

Prevalence of different sleep problems in patients with respiratory diseases presented to a respiratory outdoor clinic: A descriptive analysis.

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Abstract

Introduction: A patient with compromised respiratory system due to some diseases may have disturbed sleep to a great extent. It has been proved in various community based epidemiologic studies. Most of such studies available had concentrated on single respiratory disease like COPD or Asthma in the community. But such studies are hardly available for patients attending a respiratory clinic, where all respiratory ailments were evaluated with concurrent sleep problems. The present study is one such.

Methods: Total 163 patients were screened and among them, 100 were selected as the study group. The patients were enquired with a standard questionnaire provided to them. In addition, they were given separate questionnaire as STOP BANG, Insomnia Severity Index Score, and RLS questionnaire. Those persons with STOP BANG>5, were also advised for a Polysomnography (PSG), if not already done. Descriptive statistical analysis has been carried out in the present study.

Results: The present study is a cross-sectional depiction of relationships between various respiratory diseases and sleep problems. As per this study, most patients were asthmatic and commonest sleep problem was OSA. A subgroup analysis was done to determine the significance of difference of various parameters between the three groups of asthmatic patients, patients having COPD and the 'Other' group.

Discussion: Subjective sleep problems were significantly more in Asthma group than COPD group ($p<0.0362$). The mean STOP BANG was more in COPD group than the Asthma group ($p<0.0301$). Though OSA was the commonest sleep problem between the three groups, the prevalence was not statistically significant between them. More patients in the COPD group had insomnia, but it was not statistically, significantly more than in Asthma group. Sleeping pill use was significantly more in COPD group than the Asthma group ($p<0.0039$).

Conclusion: Sleep problems are common in patients with respiratory diseases and OSA is the most common problem according to the present study. Asthma patients had more subjective sleep problems. Sleeping pill use is more common in COPD patients instead of having less subjective sleep complaints than asthma patients.

Keywords: COPD, Asthma, STOP BANG, Insomnia, Polysomnography.

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Introduction

The quality and quantity of sleep are the determinants of quality of life. But performance of respiratory system is not at its best during sleep. So a patient with compromised respiratory system due to some diseases may have disturbed sleep to a great extent. In the Tuscan epidemiologic study, it was found that 53% of patients with COPD experience difficulties in initiating or maintaining sleep and 26% complaints of excessive daytime sleepiness (EDS), compared to 36% and 11%, respectively, in age matched controls having no respiratory diseases [1]. Similarly Asthma patients are also prone to various sleep problems. In an analysis of 225 patients from the SARP Cohort, 40% of severe Asthmatic complaints of EDS, and 31% had an elevated Epworth Sleepiness Score (EPSS) [2]. In spite of such wide prevalence of sleep problems in respiratory patients, we often do not take the sleep history from the patient. In 2013, Price, et al. showed that, although 78% patients reported

night time symptoms, only 67% of clinicians reported that their patients were bothered at night [3]. In view of all these, the present study was done in a respiratory outdoor clinic to evaluate different sleep problems in a small group of patients presenting with various respiratory ailments.

We discovered that among subjects with no respiratory symptoms, 28.0 percent reported insomnia (difficulty initiating or maintaining sleep) and 9.4 percent reported daytime sleepiness, based on data from the Tucson Epidemiologic Study of Chronic Lung Disease, which included body weight, questionnaire responses, and spirometry. Sleep problems increased among patients with respiratory symptoms such as cough and or wheezing. Insomnia was reported by 39.1% of respondents, and daytime sleepiness was reported by 12.4%. The rates were 52.8 percent and 22.8 percent, respectively, for both symptoms. Overall, we discovered a link between respiratory symptoms and sleep complaints ($p=0.001$ for insomnia and

p=0.001 for daytime drowsiness). Obesity, snoring, and diagnosis of lung illness, all increased the incidence of sleep complaints in independent studies, but when we used logistic regression, we discovered that obesity, respiratory symptoms, gender, and age were the only factors that influenced the rate of sleep complaints.

