A Comparative Evaluation Of Lipid Profile In Smokers And Non Smokers

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Abstracts: **Background:** The major cardiovascular risk factors i.e. smoking, hypertension and hypercholesterolemia; person having only one of these risk factors show a 2-4 times increase in the incidence of coronary heart disease. Studied have also shown the beneficial effect of smoking cessation on the serum lipids, mainly HDL cholesterol. The risk of coronary artery disease reverts rapidly after cessation of smoking. Material and method:-Present study is conducted to reveal the effect of smoking on the lipid profile in male subject. The cross-sectional study was done in 60 male subjects age ranging from 30 to 45 years. The subjects were divided into control group (n=30) and study group i.e. smokers (n=30). All subjects were belongs from either social class 2 or 3 according to Modified Prasad's social classification. About 5 ml of venous blood will be obtained after 10-12 hours of fasting and analysis of lipid profile was done. **Result:** Total Cholesterol, Total Triglycerides, High Density Lipoprotein (HDL-Cholesterol), Low Density Lipoprotein (LDL- Cholesterol) and Very Low Density Lipoprotein (VLDL-Cholesterol) will be calculated by Friedwald and Friedrickson formula. There is significant difference in lipid profile parameter of control and smokers. The Total Triglyceride, Total Cholesterol, LDL-Cholesterol ,VLDL-Cholesterol of control and smokers are respectively, which is increase significantly ($p<0.05$) in smokers then control. The HDL-Cholesterol of control and smokers is decrease significantly ($p<0.05$) in smokers then control. **Conclusion:** Hence we concluded that strict measures should be taken up to control the prevalence of the habits of smoking and preventing the risk factor for cardio vascular diseases, hypertension etc. [Gupta N NJIRM 2014; 5(3) :62-64]

Key Words: Cardiovascular, Smokers, Hypertension , Hypercholesterolemia.

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Introduction: Several possible mechanisms which involve in the risk factor for coronary heart disease, carbon mono oxide (CO) induced atherogenesis, nicotine stimulation of adrenergic drive raising both blood pressure (B.P) and myocardial oxygen demand, lipid metabolism with fall in "protective" high density lipoprotein (HDL). When we look at the various types of lipoproteins, it is the level of low density lipoprotein (LDL) cholesterol that is most is directly associated with coronary heart disease (CHD), while very low density lipoproteins (VLDL) has also been shown to be associated with premature atherosclerosis peripheral vascular disease, high density lipoprotein (HDL) cholesterol is protective against the development of coronary heart disease (CHD)[1]. Coronary artery disease is the largest killer in developed countries and is now assuming a similar role in the developing countries including India. It has been reported that cardiovascular diseases will be the most important cause of mortality in India by the year 2015.[2,3] Recent studies have shown a high prevalence of coronary artery disease in both urban and rural populations in India. The incidence of coronary artery disease among urban population in India has multiplied nine times since 1960 to 1990 and also the incidence of coronary artery disease is steadily increasing in the younger age group (20-39) years.[4] In studies involving established major cardiovascular risk factors i.e. smoking, hypertension and hypercholesterolemia; person having only one of these risk factors show a 2-4 times increase in the incidence of coronary heart disease. The combination of two of these risk factors have been found to increase the incidence of coronary heart disease by as much as nine times and by as much as 16 times when all three of these factors are present.[5]Studied have also shown the beneficial effect of smoking cessation on the serum lipids, mainly HDL cholesterol (HDL-C)[6]. The risk of coronary artery disease reverts rapidly after cessation of smoking. On an average the excess risk of coronary artery disease among smokers drops by 50% within first year after stoppage of smoking and disappear completely within 10 years.[7] Present study is conducted to reveal the effect of smoking on the lipid profile in male subject.

Material And Method: The study was conducted in Department of Physiology after approval from

ethical committee of institute. The cross-sectional study was done in 60 male subjects ages ranging from 30 to 45 years. The subjects were divided into control group (n=30) and study group i.e. smokers (n=30). All subjects were belongs from either social class 2 or 3 according to Modified Prasad's social classification criteria for socioeconomic status[8]. Control group are healthy individuals free from any disease condition, without history of smoking and study group i.e. smokers are the subject who have the history of smoking 10 cigarettes or 15 bidis per day from last 10 year, was included in the study. A prepared proforma was designed to evaluate and record the personal data of all 60 subjects asking their name, age, sex, height and weight, personal history like smoking, with duration and quantity, any history of lung disease, history of persistent cough etc. Subject with history of any chronic disease like Diabetes, Hypertension, Renal & Respiratory diseases, alcohol intake or any other addiction are excluded from the study.

