Original Article

Assessing health-seeking behavior among Asthma and COPD patients in urban South India

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Abstract

Context: Health-seeking behavior of patients with chronic obstructive pulmonary disease (COPD) and asthma and the diagnosis told to them by doctors before they reach tertiary care is not well documented. **Aims:** This study aimed at describing the health-seeking behavior of asthma and COPD patients before they present to a tertiary care hospital in Trivandrum in South India. **Methods and Materials:** The hospital-based cross-sectional study was done at one government and one private tertiary care hospital in Trivandrum, Kerala, including diagnosed COPD and asthma patients. Data were collected using a pretested semistructured questionnaire paired with the results of clinical evaluation and spirometry. **Results:** Among the studied population, about half (53%) of the patients in this study sought initial treatment from government facilities and most patients continued the same pattern of government care or private providers till the final level. Most of them (91%) were likely to have a history of first care from modern medicine system. High proportion of patients (89%) did not have a diagnosis known after the initial consultations, among patients with asthma only 3.4% were given a correct diagnosis and only one person was given a correct diagnosis of COPD out of 129 patients with COPD as the final diagnosis. Out of 739 patients, only 135 patients had done pulmonary functtion test as investigation. **Conclusions:** High proportions of patients do not know the diagnosis of their disease when they reached tertiary care. Patients tended to follow the same sector of health care (private/government) where they sought initial care.

Keywords: Asthma, COPD, healthcare-seeking behavior, India

Introduction

Obstructive airway diseases, including chronic obstructive pulmonary disease (COPD) and asthma, cause significant mortality and morbidity worldwide and in India. COPD is defined as "a common, preventable and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases" (Global Initiative for Chronic Obstructive Diseases (GOLD) 2019).[1] Asthma is defined as "Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation" (Global initiative for Asthma (GINA) 2018).[2]

The Global Burden of Disease study 2017 points to a shift from communicable to noncommunicable diseases even in the least developed countries. COPD was ranked as the fifth leading cause of DALYs in GBD 2017[3] and the third leading cause of

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death in the world.[3] In India, COPD is the third leading cause of DALYs as per the GBD estimates of 2017 for India, showing an increase from sixth place in 1990.[3] Asthma continues to be the 12th leading cause of deaths from all ages in India since 1990 (GBD data). According to GBD 2016 data, COPD is the third leading cause of DALYs (1187 DALYs/100,000) and deaths (39 deaths/100,000) in Kerala.[4]

Both the diseases are common, with 300 million persons worldwide estimated to be affected by asthma and an estimated 384 million persons worldwide affected by COPD, with about 3 million deaths a year due to COPD.

Various studies have reported prevalence of COPD ranging from 3% to 9%.[5] The epidemiology of COPD in India has been studied in the INSEARCH study by Dr. SK Jindal and team, they estimated the burden of COPD (as measured by chronic bronchitis) as 3.49% in persons above the age of 35 years and the burden of Asthma was 2.05%.[6] However, the site in Kerala in INSEARCH, Trivandrum had a high prevalence of COPD at 10%, which is much higher than the National average (3.5%) and asthma was 3.44% as opposed to the national average of 2.05%. Another study done in Kollam showed that the prevalence of self-reported asthma was 2.82% (95% CI 2.52–3.12) and that of chronic bronchitis was 6.19% (95% CI 5.76–6.62), whereas the other CRDs which did not fit to either constitute 1.89%.[7] GBD 2016 shows that COPD accounts for 6.03% of the total deaths in Kerala and 4.36% of total DALYs, whereas asthma burden was 1.04% of the total DALYs.[6-8]

Exposures from tobacco smoke/allergens, noxious chemicals, occupational exposures, indoor air pollution, comorbidities, such as chronic rhinitis and/or eczema, and obesity are considered as risk factors for presence or exacerbation of asthma.[2] Gender, increasing age, urban residence, low socioeconomic status, and family history are also proven to be significant risk factors for asthma. Environmental tobacco exposure also had considerable contribution in increasing risk for asthma.[9]