Methodology

The study was carried out in 2019 in a Respiratory Clinic in Kolkata (February to June). All patients coming for some respiratory consultations were requested to provide the data required for the study. The inclusion criteria were:

1. Adult patients > 18 Years
2. Not terminally ill
3. Follow up data available for at least 6 months

The patients were enquired with a standard questionnaire provided to them. In addition, they were given separate questionnaire as STOP BANG [4], Insomnia Severity Index Score [5], RLS questionnaire [6]. Those persons with STOP BANG > 5, were also advised for a Polysomnography (PSG) [7], if not already done. Only those patients having a PSG

documented for OSA presence were tabulated as confirmed OSA.

Total 163 patients were screened and among them, 100 were selected as the study group, for whom we are able to gather all the required information. Descriptive statistical analysis has been carried out in the present study. Results on continuous measurements are presented on Mean ± SD and results on categorical measurements are presented in Number (%). Significance is assessed at a level of 5%. Statistical software: MedCalc Software [8].

Results

The total number of patients in this study was 100. The distribution of patients according to the diagnosis were asthma=45, COPD=24, Tuberculosis=4, acute bronchitis=2, Respiratory tract infection=20, lung cancer=1, interstitial lung disease=2, bronchiectasis=1, GERD=1. The most common diagnosis in this population was asthma, and then followed by COPD, followed by acute respiratory tract infections. The characteristics of each of this group are given in Table 1. Those patients who are not having either Asthma or COPD were clubbed together as 'Other' group (Table 2).

Table 1: Subgroup analysis between these three groups to determine the level of significance.

Parameter	Asthma	COPD	Other
% of patient	45%	24%	31%
Mean age in years (SD)	43.13(19.73)	70.79 (9.55)	50(16.04)
Sex %	F=55.55, M=44.44	F=12.5, M=87.5	F=48.39, M=51.61
Subjective sleep problem (n/%)	21(46.67%)	5(20.83%)	18(58.06%)
Mean STOP BANG (SD)	2.71(1.84)	3.75(1.89)	3.87(2.21)
Mean Mallampati (SD)	1.93(0.94)	1.83(1.049)	1.58(0.886)
Mean BMI (SD)	27.19(4.99)	26.74(6.56)	27.38(7.76)
OSA (n/%)	19(42.22%)	15(62.5%)	12(38.71%)
Insomnia (n/%)	1(2.22%)	2(8.33%)	0
RLS (n/%)	1(2.22%)	0	0
Sleeping pills (n/%)	2(4.44%)	7(29.166%)	3(9.68%)

Table 2: The observations which achieved the level of significance.

Parameter	Asthma	COPD	Other	Difference	Standard error	95% CI	t statistics	Chi-squared	DF	p value
Mean age in years	43.13	70.79	-	27.66	4.28	19.11 to 36.20	6.46	-	67	<0.001
Mean age in years	43.13	-	50.16	7.03	4.27	-1.49 to 15.55	1.644	-	74	0.1045
Subjective sleep problems	46.67%	20.83%	-	25.84%	-	1.88 to 44.21%	-	4.386	1	0.0362
Subjective sleep problems	46.67%	-	58.06%	11.39%	-	-14.96 to 35.09%	-	0.657	1	0.4178
Mean STOP-BANG	2.71	3.75	-	1.04	0.47	0.103 to 1.977	2.215	-	67	0.0301
Mean STOP-BANG	-	3.75	3.87	-0.12	0.57	-1.25 to 1.01%	-0.212	-	53	0.8326
Mean STOP-BANG	2.71	-	3.87	-1.16	0.47	-2.089 to -0.231	-2.487	-	74	0.0151
Mean Mallampati	1.93	1.83	-	-0.1	0.25	-0.593 to 0.394	-0.404	-	67	0.6874
Mean Mallampati	1.93	-	1.58	-0.35	0.21	-0.777 to 0.077	-1.633	-	74	0.1068
Mean Mallampati	-	1.83	1.58	-0.25	0.26	-0.773 to 0.274	-0.958	-	53	0.3426