Specimen Collection: About 5 ml of venous blood will be obtained after 10-12 hours of fasting through routine method applying aseptic technique and tourniquet for as short a time as needed. The blood was allowed to stand for 60 minutes in incubator at 37^0C. After that serum was obtained by centrifugation. Fresh serum were used and analysis of lipid profile. Total Cholesterol. Total Triglycerides, HDL-Cholesterol, LDL-Cholesterol and VLDL-Cholesterol will be calculated by formula[9].

Statistical Analysis: The data was statistically analysed by using SPSS (version17) for the determination of the significant relation by **paired student t test** between the lipid profile of control and smokers.

Result: In the present study about 60 male are randomly selected with the age ranging from 30 to 45 years for the study, Out of which 30 subjects as control group and 30 subjects as study group i.e. smokers Table-1 shows the anthropometric parameter of control and study group i.e. smokers. Table-2 represents the lipid profile parameter of control and study group i.e. smokers. The mean± S.D value of Total Triglyceride, Total Cholesterol, LDL Cholesterol, VLDL Cholesterol of control and smokers are 184.00±13.27 and 191.10±12.69, 183.07±36.89 and 204.67±39.93, 103.03±33.79 and 129.48±38.30, 36.80±2.65 and 38.22±2.54 respectively. Which is increase significantly ($p<0.05$) in study group i.e. smokers then control. The mean± S.D value of HDL Cholesterol of control and study group i.e. smokers are 43.23±7.93 and 36.97±7.51 respectively. Which is decrease significantly ($p<0.05$) in study group i.e. smokers then control.

Table1: Compression Of Anthropometric Parameters Between The Control And Study Group

PARAMETER	Control	Smokers	P value
	Mean ± S.D.	Mean ± S.D.	
Age (years)	36.47±3.98	38.00±3.39	0.114
Height (cm)	163.57±9.30	162.57±7.88	0.655
Weight (Kg)	58.97±9.70	54.70±11.67	0.129
BMI (Kg/m^2)	21.93±2.23	20.62±3.73	0.103

Table 2 Compression Of Lipid Profile Parameter Between The Control And Study Group

PARA METER (mg/dl)	Control	Smokers	P value
	Mean ± S.D.	Mean ± S.D.	
TG	184.00±13.27	191.10±12.69	0.038
TCHO	183.07±36.89	204.67±39.93	0.034
HDLC	43.23±7.93	36.97±7.51	0.003
LDLC	103.03±33.79	129.48±38.30	0.006
VLDLC	36.80±2.65	38.22±2.54	0.038

TG-Triglyceride, TCHO-Total Cholesterol, HDLC- HDL Cholesterol, LDLC-LDL Cholesterol, VLDLC-VLDL Cholesterol

Discussion: The present study was conducted in Department of Physiology. The mean value of the lipid components (Total Cholesterol, TG, HDL, LDL & VLDL) was deranged in smokers as compared to control group. These findings are in accordance with the study of Neki in 2002 compared lipid profile of smokers and control groups and found that the Increase in the level of the total cholesterol, LDL, VLDL & TG in smoker groups[10]. Our finding quite matches with their values. In addition our study also reveals significant decrease in HDL cholesterol in smokers as compared to control group. Study of Rastogi et al in 1989 also reported significant decrease in HDL cholesterol

level in smokers as compared to control group which is similar to that of our study[11]. In year 2005 Goel R shows no significant difference in HDL level between smokers & control[12] which is not similar to the our study. Several studies like that of lipid Research clinics programs Prevalence Study[13] and the Framingham study[14] have identified and relationship between smoking and plasma lipoproteins.

Our study resembles that of Freeman et. al. in reduction of serum HDL in smoker as compared to control group.[15] There was also significant increase in the level of TG and VLDL. Our study there is similar results.

Conclusion: As in our study it was observed that lipid profile is significantly increased in study group. On the basis of above study we suggested that strict measures should be taken up to control the habits of smoking and encouraging that the people dose not smoke on public places and closed spaces.

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