Smoking or passive exposure to cigarette smoke also leads to respiratory abnormalities. GBD 2017 Study listed smoking as the leading risk factor for early death and disability among males.[10] Various studies have shown that smokers had greater risk for developing respiratory diseases and decrease in lung function. In a subset of PURE study, it was found that among heavy bidi smokers, severe impairment of respiratory functions were seen and the hazard for all-cause mortality increased across smoking categories. They also reported increase in baseline levels of chronic wheeze, cough, and other associated symptoms.[11]

Occupational exposure to dust and fumes can predispose workers to impairments by increasing burden on lungs. In urban households, outdoor air pollution contributes to respiratory distress. Chronic bronchitis in smokers can lead to a likelihood for COPD. Infections such as HIV-AIDS can also play a role in development of COPD.[1] Asthma was found to be significantly associated with COPD in a longitudinal study, with asthmatics having a hazard ratio of 12 when compared with patients with no asthma.[12] But other risk factors are seen to play a major role in developing COPD in nonsmokers. It is estimated that around 25%–45% COPD patients are nonsmokers.[13] In developing countries, biomass fuel exposure was considered to be a significant factor especially among women. Various studies have proven that a history of pulmonary TB had a stronger association with COPD than smoking or other exposures.[14,15]

Kerala is considered to be one of the states in India showing exceptional developments in literacy and health outcomes. An increasingly educated population led to an increase in income of households. This along with population ageing triggered a demand for better health facilities, which could not be met only by the public sector hospitals. As a result, health sector witnessed the growth of hospitals in private sector that has been expanding even now.[16] This trend is seen in other parts of southern India also, where private providers manage more than 80% of patients and higher income is associated with increased utilization of private healthcare facilities.[17] Nature of treatment also varied across the country with patients preferring systems of medicine other than modern medicine/allopathy.[18] A study conducted in West Bengal showed that COPD patients preferred to visit qualified doctors in private and government sectors.[19] Another study found 4 out of 10 patients trying to manage the disease with home remedies.[20]

In this context, this study aimed at describing the health-seeking behavior in patients with asthma and COPD before they present to a tertiary care hospital, in Trivandrum city in South India

Subjects and Methods

Study design and setting

This hospital-based cross-sectional study was done at two tertiary care hospitals in Trivandrum city, Kerala, one in government sector and the other in private sector. Kerala is a state in south India with an area of 38,863 km^2 and population of 33,387,677.[21] It is the state with highest literacy rate in India and also has the best health care indicators in the country.[16] This state is believed to have the most well-informed patients in India.

Study population

Patients with a diagnosis of COPD or asthma from the pulmonary medicine departments of two hospitals were included.

Data collection

A pretested semistructured questionnaire was used to collect data. The tests done for their diagnosis at the centers where the patients were previously treated and the treatment offered at the peripheral centre was determined. Patients were also interviewed to determine where they sought treatment before they came to the tertiary care center and what diagnosis was informed to them. Patients were evaluated at the tertiary hospital with

clinical evaluation as well as spirometry to make a diagnosis of Asthma, COPD, or overlap as per GINA or GOLD guidelines as appropriate.

Sample size

Taking the proportion of patients seeking medical treatment for COPD and Asthma as 48%,[20] an absolute precision of 5%, 95% confidence level, and a design effect of 1.5, the sample size was 576. After adding a nonresponse of 20%, the final sample size was estimated to be 720. When the proportion of patients visiting government sector for treatment of COPD and asthma was taken as 67%,[20] with the same absolute precision, 95% confidence level, and design effect as the former, the sample size was 510. After adding a nonresponse of 20%, it was found to be 638. In total, 740 sample sizes were achieved at the end of the study.

