

Relation of Snoring Habits with Body Mass Index and Neck Circumference among Adult Population

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Abstract

Objective: To observe the frequency of snoring and its relation with body mass index (BMI) and neck circumference (NC) among Bangladeshi adult Population.

Method: A cross sectional study was designed among 119 adult healthy Bangladeshi population who were the accompanying persons of patients visiting the medicine outdoors of a tertiary care hospital, Chittagong, Bangladesh. A 'Snore Survey' questionnaire based on Berlin Questionnaire was used to find the snoring frequency. BMI was calculated as weight in kg/height² and NC was measured by placing a measuring tape just below the Adam's apple and extending the tape horizontally around the neck. Data was analyzed by SPSS 20.

Results: With a valid response rate of 88.1%, 63 (52.94%) male and 56 (47.06%) female were recruited. Frequency of snoring was 28 (23.5%) of total subjects where male snorer was 33.3% and female snorer was 12.5%. Snoring distributed from daily to monthly phenomenon. Some had very loud (25.0%) snoring and others also had variable loudness. Snorers had statistically significant higher level of body weight and NC ($P < 0.001$) but statistically insignificant height and BMI differences ($P > 0.05$).

Conclusion: Snoring is more common in males and those having higher body weight and neck circumference among Bangladeshi adult population.

Keywords: Neck circumference; BMI; Snoring

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. Frequency of snoring is 16%-89% in general populations, about 50% adult male and 24%-50% adult female are snorer with male to female ratio is 2.35: 1 [1,2]. It is a common condition, caused by movement of air across soft tissues of mouth and throat. Snoring is one end of the spectrum of sleep disordered breathing with Obstructive Sleep Apnea (OSA) at the other end. Snoring can be considered as a predecessor of OSA and needs to be evaluated and managed at an early stage. There is a close relationship between body anthropometry and snoring. Overweight induces multiple physiologic changes at the respiratory and circulatory system level. 24% of overweight men, 9% of women have Sleep Disordered Breathing compared with 1%-4% of total population. It may lead to obstructive sleep apnea (OSA) which requires an overnight PSG, which is an expensive test with limited availability. If we can predict sleep apnea early it will be great in a resource poor setting like Bangladesh. Neck circumference (NC), body mass index (BMI), snoring with pauses and excessive daytime sleepiness are simple some inexpensive simple tools which can be used for this prediction. So the

present study was designed to see the relation of snoring habit with NC and BMI in the context of Bangladeshi populations.

Method

This study was conducted in a tertiary care hospital of Bangladesh, among 119 healthy persons. During consulting the diseased person, the accompanying attendant who carried the patients were explained about the study and after an informed written consent from him/her, a structured questionnaire were introduced. Subjects were interviewed face to face using 'snore survey' questionnaire which was adopted from the Berlin questionnaire. Detailed information regarding snoring like snoring loudness, snoring frequency, bothersome snoring and non-bothersome snoring were recorded. BMI was calculated as weight in kg/height² and NC was measured by placing a measuring tape just below the Adam's apple and extending the tape horizontally around the neck. Data was analyzed by SPSS 20.

Results

Among the 119 respondents frequency of snoring was 23.5% (28). Where male snorer was 33.3% and female snorer was 12.5%. Snoring distributed from daily to monthly attacks. Some had very loud (25.0%) snoring and others also had variable loudness (Table 1). Among all 52.94% (63) male and 47.06% (56) female subjects were recruited. Male to female ratio was 1: 0.88 (Table 2). Snorers had statistically significant

higher level of body weight and NC ($P < 0.001$) but statistically insignificant height and BMI differences ($P > 0.05$) (Table 3).

Snoring characteristics		Frequency	Percentage (%)
Snoring Status	1. Snorers	28	23.5
	2. Non snorers	84	70.6
	3. Not known	7	5.9
Snoring frequency	1. Almost every day	7	25
	2. 1-2 times per week	6	21.4
	3. 3-4 times per week	7	25
	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
Snoring bothers others	1. Yes	15	53.6
	2. No	13	46.4

Table 1: Snoring characteristics of study subjects.

Gender		Frequency	Percentage (%)
Male	Present	21	33.3
	Absent	35	55.6
	Unknown	7	11.1
	Total	63	100
Female	Present	7	12.5
	Absent	49	87.5
	Total	56	100

Table 2: Gender distribution with snoring among the study subjects.

Snoring		N	Mean	Std. Deviation	P value [*]
Height in meter	Present	28	1.6804	0.09343	0.569
	Absent	84	1.6394	0.37456	
Body weight in Kg	Present	28	67.3214	7.49347	0.001
	Absent	84	61.4286	7.59087	
BMI	Present	28	23.7903	0.92233	0.983
	Absent	84	23.8066	4.01783	
Neck circumference	Present	28	36.75	2.63347	0.001
	Absent	84	34.3333	2.6083	

^{*}p value is calculated by independent sample t test

Table 3: Relation of snoring with height, weight, BMI and neck circumferences.

Discussion

With a valid response rate of 88.1%, 63 (52.94%) male and 56 (47.06%) female were recruited. Frequency of snoring was 28 (23.5%) of total subjects where male snorer was 33.3% and female snorer was 12.5%. In an Indian Study found 24%-50% of men, 14%-30% of women are snorer [3]. Snoring distributed from daily to monthly attacks. Some had very loud (25.0%) snoring and others also had variable loudness. A study done in India on apparently healthy attendants of patients in whom snoring was found in 31.1%. In another Indian study done by Udwardia et al. who found the prevalence of snoring of about 26% in middle-aged urban community [4].

Snorers had statistically significant higher level of body weight and NC ($P < 0.001$) but statistically insignificant height and BMI differences ($P > 0.05$). Body mass index was found uninfluenced in relation with snoring frequency which subsequently may lead to OSA. As the higher NC and BMI are on the higher side in the middle-aged population, there is greater prevalence of snoring and severe OSA in this age group. According to Bixler et al. the average BMI did increase with age for subjects with OSA [5]. As the present study is done on a small sample size ($n=119$) further large scale study is needed to explore whether

these anthropometric variables actually has any influence in snoring status and also to have a strong conclusion. From this study it was found that snoring is not an uncommon medical condition among healthy young people. Considering the large population of Bangladesh these data may be poor and it needs a large scale study for the awareness among the patients as well as health professionals about this neglected but very significant health problem.

References:

1. Jones TM, Swift AC (2000) Snoring: Recent developments. *Hospital Medicine* 61: 330-334.
2. Koskenvuo M, Partinen M, Kaprio J (1994) Snoring and cardiovascular risk factors. *Ann Med* 26: 371-376.
3. Prasad R, Garg R, Verma RK, Agarwal SP, Ahuja RC (2006) A study on snoring habits in healthy population of Lucknow. *J Sleep Med* 1: 37-40.
4. Udwardia ZF, Doshi AV, Lonkar SG, Singh CI (2004) Prevalence of sleep disordered breathing and sleep apnea in middle aged urban Indian men. *Am J Respir Crit Care Medicine* 169: 168-173.
5. Bixler EO, Vgontzas AN, TenHave T, Tyson K, Kales A (1998) Effects of age on sleep apnea in men: I. Prevalence and severity. *Am J Respir Crit Care Med* 157: 144-148.