

# Snoring Habit in Healthy Populations of Bangladesh

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## Abstract

**Introduction:** Snoring is a common health condition which is unexplored in Bangladesh. So the objective of the present study is to find out the frequency of snoring among the healthy Bangladeshi people.

**Methodology:** It was a single-center cross-sectional study done in the Department of Internal Medicine of a tertiary care hospital of Bangladesh, among 119 apparently healthy adults. A 'Snore Survey' questionnaire adopted from an Indian Study<sup>4</sup> was used for this study (questionnaire was itself based on the Berlin Questionnaire).

**Results:** With an 88.1% valid response rate the present study included 63 males (52.94%) and 56 females (47.06%). The majority of the subjects were <30 years of age (47.9%). And a considerable majority of 82.4% was recruited from the urban locality. The frequency of snoring was seen in 28 of the total subjects (23.5%). Of the frequent snorers, 33.3% were males and 12.5% were females. Snoring distributed from daily (25.0%) to monthly (28.6%) attacks. Some snored very loudly (25.0%) while the rest had variable loudness in snoring. Male snorers had significantly higher level of height, bodyweight and neck circumference than female snorers ( $p < 0.05$ ).

**Conclusion:** This is probably the first such study from Bangladesh to the best of our knowledge. Snoring is to be explored widely in future as it is associated with many other health conditions.

**Keywords:** Snoring, Frequency, Neck circumference

## Introduction

Snoring is regarded as a common condition nowadays. Years ago it was regarded as a social nuisance and was thought as a harmless matter for the victim, but now it is a matter of medical importance and related with many adverse health consequences.

In earlier studies<sup>1,2,3</sup> snoring was found 16-89% in general populations and regarding gender variations, 50% of males and 24-50% females had the snoring problem. A study<sup>4</sup> done in India, among 702 subjects in Lucknow,

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found that the prevalence of snoring in men and women was at 31.1%. Among them, 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. Among them, 17.4% were loud snorers and 21.5% were having a snoring frequency of 3-4 times per week.

It is assumed that snoring is a common problem in Bangladesh but sleep medicine and sleep-related problems are not yet dealt with attention as we are still burdened with other communicable diseases.

On that ground, a preliminary questionnaire based study is designed to find out the frequency of snoring of Bangladeshi population. The study was conducted on structured questionnaires as there is no 'Gold Standard' for objective measurements of snoring. Across the world, the literature is rich in studies related to sleep apnea in comparison to snoring and in our country the awareness about the subject of sleep is in its early stage. So the lack of studies from our country prompted us to perform this study.

## Method

This study was conducted in a tertiary care hospital of Bangladesh, among 117 healthy subjects. During consulting the diseased person and the accompanying attendant who carried the patients were explained about the study and after an informed written consent from him/her, a structured questionnaire was introduced. Subjects were interviewed face-to-face using the 'Snore Survey' questionnaire which was adopted from the Berlin Questionnaire-4 (Appendix) on a fixed twice in a week basis (Saturday and Wednesday) from January 2015 to July 2015. The detailed information regarding snoring like snoring loudness, snoring frequency, bothersome snoring and non-bothersome snoring were recorded along with age, sex, height, weight and neck circumference. Respondents were invited to provide information about their snoring as per the questionnaire. The questionnaire was designed in a manner that would ensure participants can respond within a minimum period, but such that essential information can be easily obtained. After collection all data, it was compiled and analyzed by SPSS Version 20 (Statistical Package for the Social Sciences).

## Results

During the study 135 subjects were offered, among whom 119 responded with a valid response rate of 88.1%. Among them, 63 were males (52.94%) and 56 were females (47.06%) with a male to female ratio of 1.13:1. The majority of the subjects were <30 years of age (47.9%) and the next majority of 32.8% belonged to the 30-40 years age group. Among all 82.4% subjects were recruited from urban locality (Table 1). The frequency of snoring was seen in 28 of total subjects (23.5%) of which 7 were unaware of their snoring status (5.9%). Among males 33.3% were snorers and among females, 12.5% were snorers. Snoring distributed from daily to monthly attacks. Some had very loud snore (25.0%) and others also had variable loudness (Table 2). Regarding the analysis of anthropometric variables, male snorers had a significantly greater level of height, body weight and neck circumference than female snorers ( $p < 0.05$ ), whereas body-mass-index, was found insignificant among both genders ( $P > 0.05$ ) (Table 3).

**Table 1: Age distribution and locality of the study subjects**

		Gender		Total
		Male (n=63)	Female (n=56)	
Age group in years	<30 years	37 (58.7%)	20 (35.7%)	57 (47.9%)
	30-40 years	18 (28.6%)	21 (37.5%)	39 (32.8%)
	40-50 years	7 (11.1%)	10 (17.9%)	17 (14.3%)
	50- 60 years	1 (1.6%)	5 (8.9%)	6 (5.0%)
Locality	Rural	21 (33.3)	0	21 (17.6%)
	Urban	42 (66.7%)	56 (100%)	98 (82.4%)

Table 2: Snoring Characteristics of Study Subjects

Snoring characteristics		Frequency	Percentages
Snoring Status	1. Snorers	28	23.5
	2. Non-snorers	84	70.6
	3. Unaware/ Not known	7	5.9
Snoring frequency	1. Almost every day	7	25.0
	2. 1-2 times per week	6	21.4
	3. 3-4 times per week	7	25.0
	4. 1-2 times per month	8	28.6
Snoring loudness	1. Loud as breathing	8	28.6
	2. Loud as talking	8	28.6
	3. Louder than talking	5	17.8
	4. Very loud	7	25.0
Snoring bothers others	1. Yes	15	53.6
	2. No	13	46.4