Ethical issues

Ethics committee clearance was obtained prior to carrying out the study from the registered Independent ethics committee at Health Action by People (Ethics clearance number: IEC.No.EC2/P1/November/2017/HAP). No additional investigations or treatment modification were made as part of the study, only documentation of health seeking behaviour and care given was made.

Statistical issues

The data were analyzed by EpiInfo7 software. General characteristics of the patients, presence of risk factors, and health-seeking behavior characteristics were expressed as proportions with 95% confidence interval. Duration of symptoms of the patients was expressed as median (IQR).

Results

This cross-sectional study done in one government and one private tertiary care hospital in Trivandrum included data from 740 patients, who had asthma or COPD as their final diagnosis from the consultant pulmonologist at the tertiary care hospital. Of these patients, 56.2% were recruited from the private tertiary care center and 43.8% were recruited from the government tertiary care center. The general characteristics of the patients are shown in Table 1. Table 2 describes the duration of symptoms of the patients. The median duration shows that patients suffered from symptoms such as cough, wheeze or breathlessness for at least 3 years. Family history of disease was present in around 71% of the patients. Nearly one-third of the patients were passive smokers [Table 3]. Among the smokers, about 25% still continued to smoke even at the time they reached tertiary care facility. The rest 75% had stopped the habit only 3–4 months after the onset of symptoms, such as cough or wheeze. While analyzing previous investigations which were done, out of 739 patients, 400 (54.13%: 95% CI - 50.52, 57.69) had done chest X-ray and 135 patients (18.27%: 95% CI - 15.65, 21.22) had done PFT.

Table 1: General characteristics of patients in the study

Variables	Categories	Number	Percentage	95% CI
Age in years	≤40	316	42.70	39.19, 46.30
	>40	424	57.30	53.70, 60.81
Gender	Male	358	48.38	44.80, 51.98
	Female	382	51.62	48.02, 55.20
Socioeconomic	APL	554	73.87	70.22, 76.57
Sstatus	BPL	196	26.13	23.43, 29.78
Residence	Urban	317	42.84	39.32, 46.43
	Rural	423	57.16	53.57, 60.68
Education	Illiterate	1	0.14	0.02, 0.76
	Primary	153	20.68	17.91, 23.74
	Secondary	236	31.22	27.98, 34.64
	Pre-degree	129	17.16	14.62, 20.05
	Degree	156	20.81	18.04, 23.88
	Post-graduation	49	6.49	4.93, 8.50
	Professional	26	3.51	2.41, 5.10

95% CI=95% confidence interval; APL=above poverty line as per ration card; BPL=below poverty line as per ration card

Table 2: Symptoms of the patients

Symptom	Number	Percentage	Median duration of symptoms (months)	IQR
Cough	603	81.89	48	12-120
Wheeze	645	87.16	48	12-96
Skin atopy	99	13.40	2	1-6
Breathlessness	712	96.22	36	12-96
Rhinitis	498	67.30	60	24-180

IQR=inter quartile range

Table 3: Risk factors for the patients

Risk factor	Number in whom this was present	Percentage	95% CI
Family history	526	71.08	67.71, 74.23
Smoking	180	24.32	21.37, 27.54
Passive smoking	248	33.56	30.25, 37.04
Previous history of TB	38	5.14	3.77, 6.98
Exposure to smoke from burning of waste	235	31.80	28.54, 35.24
Biomass exposure	228	30.81	27.59, 34.23
Exposure to mosquito coil	148	20.03	17.30, 23.06

95% CI=95% confidence interval; TB=tuberculosis

It was seen that patients who reached and availed treatment from private tertiary care center were more likely to be from upper socioeconomic section (87.50%). Differences in health seeking behavior between the patients who presented at government and private tertiary care centers is given in Table 4. About half of the patients (52.84%) sought initial treatment from government facilities. Most of them (91.08%) had a history of first care from modern medicine system as opposed to alternate system of medicine. Home remedies were followed by 24 patients. About 56.6% of the patients had directly visited the tertiary care facility without any prior referral. Among 737 patients who actually approached government or private providers, 654 were offered no diagnosis at all. They were only provided treatment without any diagnosis.

