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QUALITY OF LIFE AND ITS DETERMINANTS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE CASES AMONG 35 YEARS & ABOVE RURAL POPULATION OF GURUGRAM, HARYANA

Community Medicine

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ABSTRACT

Background: COPD is 4th leading cause of death worldwide and predicted to be third by 2030. In India, COPD accounts for 7% of deaths and 3% DALYs loss. Study was conducted to Find to assess health related quality of life and its determinants in patients with COPD among 35 years & above rural population of Gurugram, Haryana and also determine health seeking behavior & economic burden of COPD cases.

Methods: The study was conducted among field practice area of PHC Garhi Harsaru for one year. A total of 1434 individuals 35 years & above of age found in 700 households among were selected by probability proportion to size (PPS) sampling methods. 115 cases detected as cases were matched with equal number of controls. Health Related Quality of Life (HRQL) of participants was assessed using St. George's Respiratory Questionnaire (SGRQ). and Data analyzed

Results: This study shows an impaired quality of life in COPD patients. Quality of life was impaired in all the domains. However, activity domain was the most affected while impact domain was least affected. Smoking & frequent resp infections had significant effects but age, sex, BMI, socioeconomic status, occupation did not impact quality of life in significant manner.

Conclusions: This study shows an impaired quality of life in COPD patients. As COPD is slowly progressing disease with no specific cure, we should focus more on treatable aspects of quality of life.

KEYWORDS

Chronic obstructive pulmonary disease, Quality of life, St. George's respiratory questionnaire, Spirometry

INTRODUCTION

COPD is estimated to become the third leading cause of death worldwide by 2030.[1] COPD accounts for 7% of deaths and 3% DALYs loss.[2,3] It is a disabling disease with no definite cure and thus affects the quality of life (QOL) of such patients. Analyzing the mental, physical and social aspects of this disease is beneficial to improve the quality of life of COPD patients.

Thus the following study is conducted to assess health related quality of life and its determinants in patients with chronic obstructive pulmonary disease.

METHODS

The study was conducted among field practice area of PHC Garhi Harsaru of Gurugram for one year from Jan 2018 to Dec 2018. Presuming the prevalence of cases about 7% among 35 years & above form previous study, a sample size of population was calculated using formula $n=(Z_{1-a/2})^2 p (1-p)/d^2$ where p is prevalence and relative precision of 10% with anticipated non-response 10%[4]Population of all 14 villages consisting of 7700 household under PHC Garhi Harsaru was listed as per 2011 census and 7 villages were selected by simple random sampling. of these seven villages, 700 households were selected by probability proportion to size (PPS) sampling methods. All the 1434 individuals above 35 years of age found in these household were examined to detect chronic obstructive pulmonary diseases. Case definition was subject suffering from cough with expectoration for three or more months in a year for not less than 2 years and breathlessness. Spirometry was done to confirm the case & severity of condition (Gold criteria).[5] A total of 137 cases were listed on screening, of which 115 were taken as confirmed case of COPD as per case definition, spirometry & pulmonary medicine consultant advice. All the 115 cases detected were matched with equal number of controls matching the two for age (+_2 yrs) & sex. Data were collected on structured scheduled, Health related quality of life was assessed using St. George's Respiratory Questionnaire (SGRQ).[6] It is a standardized disease-specific instrument designed to measure impact on overall health, daily life, and perceived well-being in patients with obstructive airway disease.

It consists of 3 domains:

Part 1: Symptoms component (frequency and severity)
Part 2: Activity component (activities that cause or are limited by breathlessness.
Part 3: Impact component (social functioning, psychological disturbances resulting from airway disease)

Scores range from 0 to 100. A total score of 100 indicates a poor health status while score of zero indicates the best. Prior ethical clearance was taken from Institutional Ethical Committee

RESULTS:

Smoking, passive smoking, biomass fuel smoke exposure, occupational exposure to dust/smoke/gas /chemical vapors at work , frequent respiratory infections, family history of COPD were found important determinants of COPD (P<0.05) (Table 1)

This study shows an impaired quality of life in COPD patients. Quality of life was low in all the domains. However, activity domain was the most affected while impact domain was least affected as depicted in Table 2. Age, sex, did not impact quality of life in significant manner while smoking, and frequent respiratory infections was found to impact quality of life in significant manner (Table 3). Among all COPD patients 87.83% seeks immediate medical help in case of any breathing discomfort. Annual economic burden on COPD case was found to be Rs 14804/-.

