio (β)	95% CI		P-Value
				Lower	Upper	
Age	3.007	0.753	20.218	4.620	88.481	0.000*
Sex						
Male	1.334	1.105	3.796	0.435	33.092	0.227
Female	Ref	Ref	Ref	Ref	Ref	
Education Status						
Literate	0.678	0.552	1.970	0.668	5.816	0.219
Illiterate	Ref	Ref	Ref	Ref	Ref	
Marital Status						
Married	0.727	0.744	2.069	0.481	8.894	0.328
Widow/Widower	Ref	Ref	Ref	Ref	Ref	
Occupation						
Currently working	0.634	0.556	1.885	0.635	5.601	0.254
Currently not working	Ref	Ref	Ref	Ref	Ref	
Duration of Illness Domiciliary	- 2.346	0.523	0.096	0.034	0.267	0.000*
Oxygen therapy						
Yes	-2.670	0.825	0.069	0.014	0.349	0.001*
No	Ref	Ref	Ref	Ref	Ref	

*p-value significant at (p<.05), CI: Confidence Interval

Table 4: Association between Socio-Demographic and Clinical Variable of respondents and Depression (n=185)

Variables	Present No (n=107)	Absent No (n=78)	Chi square P value
Age Group (in Years)			
Less than 60	7	11	
60-70	75	35	0.002*
70 and more	25	32	
Sex			
Male	93	63	
Female	14	15	0.256
Religion			
Hinduism	90	30	
Islam	10	28	0.000*
Christian	7	20	
Educational status			
Literate	37	18	0.091
Illiterate	70	60	
Marital Status			
Married	79	70	0.007
widow/widower	28	8	
Occupation			
Currently working	27	23	0.520
Currently not working	80	55	
Smoking Status			
Current smoker	29	36	0.016*
Ex-smoker	65	38	
Non-smoker	13	4	
Duration of Illness			
Less than 10 Years	89	25	0.000*
10 and more	18	53	
History of Previous hospitalization			
Yes	77	70	0.003*
No	30	8	
No. of hospitalization in previous year			
Less than 2 times	79	74	0.000*
2 and more times	28	4	
Monthly Income			
10,000-20.000	9	5	0.225
21,000-30,000	36	36	
>30,000	62	37	
Type of Family			
Nuclear	27	27	0.046*
Joint	65	48	
Extended	15	3	
Domiciliary Oxygen therapy			
Yes	23	25	0.106
No	84	53	

*p-value significant at (p<.05).

Table 3 presents further analysis using binary logistic regression showed that age, duration of illness, domiciliary oxygen therapy score were independently associated with anxiety. Age was associated with an OR of 20.21 β (p = 0.000, 95% CI = 4.620 - 88.481), duration of illness were 0.096 times β (p = 0.000, 95 % CI = 0.034-0.267). Similarly domiciliary oxygen therapy was also associated with an odds of 0.069 β (p = 0.001, 95 % CI 0.014 - 0.349). Similarly, there was no significant association between sex, educational status, marital status and occupation with anxiety.

Table 4 presents factors associated (p value < 0.05) with depression in COPD respondents there was significant association between age (p = 0.002), Religion (p = 0.000), Smoking status (p = 0.016), duration of illness (p = 0.000), history of previous hospitalization (p = 0.003), number of hospitalization in the previous year (p = 0.000), type of family (p = 0.046) with depression. Further no significant association was observed between sex (p = 0.256), educational status (p = 0.091), marital status (p = 0.007) , occupation (p = 0.520), monthly income (p = 0.225), and domiciliary oxygen therapy (p = 0.106).

Table 5 presents further analysis using binary logistic regression showed that duration of illness were independently associated with depression. Duration of illness was associated with an OR 0.095 β (p = 0.000, 95% CI = 0.048- 0.191), similarly there was no association between sex, educational status, marital status, occupation and domiciliary oxygen therapy with depression.

Table 5: Most significant associated factor for Depression among COPD respondents by logistic regressions (n=185)

Variables	Present No (n=107)		Absent No (n=78)		Chi square P value
Variables	**B**	**S.E.**	**Adjusted odds Ratio (β)**	**95% CI**		**P-Value**
				Lower	**Upper**	
Age	0.051	0.342	1.052	0.539	2.055	0.882
Sex						
Male	-.887	0.456	0.412	0.169	1.007	0.052
Female	Ref	Ref	Ref	Ref	Ref	
Education Status						
Literate	-.611	0.376	0.543	0.260	1.135	0.105
Illiterate	Ref	Ref	Ref	Ref	Ref	
Marital Status						
Married	0.876	0.459	2.402	0.976	5.911	0.056
Widow/Widower	Ref	Ref	Ref	Ref	Ref	
Occupation						
Currently working	0.692	0.381	1.998	0.947	4.217	0.069
Currently not working	Ref	Ref	Ref	Ref	Ref	
Duration of Illness	- 2.350	0.354	0.095	0.048	0.191	0.000*
Domiciliary Oxygen therapy						
Yes	0.733	0.489	0.535	0.798	5.424	0.460
No	Ref	Ref	Ref	Ref	Ref	