Table 4: Health-seeking behavior of the patients

Variable	Category	Number	Percentage	Patients at government tertiary care	Percentage	Patients at private tertiary care	Percentage
Gender	Male	358	48.38	179	55.25	179	43.03
	Female	382	51.62	145	44.75	237	56.97
Socioeconomic status	APL	544	73.51	180	55.56	364	87.50
	BPL	196	26.49	144	44.44	52	12.50
First treatment sought from	Govt.	391	52.84	258	79.63	133	31.97
	Private	322	43.51	61	18.83	261	62.75
	Pharmacies	27	3.65	5	1.54	22	3.65
First care sought from which system of medicine	Modern medicine	674	91.08	314	96.91	360	86.54
	Ayurveda	19	2.57	6	1.85	13	3.13
	Homeopathy	23	3.11	1	0.31	22	5.29
	Home remedies	24	3.24	3	0.93	21	5.05
Qualification of the treating doctor just before the patient reached the tertiary care hospital	Not known	117	15.83	38	11.76	79	18.99
	MBBS	64	8.66	53	16.41	11	2.64
	Physician	407	55.07	201	62.23	206	49.52
	Pulmonologist	122	16.51	24	7.43	98	23.56
	Alternate system	29	3.92	7	2.17	22	5.29
Institution which referred the patient to the tertiary care hospital	Government	302	40.87	301	92.90	1	0.24
	Private	18	2.44	12	3.07	6	1.45
	Self	418	56.56	10	3.09	408	98.31
Institution at which patient was seeking care just before reaching the tertiary care hospital	Private clinic	122	16.49	22	6.79	100	24.04
	Private hospitals	207	27.97	14	4.32	193	46.39
	PHC and CHC	57	7.70	43	13.27	14	3.37
	TH and GH	130	17.57	99	30.56	31	7.45
	Medical Colleges	160	21.62	144	44.44	16	3.85
	Self	64	8.65	2	0.62	62	14.09

95% CI - 95% confidence interval; APL=above poverty line as per ration card; BPL=below poverty line as per ration card; PHC=Primary Health Center; CHC=Community Health Center; TH=taluk hospital; GH=general hospital; MBBS=Bachelor of Medicine and Bachelor of Surgery; Govt. = Government

Table 5: Correlation between previous diagnosis and final diagnosis

Previous diagnosis	Final diagnosis			Total
	Asthma	COPD	Asthma and COPD overlap	
Asthma	19 (3.36%)	4 (3.10%)	3 (6.98%)	26 (3.53%)
COPD	4 (0.71%)	1 (0.78%)	1 (2.33%)	6 (0.81%)
Others	1 (0.18%)	0	0	1 (0.14%)
None	493 (87.26%)	122 (94.57%)	39 (90.70%)	654 (88.74%)
Allergy	48 (8.50%)	2 (1.55%)	0	50 (6.78%)
Total	565	129	43	737

Among patients with asthma, only 3.4% were given a correct diagnosis and only one person was given a correct diagnosis of COPD out of 129 patients with COPD as the final diagnosis. About 8.5% patients with asthma were told that they have allergy without telling the name of their disease [Table 5].

Discussion

This study describes the current practices and health-seeking behavior in asthma and COPD patient in South India. This study is in the context of the governments of India and Kerala moving toward achieving the sustainable development goals. For this, there is a need to shift focus toward detection and management of noncommunicable diseases, including COPD and asthma. The state of Kerala has initiated a new public health program for the prevention and control of COPD and asthma, called the "SWAAS program."[22] In this context, there is a need to determine the current health-seeking behavior of patients with asthma and COPD.