Table 1: Socio demographic risk factors profile of COPD

Factor	Category	COPD Cases (n= 115)	Controls (n=115)	Stat cal value
Smoking	Non smoker	27	66	OR 4.39 (2.49-7.75) P=<0.0001
	ever smoker	88	49	
Smoking substance Among smokers	Cigarette	06	06	x^2=9.79, DF=4, P=0.0441
	Bidi	55	19	
	Hooka	23	16	
	Mix	04	08	

Average No. of bidi/cigarette/hooka per day among smokers	1-5	03	09	x^2=17.6177, DF=4, P=0.0041
	06-10	12	11	
	11-15	15	05	
	16-20	17	04	
	21+	18	03	
Passive smoking at home upto 18 years age (yrs of exposure)	0-4	02	02	x^2=9.8569, DF=4, P=0.0429
	5-9	03	08	
	10-14	23	14	
	15-18	76	67	
Passive smoking at home after 18 years age (yrs of exposure)	0-4	08	15	x^2=9.9495 DF=4, P=0.0413
	5-9	17	13	
	10-19	09	08	
	20+	52	34	
Passive smoking at work place (yrs of exposure)	0-4	11	04	x^2=9.9677 DF=4, P=0.0462
	5-9	16	10	
	10-19	17	14	
	20+	30	25	
Biomass fuel smoke exposure	Not exposed	08	24	OR=3.53, (CI 1.51-8.23) x^2=9.9677 DF=4, P=0.0462
	Exposed	107	91	
Type of biomass fuel used among exposed	Wood	10	18	x^2=5.1974 DF=4, P=0.26
	Agriculture- crop residue	14	12	
	Animal dung	22	20	
	Mix	61	41	
Average exposure hours per day to biomass fuel among exposed	-1 hrs/day	5	16	x^2=9.9772, DF=4, P=0.0444
	1-2 hrs/day	7	4	
	2-3hrs/day	19	17	
	3-4 hrs/day	23	13	
	4 hrs+	53	41	
Occupational exposure job dusty conditions	Not exposed	41	59	OR=1.9, (CI 1.12-3.23) x^2=5.7323 DF=1, P=0.166
	Exposed	74	56	
Time spent in dusty job exposure among exposed	upto 5 yrs	09	17	x^2=10.4084 DF=4, P=0.0341
	06-10 yrs	11	07	
	11-15yrs	08	03	
	16-20 yrs	14	15	
	20 yrs+	32	14	
Occupation where exposure to gas/smoke/chemical vapors	Not exposed	91	102	OR=2.07, (CI 1.0-4.3) x^2=3.8972 DF=1, P=0.0483
	Exposed	24	13	
Time spend on job exposure to gas/smoke/chemical vapors	upto 5 Yrs	01	03	x^2=11.0197 DF=4, P=0.0263
	6-10 Yrs	02	05	
	11-15Yrs	06	03	
	16-20Yrs	05	01	
	20 Yrs+	10	01	
Frequent respiratory infection	Negative	72	86	OR=1.77 (CI 1.01-3.12) x^2=3.9627 DF=1, P=0.0465
	Positive	43	29	
Family history of COPD	Negative	86	99	OR=2.09 (CI 1.01-4.10) x^2=4.6691 DF=1, P=0.0307
	Positive	29	16	
Physical activity	Light	44	27	x^2=6.1505 DF=2, P=0.04617
	Moderate	58	63	
	Heavy	13	25	
Body Mass Index	Underweight	37	23	x^2=6.3945, DF=2 P=0.0408
	Normal range	48	66	
	Overweight	30	26	

Table 2 SGRQ score of COPD cases

Cat	No.	Minimum	Max	Mean (SD)
Symptoms	115	6.68	93.86	45.10 (22.04)
Activity	115	1.1	99.4	50.19 (23.14)
Impact	115	0	59.55	23.17 (14.16)
Total	115	3.20	70.16	36.14 (18.50)

Table 3. Determinants of quality of life of COPD cases (n=115) as per SJRQ score

Variable	Symptom score Mean (SD)	Activity score Mean (SD)	Impact Score Mean (SD)	Total score Mean (SD)
Sex Male Female Stat Cal	43.01 (22.99)	46.98 (25.23)	20.28 (16.15)	33.03 (21.07)
	46.29 (24.98)	52.03 (23.78)	24.83 (17.83)	37.64 (18.41)
	t=-0.431	t=-0.662	t=-0.840	t=-0.758
	p=0.669	p=0.512	p=0.406	p=0.452
Age <50 50–60 >60 Stat Cal	49.70	60.26	51.60	53.67
	46.66 (23.04)	48.63 (24.78)	21.19 (15.12)	35.60 (17.06)
	44.19 (25.29)	50.60 (24.61)	23.17 (17.83)	35.53 (20.63)
	F=0.065	F=0.115	F=1.446	F=0.419
	P=0.937	P=0.891	P=0.247	P=0.661

