



Comparative Study of Tobacco Chewer & Smokers as a Risk Factor For Cardiovascular Disease

KEYWORDS

Dr.Rajesh Kumar Shrivastava

Assistant Professor, Department of Biochemistry, Sri Aurbindo Medical College and PG Institute, Indore

Dr.Rajesh Kumar Jha

Professor, Department of Medicine, Sri Aurbindo Medical College and PG Institute, Indore

Dr. Ravindra Kumar

Scientist, Central Research Laboratory, Sri Aurbindo Medical College and PG Institute, Indore

ABSTRACT Tobacco consumption, either in smokeless form or as smoking, is reported to be responsible for major non-communicable diseases namely, cardiovascular diseases, chronic obstructive pulmonary diseases and cancers. The World Health Organization predicts that tobacco deaths in India may exceed 1.5 million annually by 2020. The present prospective study was carried out in SAIMS Medical College Indore to assess the side effect of tobacco in relation with cardiovascular diseases. Total 350 cases were selected from 25-60 yrs of age group. They were grouped in 3 groups. Group 1 Tobacco non users (Control group N =50), Group 2 Tobacco chewer (Study group N=150), Group 3 Tobacco smoker (Study group N =150). Blood samples were collected & analyzed for Biochemical Parameter Fasting Blood Sugar; Lipid profile (Total Cholesterol, HDL, LDL, & Tri Glyceride) & Renal profile (Blood Urea, Sr.Creatinine & Sr.Uric Acid) in biochemistry lab at SAIMS Indore. In this study we found that Systolic and diastolic blood presser were high in tobacco smokers/chewers. Total cholesterol, Triglyceride, LDL level were high & HDL level was low in tobacco smokers/chewers which is highly significant.

INTRODUCTION-

Tobacco is consumed in various forms i.e. smoking, chewing, & nasal spray (sunghani; nasvar). Tobacco consumption, either in smokeless form or as smoking, is reported to be responsible for major non-communicable diseases namely, cardiovascular diseases, chronic obstructive pulmonary diseases and cancers [1, 2, 3].

Cigarette and tobacco smoke, high blood cholesterol, high blood pressure, physical inactivity, obesity and diabetes are the six major independent risk factors for coronary heart disease that you can modify or control.

Smoking is estimated to cause nearly 10 per cent of cardiovascular disease (CVD) and is the second leading cause of CVD, after high blood pressure [4]. According to recent WHO estimates, 4.9 million deaths annually are attributed to tobacco [5]. The risk of a non-fatal heart attack increases by 5.6 per cent for every cigarette smoked and persists even at only one to two cigarettes per day [6]. Chewing tobacco more than doubles the risk of heart attack [7].

The World Health Organization predicts that tobacco deaths in India may exceed 1.5 million annually by 2020 [8]. By 2030 tobacco-related deaths are projected to increase to more than 8 million deaths a year [4].

Tobacco acts in a number of ways to cause CVD. Its use, whether by smoking or chewing, damages blood vessels, temporarily raises blood pressure and lowers exercise tolerance. Moreover, tobacco smoke contains carbon monoxide which decreases the amount of oxygen that the blood can carry and increases the tendency for blood to clot. Blood clots can form in arteries causing a range of heart diseases that ultimately result in a stroke or sudden death. Tobacco contains Nicotine which reduces blood flow in the arterial inner linings/endothelium results atherosclerosis. Nicotine increases heart rate, blood pressure. In chronic tobacco users nicotine causes extraordinary 'wear& tear' on cardiovascular system.

A large number of epidemiologic studies claim that in both genders, cigarette smoking generally predisposes to the development of atherosclerosis and also increases in the inci-

dence of myocardial infarction (MI) along with fatal coronary artery disease (CAD) [9,10,11].

MATERIAL & METHOD

The present prospective study was carried out in SAIMS Medical College Indore. Patients attending Medicine OPD were selected for this study. Total 350 cases were selected from 25-60 yrs of age group .The male: female ratio was 295 / 55 (5.36:1). They were grouped as under.

- Group 1 - Tobacco non users (Control group- N =50)
- Group 2 - Tobacco chewer (Study group N=150)
- Group 3 - Tobacco smoker (Study group N =150)

Controls (Tobacco non users) =healthy volunteers who had never taken tobacco in any form.

Tobacco chewers= H/O tobacco chewing 10-15 times/day for > 7 yrs.

Tobacco smokers= H/O smoking cigarette/Bidis for > 7yrs.

Excluding criteria – Patient having any pre-existing major illness (e.g.-Cardio Vascular Disease, DM, TB, Renal d/s, lever d/s etc.) & taking Hormone therapies, Chemotherapy were excluded from this study.

All the cases were evaluated for Physical parameter-Height, weight, body mass index, heart rate & blood pressure. Blood samples were collected & analyzed for Biochemical Parameter Fasting Blood Sugar; Lipid profile (Total Cholesterol, HDL, LDL, & Tri Glyceride) & Renal profile (Blood Urea, S. Creatinine & S. Uric Acid) in biochemistry lab at SAIMS Indore in fully automated analyzer Hitachi-902. Statistical analysis was carried out which include the application of tests of significance such as student "t" test.