In this study, it was found that initial care seekers at government or private healthcare facility preferred to avail treatment again from the same type of hospital, i.e. government or private, creating a pattern in care seeking. About half of the patients in this study sought initial treatment from government facilities. This was different in a study conducted in West Bengal where more COPD patients visited private providers and only one-fifth visited government providers.[19] The proportion of COPD patients preferring government facilities was 67.2% in a study conducted in Delhi.[20] It was seen that in this study, patients who reached and availed treatment from private tertiary care center were more likely to be from upper socioeconomic section (87.50%). Uddin *et al.* also described a similar scenario where higher consultation rate from trained providers was from

patients with highest asset quintile.[23] Also, 56.6% of the patients in this study had directly visited the tertiary care facility without any prior referral. Studies exploring health-seeking behavior of noncommunicable diseases such as diabetes and hypertension in South India had proportions of contact with government facilities ranging from 34% to 55%.[24,25]

This study found only 18.27% patients being offered PFT in previous investigations. In a review of 65 patient records in Los Angeles, it was found that only 29% had availability of spirometry and led to misclassification of 31.6% COPD patients.[26] A study by Vanjare *et al.* across 15 states in India shows that practitioners other than chest physicians were only likely to use spirometry for obstructive airway diseases in 12%–26% of patients,[27] the proportion being nearly similar to this study. The main reasons given were cost effectiveness and lack of affordability by patient.

Most of them (91.08%) were likely to have a history of first care from modern medicine system as opposed to alternate system of medicine. Home remedies were followed by 24 patients. A study conducted in Bangladesh also found that alternate medicine systems (homeopathy, Ayurveda, Unani) were rarely consulted.[23] But study of COPD profile in Delhi had 41% of the patients on home remedies and 48% of them on medical treatment.[20] In the study of Uddin *et al.*, 22.6% of patients with COPD sought care from MBBS Doctors; whereas in this study, 8.6% sought care from MBBS doctors with more patients preferring to visit a physician.[23]

The proportion of patients who knew their correct diagnosis was 17.6% in a study conducted by Singh *et al.* in Rajasthan, whereas the proportion who were told any diagnosis was only 11.3% in this study.[28] Among patients with asthma, only 3.4% were given a correct diagnosis and only one person was given a correct diagnosis of COPD out of 129 patients with COPD as the final diagnosis. 8.5% patients with asthma were told that they have allergy without telling the name of their disease. The study conducted in Rajasthan also had only 57.7% doctors who told the exact name of the disease COPD as such to patients suffering from COPD. However, for asthma, 71.1% doctors had used the correct terminology, quite contrary to our study.[28] We have not presented health-seeking behavior of asthma and COPD patients separately since most of them were not offered a diagnosis before arriving at the tertiary care facility.

In order to calculate and assess the type of facilities required by patients and for the successful implementation of any health program, patients' health-seeking behavior needs to be known.

Strengths of the study

This study looks at health-seeking behavior of asthma and COPD patients which is scarcely studied in India. This is the first study explaining health-seeking behavior of asthma and COPD patients in Kerala. This is also a valid and reliable study, recruiting a large number of patients, especially during the time of implementation of SWAAS program in the state.

Limitations of the study

Comparatively, a large number of patients were assessed from both government and private tertiary healthcare facilities. However, the recruited patients presented to the healthcare facilities after a long period of symptoms. So, behavior of patients with milder symptoms, who might not consider their symptoms serious enough for a hospital visit, could not be explored. This might have led to a selection bias as their health-seeking behavior might be different.

Conclusion

Around 53% of the patients preferred to visit government providers as a choice of availing initial treatment and very high proportion (91.08%) of patients preferred modern medicine for availing the first treatment. There was a concordance in the pattern of health seeking with majority of the patients having first contact with a government or private provider preferring to continue the same till the final level. Also, there were a large number of COPD and asthma patients who were not offered any diagnosis by the initial providers.

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Conflicts of interest

There are no conflicts of interest.

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