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Original Article

Internal Medicine Section

Marital Quality and Erectile Dysfunction among COPD: A Cross-Sectional Study

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ABSTRACT

Introduction: Erectile Dysfunction (ED) is one of the distressing comorbidities associated with Chronic Obstructive Pulmonary Disease (COPD). There is a paucity of literature on the association of erectile function and marital quality in Indian COPD population.

Aim: To find out whether Erectile Dysfunction (ED) affects the marital quality in COPD subjects.

Materials and Methods: This cross-sectional study included 87 stable COPD patients, aged more than 40, who were married and staying with their partners. The patients were screened for psychiatric comorbidity using General Health Questionnaire-28 (GHQ) and Hospital Anxiety and Depression Scale (HADS). Erectile dysfunction was assessed using International Index of Erectile Function (IIEF) questionnaire. The patients were grouped into those having and not having ED. 'Marital quality' and 'relationship and sexuality' scales were used to compare the groups.

Results: Among the 87 study participants, 37 had ED while 50 were non-ED. The 'Marital Quality' and 'Relationship and Sexuality' scores were significantly lower in the non-ED group and ED group respectively (p-value $\leq$ 0.001). Age had no significant correlation to IIEF (0.164), 'Marital Quality' (0.14) and 'Relationship and Sexuality' (-0.094). There was a significant positive correlation between FEV1 values and "Relationship and Sexuality' scores (0.228), but none to 'Marital Quality' (0.58) and IIEF (-0.204) scores.

Conclusion: The study confirms that erectile function is a significant predictor of marital quality in COPD. The marital relationship and sexuality are found to be related to lung function.

Keywords: Anxiety, Comorbidities, Depression, Forced expiratory volume, Lung, Sexuality

INTRODUCTION

COPD is a progressive illness causing significant morbidity and mortality. COPD is associated with many comorbidities like cardiovascular, renal, psychiatric, musculoskeletal, and metabolic diseases [1]. COPD patients are reported to have low sex quality and sexual functioning which leads to sexual inactivity. ED is one of the causes for poor sexual life in COPD [2].

Chronic illnesses like COPD affect the marital quality [3]. Dyspnoea is the leading symptom that leads to poor sexual performance which in turn negatively affects the marital quality [4]. Wives of COPD patients are found to be stressed due to chronic illness of their partner. They take most of the family responsibilities, feels low health as well as marital quality [5]. It is evident that sexual dysfunction due to COPD may affect the marital quality [2,3]. The sexuality and relationship in patients of COPD is multifactorial. It is difficult to delineate the effect of respiratory disability from other factors that lead to poor marital quality and sexuality. In Indian practice, discussing the sexual problem is still a taboo and less time is spent, by the caregiver, in assessing the sexuality in patients with chronic illness.

There are no Indian studies, to the best of our knowledge, on ED and marital quality in COPD patients. This study was an attempt to find out the association of ED and the marital quality in COPD patients.

MATERIALS AND METHODS

This cross sectional study included 87 stable COPD patients, aged more than 40, who were married and staying with their partners, and literate in English or local language. The subjects were recruited from the Department of Respiratory Medicine, Kasturba Medical College, Manipal, Karnataka, India, using purposive sampling. COPD was diagnosed based on GOLD guidelines [6]. The patients having co-morbid physical conditions such as hypertension, diabetes mellitus, cardiac disease, and any neurological disease were excluded.

The socio-demographic details of all those who consented were collected. All the patients were receiving the recommended standard therapy for COPD. The patients were screened using General Health Questionnaire- 28 (GHQ-28) [7] and Hospital Anxiety and Depression Scale (HADS) [8] to rule out the presence of psychiatric co-morbidity. They were administered International Index of Erectile Function (IIEF) questionnaire [9], 'Marital Quality' [10], and 'Relationship and Sexuality' Scale [11].

International Index of Erectile Function (IIEF) questionnaire

The IIEF is the "gold standard" tool for evaluating ED. It contains 15 items that are divided into five unique domains: erectile function, intercourse satisfaction, orgasmic function, sexual desire and overall satisfaction. Out of these domains, only the first domain- erectile function (item no: 1,2,3,4,5 and 15) was used for the present study. The participants were directed to respond to the questions based on their sexual experience over the previous four weeks. A low IIEF score indicated severe ED. Subject with IIEF score higher than 25 was considered as not having ED and those with a score less than 25 as having ED. Thus, the participants were divided into two groups, ED and non-ED.

Marital Quality Scale

'Marital quality' is a multi-dimensional scale that consists of 50 items in statement form, with a four-point rating scale. There are gender specific forms. The total score range from 50 to 200. A high score

indicates a poor marital quality. Scores above 80 indicate presence of marital distress.

Relationship and Sexuality Scale

The 'Relationship and Sexuality' Scale consist of 10 questions for evaluating the impact of illness and treatment on person's sexuality. Emotional intimacy in relationships, sexual desire, orgasm and frequency of sexual intercourse are chiefly assessed. The score obtained lead to three factors namely sexual function, sexual frequency, sexual fear. The higher the score the more the dysfunction is present.

