

A study on snoring habits in healthy population of Lucknow

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Abstract

Introduction: Snoring is a common complaint, the prevalence of which has been documented from 16-89% in general population.

Objective: Paucity of data from our country on this important but neglected topic prompted us to conduct this study.

Methodology: It was single centre cross sectional study done at Dept. of Pulmonary Medicine, King George's Medical University, Lucknow(India) in apparently healthy adults, using 'Snore Survey' questionnaire adopted from category 1 symptom details of Berlin Questionnaire.

Results: Out of 702 men and women 31.1% snored, 11.1% did not know whether they snore. The ratio of male to female snorers was 2.35:1 and 33.8% of men and 26 % of women were snorers. 17.4 % of the snorer were loud snorer and 21.5% were having snoring frequency e" 3-4 times/wk .

Conclusion:This is probably the first such big study from our country to our best of knowledge and literature survey, which fulfils the objective of obtaining the numbers of snorers in wide ranging population from India. The present study reveals that 1/3rd of the population over the age of 35 years snores.

Clinical Implication: Considering the large population of our country these data are substantial and triggers the need of increasing the awareness among the patients as well as health professionals about this neglected but very significant medical health problem which leads to development of several other medical diseases.

Keywords: Snoring, Prevalence, Sleep disturbed breathing

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Introduction

Snoring is reported to be a common condition. Earlier snoring was regarded as a social nuisance that was harmless to the snorer, but the gradual recognition of snoring as a matter of medical importance has increased in recent years. It is reported to give rise to adverse health consequences. Estimates of prevalence of snoring range from 16-89% ¹of the general population. As per the gender distribution it is found in 24 - 50% of men ², 14 - 30% of women ². The wide variation in estimates are probably due to differences in the populations studied, study design, investigations performed, age and sex of the subjects.

Epidemiological studies to date have tended to focus on male prevalence but anecdotally there is a growing number of women who are reporting that they are suffering from this troublesome complaint. From a patient's perspective, what constitutes a serious problem for one snorer or their partner, or both, may not necessarily be a problem for others. Additionally, both in interview and written questionnaires it has been demonstrated that patients are not wholly accurate in their assessment of their own problems and therefore discrepancies may occur ³. The other problem is that interpretation of symptoms and signs of snoring are defined differently in epidemiological studies and the most frequently used method for estimating snoring is

by questionnaires as there is no 'Gold Standard' for objective measurements. World wide the literature is rich in studies related with sleep apnoea in comparison to snoring and while in our country the awareness about the subject of sleep is in its neonatal stage. The paucity of literature from our country has led us to perform this study.

Material and method

Consecutive apparently healthy attendants in age group of 25-64 years, attending outdoor of Kasturba Chest Hospital, Department of Pulmonary Medicine, King George's Medical University, Lucknow, India, were interviewed face to face using 'snore survey' questionnaire which was adopted from the Berlin questionnaire ⁴(Appendix) on a fixed single day in a week from August 2003 to July 2004. Detailed information regarding snoring like snoring loudness, snoring frequency, bothersome snoring and non bothersome snoring were recorded along with age, sex, height, weight, neck circumference and blood pressure.

Results

Out of 816 subjects approached 702 (86%) successfully participated in study and were included for final analysis. Out of these 702, 452 (64.4%) were males and 250 (35.6%) were females. Mean age was 42.7 ± 10.4 years (men 43.6 ± 10.2 yrs, women 40.9 ± 10.5 years). Mean neck circumference was 13.6 ± 1.2 inch. Mean BMI was 23.8 ± 4.2 kg/m². Table 1 shows, out of 702, 218 (31.1%) were snorers, 406 (57.8%) were non-snorers and 78 (11.1%) did not know whether they snore. Among the studied population, 33.8% (153/452) men and 26.0% (65/250) women were snorers. There was no gender recall bias as equal no of males and females (39/78) told about not knowing of snoring. The snoring loudness, was assessed as loud snorer and non-loud snorer. Loud snorers were having snoring loudness more than talking and non-loud snorers were having not more than talking. Among snorers, 38 (17.4%) were loud snorers. The ratio of male to female in loud snoring category was 3.75:1.0. With regards to frequency of snoring it was categorized in to e" 3-4 times / wk and d" 1-2 times / wk. 21.5% (47/ 218) snored at least three to four times per week and male to female ratio was 2.36:1. Of snoring population, 22.9% bothered other people with male to female ratio of 4:1. The study reveals

that women have quieter and less frequent snoring than men.

Table 1: Results of 'Snore Survey'

	Male	female	total	total %
Participants	452	250	702	100
Total snorers	153	65	218	31.1
Non snorers	260	146	406	57.8
Do not know	39	39	78	11.1
Loud Snorer (more than talking)	30	08	38	17.4
Non loud snorer (not more than talking)	123	57	180	82.6
Snoring frequency (e" 3-4 times/wk)	33	14	47	21.5
Snoring frequency (d" 1-2 times/wk)	120	51	171	78.5
Bothersome snorers	40	10	50	22.9
Non-bothersome snorers	113	55	168	77.1

Table 2 classifies snorers in age group. The percentage of snorers were maximum (37.3) in 55-64 years age group. The percentage of snorers increased with advancing age. There was no significant difference in age of male snorer and non snorer ($p=0.17$) and in female snorer and non snorers ($p=0.78$). Number of male snorers were higher than female snorers in different age groups ($p=.0029$).