Mean BMI	27.19	26.74	-	-0.45	1.41	-3.26 to 2.36	-0.319	-	67	0.7506
Mean BMI	27.19	-	27.38	0.19	1.46	-2.72 to 3.10	0.130	-	74	0.8969
Mean BMI	-	26.74	27.38	0.64	1.97	-3.32 to 4.60	0.324	-	53	0.7472
OSA	42.22%	62.50%	-	20.28%	-	-4.24 to 41.32%	-	2.538	1	0.1111
OSA	42.22%	-	38.70%	3.52%	-	-18.40 to 24.35%	-	0.093	1	0.76
OSA	-	62.50%	38.70%	23.80%	-	-2.59% to 45.96%	-	3.010	1	0.0827
Insomnia	2.22%	8.33%	-	6.11%	-	-5 to 23.72%	-	1.385	1	0.2392
Sleeping pills	4.44%	29.16%	-	24.72%	-	7.089 to 44.977%	-	8.313	1	0.0039
Sleeping pills	4.44%	-	9.68%	5.24%	-	-6.92% to 20.799%	-	0.809	1	0.3683
Sleeping pills	-	29.16%	9.68%	19.48%	-	-1.37 to 40.459%	-	3.388	1	0.0657

Discussion

The present study is a cross-sectional depiction of relationships between various respiratory diseases and sleep problems. As per Table 1, most patients were asthmatic and commonest sleep problem was OSA. A subgroup analysis was done in Table 2 to determine the significance of difference of various parameters between the three groups of asthmatic patients, patients having COPD and the 'Other' group.

As per the result, the mean ages of Asthma and COPD patients were significantly different, as expected. Subjective sleep problems were significantly more in Asthma group than COPD group. The mean STOP BANG was more in COPD group than the Asthma group. It may be explained by age related propensity to develop OSA [9]. Mean STOP BANG was also significantly more in 'Other' group than Asthma group, which is difficult to explain as heterogeneity of age in 'Other' group. The difference between Mallampati and BMI were not significant in between the groups. Though OSA was the commonest sleep problem between the three groups, the prevalence was not statistically significant between them. More patients in the COPD group had insomnia, but it was not statistically, significantly more than in Asthma group. Sleeping pill use is significantly more in COPD group than the Asthma group.

If results are pulled together, this study shows:

1. The commonest sleep problem in respiratory practice is OSA.
2. Subjective sleep problems are more in Asthma patients.
3. The COPD group has an increased STOP BANG, though the prevalence of OSA was not more than Asthma group or from 'Other' respiratory patients. This may be related to a subjective error in calculation of STOP BANG, or may be due to increased comorbidities, like Hypertension with increasing age.
4. Though the incidence of insomnia was not statistically more in COPD, still the use of sleeping pill was significantly more in COPD, inspite of having lesser number of subjective sleep complaints than Asthma patients. It is difficult to ascertain whether this is due to the effects of sleeping pills or not. Sleep problems in respiratory patients are very common and large community based epidemiologic studies are available. But such studies are lacking based on a respiratory clinic. Most of such studies available had concentrated on single respiratory disease like COPD or Asthma. Few of such studies in COPD had reported a wide prevalence of different sleep problems

as follows: RLS 29-36% patients [10-12], overlap syndrome or comorbid OSA, 11-16% patients [13], Insomnia 27-53% patients [14], in patients with moderate-to-severe COPD. Though based on these studies, insomnia or RLS were quite prevalent in COPD patients, but the present study was unable to detect such relationship. It may be due to subjective measure of RLS or Insomnia, which are always subjected to bias. Still the present study revealed that, a good number of COPD patients use sleeping pills, probably to control their sleep problems. Such therapy may be dangerous in subgroup of COPD patients with nocturnal or daytime hypoventilation [15]. The weakness of this study was a low sample size. Beside that, the results could not be extrapolated to general population as a special group of people were screened, who presented to respiratory clinic. We need a prospective cohort study for definite evaluation of association between various respiratory diseases and sleep problems in them.

Conclusion

Sleep problems are common in patients with respiratory diseases and OSA is the most common problem according to the present study. Asthma patients had more subjective sleep problems. Sleeping pill use is more common in COPD patients instead of having less subjective sleep complaints than asthma patients. All respiratory physicians must include a sleep history for evaluation of such problems and their remedy.

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