Results: The mean age of controls (group I), tobacco chewer(group II) and tobacco smoker(group III) were 47.1 ± 13.1, 47.3 ±13.1 and 47.9±12.2 years respectively. There

was no significant difference in age in these groups (Table 1). Male: female ratio in group-2 (i.e. tobacco chewer) is 4.5:1; while in group-3 (i.e. tobacco smoker) is 6.8:1. It shows prevalence of tobacco chewing and smoking in males is more than female.

TABLE- 1. Demographic Profile of Subjects

Variables	Group 1	Group2	Group3	P Value
Age	47.1 ± 13.1	47.3 ± 13.1	47.9 ± 12.2	0.316
M/F	41/9 (4.5:1)	123/27 (4.5:1)	131/19 (6.8:1)	0.221
Socio-economic status				
High	2(4%)	6(4%)	6(4%)	0.894
Middle	15(30%)	49(32.6%)	47(31.3%)	
Lower Middle	33(66%)	95(63.3%)	97(64.6%)	

Table 2 shows various risk factors for cardiovascular disease. The BMI in smokers is lowest (21.9±4). Systolic and Diastolic blood pressure is normal in control group (127± 15.2 and 81.0± 10.2) but in tobacco chewers it is high(129.5± 17.2 and 85.6± 9.3). Systolic and diastolic blood pressure is also seen high in tobacco smokers(131.5±15.4 and 84.0± 7.2). In group-2 slight increased heart rate is seen but not significant.

TABLE -2. Risk factors for cardio vascular diseases

Variables	Group 1	Group 2	Group 3
Height (met.)	1.64±0.2	1.67±0.2	1.65±0.2**
Weight (kg)	65.3 ± 12.5	65.0 ± 12.0	59.8 ± 14.1**
BMI kg/m ²	24.4 ± 5.9	24.2 ± 3.8	21.9 ± 4.0
Obesity (BMI >25kg/ m ²)	20(40%)	58 (38 %)	33 (22 %)**
Systolic BP (mmHg)	127.0 ± 15.2	129.5 ± 17.2*	131.5 ± 15.4**
Diastolic BP (mmHg)	81.0 ± 10.2	85.6 ± 9.3**	84.0 ± 7.2**
Heart rate (per min)	79.8 ± 6.8	81.4 ± 11.6	79.3 ± 10.8

BMI = body mass index, BP = Blood Pressure. Numerical values are mean ± SD.

*P< 0.05,**P< 0.001(Statistically significant when compared between control and Tobacco chewers/smokers.)

Table 3 shows no significant change in FBS level in all 3 groups .Total cholesterol level is high in group 3 (189.2±38.5) & in group 2 (185.2±36.9) which is highly significant. HDL is low in group 3 & group 2 which is highly

significant as we know that low HDL is a risk factor for CVD.TG and LDL or also high in group 2 and group 3. Though the renal function test i.e. blood urea, serum creatinine and uric acid are within normal range in all the 3 groups.

TABLE- 3. Biochemical Parameters

Variables	Group 1	Group 2	Group 3
FBS (mg %)	81.5 ± 9.5	82.4 ± 9.3	79.5 ± 9.5
Cholesterol (mg %)	172.6 ± 28.1	185.2 ± 36.9**	189.2 ± 38.5**
HDL (mg %)	60.2 ± 8.1	43.3 ± 7.9**	47.2 ± 7.6*
LDL (mg %)	97.3 ± 30.1	112.3 ± 38.9**	114.1 ± 40.5**
Triglyceride (mg %)	102.4 ± 29.1	119.0 ± 43.4**	119.5 ± 50.5**
Urea (mg %)	25.4 ± 4.3	25.4 ± 4.3	24.2 ± 5.6
Creatinine (mg %)	0.74 ± 0.3	0.78 ± 0.4	0.76 ± 0.4
Uric Acid (mg %)	5.2 ± 0.54	5.3 ± 0.56	5.3 ± 0.55

FBS = Fasting Blood Sugar, HDL = High density Lipoprotein,

LDL = Low density Lipoprotein

Numerical values are mean ± SD; *P< 0.05,**P< 0.001(Statistically significant when compared between control and Tobacco chewers/smokers.)

DISCUSSION

Use of tobacco either chewing or smoking changes the lipid profile significantly and this has been repeatedly proved and attested by many studies which showed higher serum cholesterol, triglyceride, and low-density lipoprotein(LDL) levels, in combination with lower high-density lipoprotein (HDL) levels [12,13,14]. Cigarette smoking aggravates the risk of cardiovascular diseases in many ethnic populations [12]. Some epidemiological studies report changes in lipid profiles due to chain smoking [14]. Studies from the past have shown that in general, current smoking will result in increased TC levels and was associated CVD. Further it was shown that smoking cessation decreased TC and lowers risk of abnormal TC [15-18]. Our results are in concordance with above previous reports. BMI is lowest in smokers which is significant. Mean systolic & diastolic BP is lowest in control but similar in tobacco chewers & smokers. Hypertension is significantly prevalent in tobacco chewers & smokers. Mean total Cholesterol LDL; Triglycerides are significantly higher in tobacco chewers & smokers. Statistical analysis shows prevalence of risk factors for CVD are higher in tobacco chewers & smokers than tobacco non users. In conclusion, smokeless tobacco is equally harmful as smoked tobacco in respect with CVD.

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