SES scale Class I &II III IV Stat Cal	51.42 (27.24)	52.68 (22.38)	28.03 (18.36)	40.54 (20.29)
	42.69 (23.15)	51.08 (26.11)	23.87 (19.38)	35.51 (20.38)
	41.54 (22.13)	46.69 (24.92)	17.53 (12.13)	31.90 (17.35)
	F=0.706	F=0.224	F=1.347	F=0.698
	P=0.499	P=0.801	P=0.271	P=0.503
Occupation Employed Housewife Retired Stat cal	55.08 (28.09)	50.36 (20.47)	27.72 (16.37)	40.07 (16.84)
	44.09 (22.69)	54.48 (23.26)	23.97 (17.66)	37.68 (18.85)
	33.18 (16.92)	37.10 (29.81)	13.99 (15.35)	24.63 (22.15)
	F=2.144	F=1.596	F=1.634	F=1.810
	P=0.130	P=0.215	P=0.208	P=0.177
BMI Normal Underweight Overweight/ obese Stat cal	40.66 (20.79)	46.80 (26.84)	20.78 (17.52)	32.88 (19.93)
	60.28 (14.39)	62.39 (17.52)	31.36 (4.05)	46.91 (3.54)
	35.00 (35.96)	51.93 (15.82)	20.46 (20.66)	32.36 (19.15)
	F=2.437	F=0.609	F=0.886	F=1.201
	P=0.079	P=0.613	P=0.456	P=0.322
Smoking Yes No Stat cal	43.41 (23.42)	51.08 (26.37)	21.06 (16.26)	35.66 (19.91)
	47.78 (25.52)	48.79 (20.84)	26.53 (18.58)	36.44 (18.89)
	p= 0.021	p=0.034	p=0.016	p=0.019
Frequent resp Infection Yes No Stat cal	45.41 (23.42)	49.08 (22.27)	31.06 (14.56)	35.66 (19.91)
	47.78 (25.52)	48.79 (20.84)	26.53 (18.58)	36.44 (18.89)
	p= 0.014	p=0.014	p=0.010	p=0.017

DISCUSSION

Study showed an impaired quality of life among 115 COPD cases using St. George's respiratory questionnaire (SGRQ). Quality of life was low in all the domains as compared to healthy subjects. However, activity domain was the most affected while impact domain was least affected. Mean total score for SGRQ in the patients was 36.14±18.50. Ahmed et al also showed impairment of QOL across all domains.[7] Symptom domain was found to be most affected while impact domain was the least affected. Negi et al also found marked impairment of HRQL.[8] When compared to studies done in other countries, it was found that Indian COPD patients suffer somewhat same reduction in QOL as from other countries.[9,10]

Socio-demographic variables such as age, sex, socioeconomic status and occupation were not found to have significant effect on quality of life in COPD patients in the present study. Previous studies have shown varied results in this regard.[11,12] Other studies also reported no correlation between age and QOL while some have reported worsening of SGRQ scores with increasing age.[13,14]

Patients with poor socioeconomic status while in this study; socioeconomic status was not found to be significantly associated with impaired QOL concurrent with other studies.

Smoking was found to have significant impact on QOL in the present study. Other studies also reported that smoking significantly affects QOL in COPD patients.[8-10] Findings were concurrent with other researcher with regard to pack years of smoking, passive smoking and patterns of use of biomass fuel especially in females.[4]

BMI was not found to have significant impact on QOL in the present study. This was Concordant with other studies where underweight patients have worse health status than patients of normal weight; other reported no association found in their study while some have shown that being underweight or obese to be consistently associated with worse HRQOL as compared to normal weight patients.. Spirometry was done at the time of the study to assess the severity of the disease.[12-14]

CONCLUSION

Poor quality of life in COPD patients, a slowly progressing disease with no specific cure, is cause of concern, public health programme should focus more on preventable aspects of quality of life. Smoking, exposure to smoke/dusty / chemical vapors & family history of COPD are main determinant of COPD. Public health planners should concentrate to mitigate these causes.

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