Table 3: Gender Variations of Anthropometric Parameters

Gender		Snoring	N	Mean $\pm$ SD	P value*
Male	Body weight in Kg	Present	21	70.47 $\pm$ 5.88	0.001
		Absent	35	60.77 $\pm$ 6.17	
	Height in meter	Present	21	1.72 $\pm$ 0.7	0.001
		Absent	35	1.62 $\pm$ 0.5	
	Neck circumference (cm)	Present	21	38.00 $\pm$ 1.67	0.001
		Absent	35	35.80 $\pm$ 2.34	
BMI (Body mass index) (kg/m <sup>2</sup> )	Present	21	23.79 $\pm$ 1.06	0.371	
	Absent	35	23.14 $\pm$ 3.19		
Female	Body weight in Kg	Present	7	57.85 $\pm$ 0.37	0.217
		Absent	49	61.89 $\pm$ 8.49	
	Height in meter	Present	7	1.56 $\pm$ 0.01	0.631
		Absent	49	1.65 $\pm$ 0.49	
	Neck circumference (cm)	Present	7	33.00 $\pm$ 0.00	0.383
		Absent	49	33.28 $\pm$ 2.27	
Body mass index(kg/m <sup>2</sup> )	Present	7	23.77 $\pm$ 0.23	0.769	
	Absent	49	24.27 $\pm$ 4.48		

\*calculated by independent sample t-test

## Discussion

During the study 135 subjects were offered the questionnaire, of whom 119 responded with a valid response rate of 88.1%. Male subjects were more than the female subjects, with a ratio of 1.13:1. The majority of the subjects were less than 40 years of age and the most subjects were recruited from the urban locality. As Bangladesh is a country of rapidly growing population, working people who were carrying their ailing family members are younger as represented in this study. The study was conducted in an urban tertiary care center, so the urban majority of respondents was obvious and expected.

In the present study, the frequency of snoring was seen among 28 subjects (23.5%). Among them, 7 were unaware of their snoring status (5.9%). Snoring affected some on a daily basis and others had a monthly distribution of snoring attacks. Some of them (25.0%) were very loudsnorers. In a similar study in India<sup>4</sup> conducted on apparently healthy subjects snoring was found in 31.1% of attendants. In another Indian study done by Udwardia et al<sup>5</sup>, the prevalence of snoring was found to be 26% in the middle-aged urban community.

In the present study, 33.3% of males were snorers (21/63) and 12.5% of females were snorers (7/56). In the Indian study<sup>4</sup>, it was found that 33.8% of men (153/452) and 26.0% of women (65/250) were snorers. In our study, the percentage of male snorers corresponds, but the percentage of female snorers is lesser than that found in the Indian study<sup>4</sup>. As the patients in this study were of a younger age group and women are shy to disclose their actual condition in a conservative country like Bangladesh, a low frequency of snoring reported among females may not represent the actual scenario in the country, and that is a limitation of this study.

A similar study by Young et al<sup>6</sup> found, habitual snoring in 81% females and non-habitual snoring in 95% females, and in males 66% were habitual snorers and 83% were non-habitual snorers. The very high rate of snoring in this study could be because of self-reporting.

Olson et al<sup>7</sup> studied 441 subjects aged between 35-69 years and found 56% of snorers were males.

Ohayon et al<sup>8</sup> conducted a telephone survey and compared young population against subjects >65 years of age, and found higher self-reporting of snoring in older people than younger subjects.

This difference observed in the prevalence of snoring depends on various factors. Complaints of snoring by one partner or family members influencing the subjects to positively answer during the introduction of the questionnaire etc. Thus it depends on the tolerance and the threshold of their partner to tolerate the sound of snoring. So the actual frequency or prevalence might be influenced by such factors and this is a limitation of all such types of studies including the present one.

In the present study body weight, height and neck circumferences were found significantly higher among the male snorers than the female snorers. BMI (Body-mass-index) was found uninfluenced in both genders in relation to snoring frequency. As the present study was conducted on a small sample size (n=119) further large-scale study is needed to explore whether these anthropometric variables actually have any influence in snoring status and also to establish a stronger conclusion.

## Conclusion

To the best of our knowledge and literature survey, the present study is the first ever such study conducted on snoring in our country, Bangladesh. This study included the urban population who are aggregated from different regions of Bangladesh. Through this study, it was found that snoring is not an uncommon medical condition among healthy young people. Considering the large population of Bangladesh, this data may be insufficient and there is a certain need of a large-scale study to improve the awareness among patients as well as health professionals about this neglected but very significant health problem.

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## Appendix

**Title:** Snoring habit in healthy populations of Bangladesh

Case no -

Name:

Age:

**Gender:** Male-1/Female-2

**Locality:** Rural-1/Urban-2

**Weight:** Kg. **Height:** m. **BMI:** kg/m<sup>2</sup>

**Neck circumference:**cm

**History of any disease:** DM-1/HTN-2/IHD-3/Asthma-4/COPD-5/None-6

### SNORING QUESTIONNAIRE

**Do you snore or you have been told you do?** Yes-1/No-2/Do not know-3

If yes

Question about snoring behavior:

Q-1. Snoring loudness?

Loud as breathing-1/Loud as talking-2/Louder than talking-3/Very loud-4

Q-2. Snoring frequency?

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

Q-3. Does your snoring bother to other people

Yes-1/No-2

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