Ethical Clearance

The study was carried out between January 2012 to May 2012. The study was approved by Institutional ethics committee. A written informed consent was obtained from the participants after explaining about the study.

STATISTICAL ANALYSIS

Anticipating a standard deviation of seven and a minimum clinically important difference of five in the marital quality score for a power of 80% with 95% confidence level a minimum of 31 each would be required with and without ED. Anticipating a prevalence of 42.5% of erectile dysfunction among COPD patients, for 95% confidence level with a precision of 10%, accounting for 10% non response, 87 COPD patients need to be enrolled in the study.

The data were analysed using the Statistical Package for Social Sciences (SPSS) version 15.0. Independent sample t-test was employed to see whether there is any significant difference between the ED and non-ED groups on age, FEV1%, 'Marital Quality' as well as 'Relationship and Sexuality'. The correlation coefficients were calculated to see the relationship between age, FEV1%, IIEF, 'Marital Quality' as well as 'Relationship and Sexuality' scores. The linear regression was used to ascertain the predictors of marital quality (as dependable variable) and erectile function and FEV1 values as predictors.

All the variables identified significantly correlated with the marital quality score with a p-value of less than or equal to 0.2 were included for the multivariable stepwise linear regression. A $p < 0.05$ was considered significant.

RESULTS

Among the 87 study participants, 37 were found to have ED. There was no significant difference in age between the ED and non-ED groups (p-value-0.165) [Table/Fig-1]. Out of the 50 subjects in the Non-ED group, 12 (24%) were having mild, and 38 (76%) were having moderate COPD. In the ED group, 12 (32.4%), 25 (67.6%) patients had mild, moderate COPD respectively. The mean FEV1% value of non-ED group was 69.20±12.56 and of ED was 74.60±11.51 (p=0.043). The 'Marital Quality' and 'Relationship and Sexuality' scores were [Table/Fig-2] significantly higher in ED group when compared to non-ED ($p \leq 0.001$).

The mild and moderate COPD groups were compared on the various domains [Table/Fig-3]. There was no significant difference in IIEF and 'Marital Quality' scores between mild and moderate COPD groups. However, there was a significant difference in the scores of 'Relationship and Sexuality' between the two groups.

While examining the correlation between the various domains [Table/Fig-4], a significant negative correlation was found between age and FEVI% (-0.884), whereas no such correlation was evident to IIEF (0.164), 'Marital Quality' (0.14) and 'Relationship and Sexuality' (-0.094) scores. Correlation analysis between FEV1% and various domains showed significant positive correlation to 'Relationship and Sexuality' scores (0.228), whereas none to 'Marital Quality' (0.58) and IIEF (-0.204) scores. The IIEF scores and various domains were correlated and found a significant negative correlation between IIEF and 'Marital Quality' as well as 'Relationship and Sexuality' scores. FEV1 and IIEF scores which significantly correlated with the marital quality score with a p-value of less than or equal to 0.2 were included for the multivariable stepwise linear regression.

The IIEF score was found to be a statistically significant predictor of Marital Quality (p<0.001) while FEV1 was not [Table/Fig-5]. The identified equation to understand this relationship was: 'Marital Quality' = 92.24-0.823×ED. The adjusted R squared value was 0.527. Erectile function in COPD cases explained the 52.7% of the variance in 'Marital Quality'.

Diagnosis	Non-ED (n=50)	Erectile dysfunction (n=37)
Age (years)	54.88±6.19	53.00±6.19
FEV1 (%)	69.20±12.56	74.60±11.51
Mild COPD	12 (24%)	12 (32.4%)
Moderate COPD	38 (76%)	25 (67.6%)

[Table/Fig-1]: Baseline characteristics of study participants
ED: Erectile Dysfunction; FEV1: Forced Expiratory Volume in One Second

Variables	Non- ED (n=50) Mean±SD	ED (n=37) Mean±SD	T	p-value
FEV1(%)	69.20±12.56	74.60±11.51	-2.051	0.043*
Marital Quality Score	64.64±7.23	76.03±8.74	-6.642	0.000*
Relationship and Sexuality Score	20.32±5.68	26.16±3.44	-5.543	0.000*

[Table/Fig-2]: Mean±SD of various scales in Non-ED and ED group
*significant at p≤0.001
SD: Standard Deviation; ED: Erectile Dysfunction; FEV1: Forced Expiratory Volume in One Second

Variables	Mild COPD Mean±SD	Moderate COPD Mean±SD	p-value
IIEF Score	19.63±9.42	21.81±8.54	0.303
Marital Quality	68.96±9.66	69.68±9.77	0.757
Relationship and sexuality	24.75±5.99	22.06±5.36	0.046*

[Table/Fig-3]: Mean scores of various scales in mild and moderate COPD groups
*significant at p≤0.05
IIEF: International Index of Erectile Function; COPD: Chronic Obstructive Pulmonary Diseases; SD: Standard Deviation

Variables	FEV1 Values	IIEF Score	Marital Quality Score	Relationship and sexuality Score
Age	-.884*	.164	-.144	-.094
FEV1 (%)		-.204	.058	.228*
IIEF score			-.728*	-.492*

[Table/Fig-4]: Correlation between various domains
*significant at p≤0.01
FEV1: Forced Expiratory Volume in 1 Second; IIEF: International Index of Erectile Function

Variable	B	Std. Error	Beta	Sig.
Constant	92.238	4.974		0.000
IIEF score	-.823	.083	-.747	0.000*
FEV1 value	-.074	.059	-.095	0.215

[Table/Fig-5]: Determinants of Marital Quality among the COPD patients
Adjusted R^2 = 0.527, F-value =48.954*
*significant at p≤0.001
IIEF: International Index of Erectile Function; FEV1: Forced Expiratory Volume in 1 Second.