DISCUSSION

In COPD respondents, reduced recreational activities and social isolation may be a major risk factor resulting in depression. Cultural differences and diverse communities significantly affect the experience of psychiatric illness in an individual which can discourage them from seeking medical treatment. [11]

The present study demonstrated out of 185 respondents, 157 respondents 84.9% had anxiety and 107 respondents 57.8% had depression. The mean HADS (±SD) anxiety score was 10.51 ±3.379 and mean HADS (±SD) depression score was 8.75 ±4.668. A similar study showed that the mean scores for anxiety and depression were 11.37± 6.894 and 11.18 ± 6.013 respectively. Likewise in their study, 63.3% patients had symptoms of anxiety and 69.2% had symptoms of depression by Sharma et. al. [7] However a study conducted by Tetikkurt et. al.[12] reported that mean scores for anxiety and depression were 8.2 ± 4.6 and 7.9 ± 4.3. Likewise in their

study, 41.7% patients had symptoms of anxiety and 46.7% had symptoms of depression. In contradicts, study conducted by Di Marco et. al.[13] demonstrated that 28.2% patients had anxiety and 18.8% had depression. Likewise in Dhulikhel hospital Nepal demonstrated that 33% anxiety and 30% depression by Shakya et. al. [10]

In present study, association was observed for anxiety and depression with different socio-demographic variables. Both anxiety and depression were associated with age (p = 0.001, p = 0.002) and were more prevalent in age group ≤ 65 years. The findings was supported by the study from Cleland et. al.[14] showed that anxiety and depression clinically significant levels of anxiety and depression were more prevalent in patients aged less than ≤ 60 years.

Similarly in another study, compared with the oldest group a slight higher the risk of anxiety and depression was associated with aged (p=0.003, p=0.001) and more prevalent in age group ≤70 years by Sharma et. al.[7] In contradicts, the age of the patient did not appear to be associated with both anxiety and depression in a study by Jose et. al.[15] In the present study in comparison to sex, male have higher rate of anxiety and depression, however there was no statistical significant relation between the score of anxiety, depression with sex. Similarly study reported by Thapa et. al.[8] was reported there is no statistical significant between depression/anxiety with sex. In contradicts, study by Allam et. al.[16] anxiety and depression highly significant statistical differences for anxiety between males and females (p = 0.004).

In present study, anxiety and depression was significant associated with religion (p = 0.000), (p=0.000). Sharma et. al and Jose et.al.[7,15] also reported significant associated with ethnicity.

Study conducted in Europe noted that significant relationship between occupation and presence of anxiety. [17] Another study in Nepal reported that anxiety was significant relationship with ethnicity.[7] In our study also anxiety was significant associated with occupation (p=0.012). Current study demonstrated that patients had smoking history likely to develop anxiety and depression (p=0.041), (p = 0.016). This finding is consistent with the result of previous studies.[6,16,18,19] In this study duration of illness were significant factor associated with anxiety and depression (p = 0.000), (p = 0.000).This finding was supported by the study conducted by Jose et. al.[15] Current study revealed that patients history of previous hospitalization (p=0.003), (0.003), and number of hospitalization in the previous year (p=0.009), (p=0.000) more likely to develop anxiety and depression .This finding is consistent with the result of previous studies.[15, 16] The present study demonstrated that, patients had oxygen therapy were significant factor associated with anxiety (p=0.001). Similarly findings were reported by Jose et. al. [15]In present study reported patients lived in joint family prone to develop depression (p=0.046).This finding is consistent with the result of previous studies. [7,15]

On the other hand, Thapa et al and shakya et.al.[8,10] demonstrated that there was no statistical association between anxiety and depression with socio demographic characteristics.

CONCLUSION

The findings of the study concluded that scores for anxiety and depression were higher in patients with Chronic Obstructive Pulmonary diseases. However there was a significant association between anxiety and depression with age, religion, occupation, smoking status, duration of illness, history of previous hospitalization, number of hospitalization in previous year, domiciliary oxygen therapy, type of family. Therefore health personnel working in the Pulmonology unit should be aware the early assessment and treatment of anxiety and depression of chronic obstructive pulmonary diseases patients. .

RECOMMENDATIONS

Mental health status should be screened in patients with chronic obstructive pulmonary diseases. Further studies to with large population to distinguish prevalence of anxiety and depression among the chronic obstructive pulmonary diseases.

LIMITATION OF THE STUDY

Despite the fact our study also has few limitations; there is a lack of control group for comparison. Findings of the study may not be generalized to other setting as it was done at a single site in Nepal.

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CONFLICT OF INTEREST

There are no conflicts associated with this research study.

FINANCIAL DISCLOSURE

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