Table 2: Age groups

Age (yrs)	Number of participants in age group	Snorers			% of snorers in age group
		Total	Male	Female	
25- 34	197	47	24	23	23.8
35- 44	195	63	52	11	32.3
45- 54	184	61	41	20	33.1
55- 64	126	47	36	11	37.3
TOTAL	702	218	153	65	

Discussion

The principal finding of this study was that it was performed on apparently healthy attendants of patients

in whom snoring was found in 31.1%. There are three other resembling studies in the literature. Young et al⁵ in 1993 found habitual snoring in 81% women and non habitual snoring in 95 % females and in males the habitual snorers were 66% and 83 % were non habitual snorer. The very high rate of snoring could be because of self-reporting. Though both self-reporting and partners' are not accurate, so there could have been other factors for the very high prevalence of snoring. Olsen et al⁶ (1995) objectively studied 441 subjects aged 35 - 69 years with a population bias towards snorers and those with subjective sleep complaints. 56% of them were men. 83.4% of those studied were found to be snorers. This extraordinary result is attributed to the biased population. Ohayon et al (1997)⁷ conducted a telephone survey and compared young population from subjects >65 yrs age, and found higher self reporting in older people than younger. The present study was done with face-to-face interview and there were total 31.1% snorers, out of which 33.8% were men, which is very close to the other Indian study done by Udawadia et al⁸ who found the prevalence of snoring of about 26% in middle-aged urban Indian men.

It must be noted that differences in the prevalence of snoring depends on various facts like the complaint of snoring by one partner may be overstated and on the other hand soundness of the partner's sleep will definitely influence the report of snoring. Thus it depends on the tolerance threshold of the partner. This will be limitation of all such type studies including this. The difference in the ratio of Male: Female snorer in this study of 2.35:1 which closely resembles the figure of 2:1 in other studies can be attributed to the tiredness and soundness of sleep with which men (usually working or earning member) retires to the bed in the night.

Despite the limitation, this study provides accurate figures on snoring both in males and females over an extensive age range, that to in apparently healthy looking attendants who never cared about this symptom and will prove purposeful in future studies. The methodology selected for the study was thought to be the most appropriate as ours was tertiary care level hospital where person of all section of social class visit this hospital thus the population selected appears to be representative and is not like the previous Indian study⁸ which was done in urban Indian men only. This was only the preliminary study which also helped in testing the part

of Berlin Questionnaire which we are sure will help in various future studies of sleep related disorders.

Conclusion

This is probably the first such big study on snoring from our country to our best of knowledge and literature survey, which fulfils the objective of obtaining the numbers of snorers in wide ranging population from India. From this present study it was found that 1/3rd of the population over the age of 35 years snores. Considering the large population of our country these data are substantial and triggers the need of increasing the awareness among the patients as well as health professionals about this neglected but very significant medical health problem which leads to development of several other medical diseases.

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Bibliography

1. **Stoohs RA et al** (1998) Normative data on snoring *Eur Respir J* 11 451-457
2. **Jones TM & Swift AC** (2000) Snoring: recent developments. *Hospital Medicine* 61 (5) 330-334
3. **Stradling JR** (1995) Epidemiology of snoring and its consequences. *Monaldi Arch Chest Dis* 50 (2) 123-128
4. **Netzer NC, Stoohs RA, Netzer CM, Clark K, Strohl KP**. Using Berlin Questionnaire to identify patients at risk for the sleep apnea syndrome. *Ann Intern Med* 1999; 131:488
5. **Young T et al** (1993) The occurrence of sleep disordered breathing among middle-aged adults. *The New England Journal of Medicine* 328 1230-5
6. **Olson LG et al** (1995) A community study of snoring and sleep-disordered breathing. Prevalence. *Am J Respir Crit Care Med.* 152 711-6
7. **Ohayon MM et al** (1997) as cited in Stoohs RA et al (1998) Normative data on snoring. *Eur Respir J* 11 451-457
8. **Udawadia ZF, Doshi AV, Lonkar SG, Singh CI et al**. Prevalence of sleep disordered breathing and sleep apnea in middle aged urban Indian men. *Am J Respir Crit Care Medicine* 2004; 169: 168-173.

APPENDIX:

Part of 'Snore Survey' questionnaire. (Adopted from Category 1 symptom details from Berlin Questionnaire)

Do you snore or *you have been told you do?*

- Yes
- No
- Do not know

If yes :

Questions about snoring behaviour :

Q-1 Snoring Loudness?

- Loud as breathing
- Loud as talking
- Louder than talking
- Very loud

Q-2 Snoring frequency?

- Almost every day
- 3-4 times/wk
- 1-2 times/wk
- 1-2 times/month

Q-3 Does your snoring bother to other people?

- Yes
- No