DISCUSSION

The present study showed that ED in COPD leads to poor marital quality. Many comorbidities are seen in COPD. ED is one among them. ED has significant adverse effects on male quality of life and self-esteem [12]. Physical disabilities and psychological stress lead to ED and strain the marital relationship.

It was found that the 'Relationship and Sexuality' score was higher in mild compared to moderate COPD group. This finding is contrary to the expected result. As the IIEF scores increase the 'Marital Quality' and 'Relationship and Sexuality' scores decreases, which in turn indicate that patients with no ED had better Marital Quality, Relationship, and Sexuality. The ED increases with increase in the severity of COPD, though there was no statistically significant difference in the IIEF score between the COPD severity groups. Patients with moderate COPD may have more disability due to hypoxemia, chronic coughing, and weakness compared to mild COPD patients. This in turn may contribute to more sexual inactivity and poorer relationship quality with the spouse in patients with moderate COPD than mild type.

There was no significant difference in the mean age among the two groups, which indicates that age is not a significant factor for the ED in COPD. Age may be one of the reasons for the progress of the COPD, and it may be contributing to the ED. All subjects in the study were above 55 years of age. COPD progress with the increase in age and the disease would have progressed from mild stage.

Fletcher EC and Martian RJ studied 20 men (aged 46 to 69 years) with COPD and found that sexual dysfunction progress as lung disease worsens [13]. They observed impotence in them even when other commonly known causes were ruled out. In our study, the ED group had significantly higher FEV1 values than the non-ED controls which in turn signifies more deterioration in the lung function in the non-ED than the ED group which is contrary to the expectation. In another study by Ibañez M et al., among the patients with COPD and chronic respiratory diseases on domiciliary oxygen therapy, they observed that there was no significant difference in lung function between those having impotence and without impotence [14]. They found 67.3% of the study subjects experienced some kind of sexual problem.

ED group had higher 'Marital Quality' and 'Relationship and Sexuality' scores when compared to the non-ED group. Usually, as lung function deteriorates the overall relation and sexuality also decreases in the patients with COPD. Low lung function leads to physical symptoms like hypoxia, chronic coughing, and weakness. All these three factors will negatively influence couples from engaging in a healthy sexual act; poor sexual performance is a significant reason for the low marital quality. Spouses of men with ED have significantly reduced marital and sexual satisfaction and increased psychological stress than controls [15-17].

Psychological disturbances such as depression and anxiety may also influence sexual function and marital quality in COPD, but their role may be difficult to separate from the physical effects of associated systemic illnesses. Rabinowitz B and Florian V found that psychosocial aspects of COPD affect the sexual functioning and the quality of life of the patient [17]. Most of those patients in the above study suffered from depression that in turn lead to decreased libido and reduced sexual pleasure. In the present study, the patients with psychiatric illness were excluded by using GHQ-28 and HADS questionnaires. The sexual satisfaction is one of the major components in marital quality. Sexual dysfunction will gradually lead to low physical as well as psychological affection which may cause relationship issues among couples. So, COPD patients with ED may not be satisfied with their sexual performance.

When family members are burdened of caring for an individual with COPD, marital and family relationships may become strained [18]. The physical disability from COPD leads to shifts in marital roles. They become less active socially. The sexual encounters dwindle. Overall responsibilities for the spouse or family member increase [16,19,20]. The main implication of the present study was to provide psychological rehabilitation along with the traditional physical rehabilitation to the patients with COPD [21]. Psychological intervention might be helpful for such patient. The present study warrants the need for psychoeducation and counselling to both the patients and their spouses which can help to handle these issues [22].

LIMITATION

The study was of cross-sectional design that limits causal inferences. The use of purposive sampling limits the external validity and generalization of results. As this is one of the first studies to examine the relationship between erectile function, 'Marital Quality' and 'Relationship and Sexuality' in COPD, the results should be considered as preliminary. The present study relied on self-reported measures which are prone to potential faking, bias, and distortions. Moreover, the current study had a relatively small sample size, making it weak to produce any generalizable conclusion.

CONCLUSION

The study proved that erectile function is a significant predictor of marital quality in COPD. Furthermore, lung function and 'Relationship and Sexuality' are found to be related to each other. It is imperative for the clinicians to discuss the problems of sexuality and guide them the measures aiming in maintaining an active sexual life, especially in subjects having chronic lung diseases like COPD.

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