

ORIGINAL ARTICLE

Blood Pressure Parameters among Smokers and Smokeless Tobacco Users in a Tertiary Level Hospital in Bangladesh* Nasrin Habib¹, Mamunur Rashid², Farzana Afzal³, Mahfizur Rahman⁴, ASM Shahin⁵

1. Assistant Professor, Department of Physiology, University Dental College, Dhaka, Bangladesh

2. Assistant Registrar of Internal Medicine, Dhaka Medical College and Hospital, Dhaka, Bangladesh.

3. Medical Officer of Ophthalmology, National institute of Ophthalmology, Dhaka, Bangladesh.

4. Lecture, Department of Biochemistry, University Dental College. Dhaka, Bangladesh.

5. Assistant Professor, Dept. of Dental Public Health, Update Dental College and Hospital, Dhaka. Bangladesh.

ARTICLE INFO*Article History:*

Received : 08 December, 2010

Accepted : 07 February, 2011

*Keywords:*Blood Pressure
Smokers
Tobacco
Smokeless Tobacco**ABSTRACT**

In Bangladesh, use of different kinds of smokeless tobacco and smoking is common among adult men. The study aimed to assess blood pressure parameters among adult male smokers and smokeless tobacco users as data on related field is limited and inclusive. For this study, 105 male respondents were selected from outdoor department of Dhaka Medical College Hospital. Among them, 30 were smokeless tobacco users and 75 were smokers. All data were recorded in data collection form. Statistical analysis of results between the groups were calculated by using unpaired students't' test. In this study, the mean (\pm SD) of systolic blood pressure was 154.50 \pm 26.79 mm of Hg in Group A and 151.67 \pm 19.24 mm of Hg in group B respectively. The mean (\pm SD) of diastolic blood pressure was 96.67 \pm 10.93 mm of Hg in Group A and 86.47 \pm 14.74 mm of Hg in group B respectively. The mean (\pm SD) of diastolic blood pressure was significantly higher ($P < 0.05$) in Group A than Group B. Future research should aim to clarify the cardiovascular risks of smokeless tobacco.

Introduction

Blood pressure refers to the pressure inside the arteries. Hypertension means that the blood is exerting more pressure than in normal or healthy and over time it weakens and damages walls of blood vessels. Hypertension may be caused by thickening of the artery walls, resulting in narrowing and eventual blockage of the vessel. In atherosclerosis, the pressure of pumping blood could 'hose off' debris from damaged artery walls.¹ Smoking has been shown to raise blood pressure by vasoconstriction and accelerate heart rate as an acute effect.² Different groups have reported that no association existed between smoking habit and blood pressure. One group found

that blood pressure of smokers was lower than that of non smokers, they also claimed that smoking raises blood pressure.³ The nicotine in cigarettes and the lack of oxygen to the body tissues cause blood vessels to be thinner than the normal vessels. Smoking impedes proper blood circulation which in turn causes high blood pressure. The carbon monoxide, a byproduct of cigarette smoking, causes cholesterol formation and deposition on the arterial walls. Blood clots are more likely to form within the blood vessels due to presence of nicotine.⁴ It also stimulates the production of a hormone, epinephrine (also known as adrenaline), in the adrenal gland which raises the blood pressure by constricting blood vessels.⁵

Consumption of smokeless tobacco is a significant part of the overall world tobacco problem. Unlike cigarettes and other forms of

* Address of Correspondence:

Dr. Nasrin Habib

Asst. Professor

Dept of Physiology, University Dental College

Outer Circular Road Century

Arcade, Moghbazar, Dhaka-1214, Bangladesh

Telephone: +8801711937853

E-mail: drnh77@yahoo.com

tobacco, smokeless tobacco is consumed without combustion (without burning). They are usually placed in contact with mucous membranes in the mouth or nose through which nicotine is absorbed into the body. The use of nasal snuff is returning. Different forms of snuffs, such as loose or packet snuff, are used by placing in the mouth. Tobacco may also be prepared in blocks and flakes for chewing. In Central, South and Southeast Asia, smokeless tobacco is usually chewed with few other substances like ash, lime, cotton, sesame or betel quid (a mixture of nut, lime, and leaves).⁷ Smokeless tobacco is a harmful tobacco product that contains over 3,000 chemicals,⁶ including 28 known carcinogens (cancer-causing agents).⁷

Every year a man smokes a pack a day, he shortens his life by almost 2 months. Even 1 stick of cigarette can reduce life span of a man about 11minutes.⁸ Like cigarettes, smokeless tobacco contains nicotine and several studies have found that smokeless tobacco increases heart rate and blood pressure.⁹ Thus consumption of smokeless tobacco puts users at increased risk for stroke, coronary heart disease, peripheral vascular disease (that is, diseases of the arteries and veins) and cardiovascular death.¹⁰ However, it should be noted that some studies have shown no relation between smokeless tobacco use and stroke or cardiovascular mortality.¹¹ Further rigorous studies are needed to determine whether cardiovascular risks are associated with smokeless tobacco use. The present study was conducted to find out changes of blood pressure among the smokers and smokeless tobacco users.

Methods

The present study was done in the outdoor medicine units of Dhaka Medical College Hospital from January 2010 to July 2010. The blood pressure was compared between smokers and smokeless tobacco users. For this purpose, 105 subjects aged over 20 years were selected for the current study. Among the participants, 30 were smokeless tobacco users (Group A) and 75 were smokers (Group B) who smoked for more than five years. Smoking history of smokers was recorded on a data collection sheet. All the subjects were explained about the aims and objectives of the study. The test procedures were briefed. Written consent was taken from the person concerned in a prescribed form. A detailed history of each subject including smoking history

was obtained by using a pre-tested questionnaire. All data were recorded in data collection form and statistical analysis of results between the groups were calculated by using unpaired Student's t-test.

Results

In this study, among the smokeless tobacco users, the mean age was 61.70 (SD±16.38) years. Mean per day use of smokeless tobacco was 4.8125 (SD±1.64). All (100%) were regular user. The mean pulse rate were 84.07 (SD±11.01)beat/min. Among the smoker subjects, the mean age was 62.61 (SD±15.80) years. Mean duration of smoking was 13.01 (SD± 6.52) years. Mean per day smoked was 14.59 (SD± 6.87) sticks. All (100%) were regular smokers. The mean pulse rate were 81.60 (SD±9.86) beat/min.

Systolic blood pressure

The mean systolic blood pressure was 154.50 (SD ±26.79) mm of Hg in Group A and 151.67 (SD ±19.24) mm of Hg in group B respectively. There was no statistical significant ($p>0.05$) differences of systolic blood pressure in Group A Vs Group B.

Group	Frequency	Percentage	Mean Systolic blood pressure (mm of Hg) ± SD	p value
A	30	28.57%	154.50±26.79	0.54
B	75	71.43%	151.67±19.24	

Table 1: Mean Systolic Blood Pressure among smokeless tobacco users and smokers

Group A: Consisted of 30 adult smokeless tobacco users.

Group B: Consisted of 75 adult -smokers.

Diastolic Blood Pressure

The mean diastolic blood pressure was 96.67 (SD ±10.93) mm of Hg in Group A and 86.47 (SD ±14.74) mm of Hg in Group B respectively. The mean diastolic blood pressure was significantly higher ($p<0.05$) in Group A Vs Group B.

Discussion

The present study showed no significant change of systolic blood pressure among users of smokeless tobacco products compared with smokers but it found an increased risk of Diastolic Blood Pressure among smokeless tobacco users.

Centers for Disease Control and Prevention (CDC) noted no significant trends of varying BP with number of cigarettes smoked by adults.¹² In another study, diastolic blood pressure decreased with increasing levels of cigarette smoking.¹³ A weak relationship was demonstrated between smoking habits and DBP, with the lowest BP in persons smoking greater than 25 cigarettes a day. The relatively small differences in BP may be of pharmacologic or psycho behavioral interest, but do not counter the well-described deleterious effects of cigarette smoking.¹² There is generally no association between smoking status and blood pressure.¹³

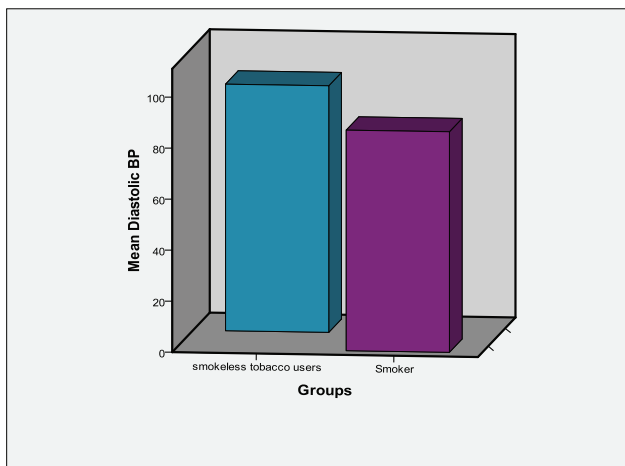


Figure 1: Diastolic Blood Pressure among smokeless tobacco users and smokers

Smokeless tobacco affects the cardiovascular system and is associated with heart disease, stroke and high blood pressure.¹³ One study states that the adverse cardiovascular effects of smokeless tobacco use are less than those caused by smoking but are more than those found in non-users. Similar findings can be found in a study done by Asplund where the author indicate that smokeless tobacco related cardiovascular risks are lower than that of smoked tobacco.¹⁴ Furthermore, smokeless tobacco use has a positive

effect on cardiovascular risk factors in young physically fit men.¹⁵ However, it is important to note that one Indian study from the state of Rajasthan states that there is a significantly greater prevalence of multiple cardiovascular risk factors like obesity, resting tachycardia, hypertension, high total and LDL cholesterol, and low HDL cholesterol, and electrocardiographic changes in tobacco users, chewing or smoking, as compared to tobacco non-users. Chewing tobacco is associated with similar cardiovascular risk as smoking.¹⁶

The findings of the current study may bear on the possibility that smokeless tobacco in Bangladesh is produced differently than in Western countries and found an association between use of smokeless tobacco products and DBP. If the association is real, its public health and clinical implications might be substantial, despite the fact that the magnitude of the excess risk is small. Future research should aim to clarify the cardiovascular risks of smokeless tobacco.

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