



Original Article

A Comparison of Lipid Profile Between Sedentary and Non Sedentary Workers

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Abstract

In different epidemiological studies, an association between sedentary life style and incidence of cardiovascular diseases has been demonstrated. Dyslipidaemia is one of the important risk factors of cardiovascular disease. An association of dyslipidaemia with sedentary life style has been considered. This study was carried out among 50 sedentary workers (teachers, office staffs, bank employees) at Pabna District and 50 individuals with non-sedentary jobs matched for age group and sex for the control group to see the association. Body mass index (BMI), blood pressure (BP), plasma level of glucose, total cholesterol, low density lipoprotein (LDL), and triglycerides (Tgs) were found to be significantly higher whereas high density lipoprotein (HDL) was found to be significantly lower among the sedentary workers as compared with the control subjects.

From the study, it appears that dyslipidaemia is more common in sedentary workers and the relative risk for cardiovascular disease is increased among them due to the sedentary nature of their jobs.

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Introduction

Cardiovascular diseases are among the most common causes of illness and death in the working population in industrialized as well as in developing countries.' Bangladesh is not an exception.

A consistent association between sedentary life style and coronary heart disease (CHD) has been demonstrated in epidemiological studies, thereby explaining the higher prevalence of CHD reported in sedentary workers. Conversely, epidemiological and other evidence suggest that regular exercise habits protect against the development of cardiovascular disease, and may also improve

sense of well-being and protect against some complications of diabetes, lung disease and osteoporosis.^{1,8} People with diabetes appear to have an excess of complicated atherosclerotic lesion and the frequency of myocardial infraction in diabetics is double than that in nondiabetics. It has long been recognized that high blood pressure is an independent risk factor for cardiovascular disease and the association between systolic hypertension and CHD in diabetics is more consistent than that which has been observed for diastolic pressure. Further, increase in body mass index are strongly associated with an increased risk of non-insulin dependent diabetes, especially

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when the obesity is centrally distributed. Plasma total cholesterol is an indicator of lipid status and important aetiological factors for the development of CHD. It has been established that high density lipoprotein (HDL) cholesterol is inversely correlated with risk of ischaemic heart disease (IHD); physical activity is directly correlated with raised HDL cholesterol levels. There is now considerable evidence in support of oxidative modification of low density lipoprotein (LDL) playing an important causative role in atherosclerosis. LDL in oxidized form, present in blood and the arterial walls has been found to be more atherogenic than in native LDL. The evidence for triglycerides as a risk factor for CHD is less convincing; however, triglycerides are positively correlated with cholesterol, obesity, glucose intolerance and are inversely correlated with HDL-cholesterol levels. In view of the above the present study aimed at ascertaining whether the lipid profile varies with sedentary/non sedentary life style it indicated increased risk for cardiovascular disease among people habituated in sedentary life styles by assessing their personal data and different lipid fractions.

Material and Methods

Subjects

Study group. The study was carried out among 50 sedentary workers (teachers, office staffs, bank employees) visiting the author's chamber with various complains, like fatigue, headache, vertigo, chest pain, respiratory distress, etc. Drawn at random from these patients 50 were selected working at different schools, colleges, banks, and government/ non government organizations working for at least 5years in these jobs. All employees were male and within the age group of 35—50 years. The nature of their jobs were teaching, clerical, managerial and administrative which mainly involved hand writing, dictating, typing, ledger keeping, cash payment-receipt and mental activities. These are usually classified as sedentary activities. An extensive questionnaire documenting age, height, weight, blood pressure,

dietary habits, smoking habits, exercise habits, monthly income, number of dependants, position held and occupational history was completed by each employee.

Control group. Fifty subjects selected at random from the 111 males in the age group 35-50 years who were working in non-sedentary jobs (*e.g.*, sales representatives, technical workers and NGO field workers) as ascertained by a sedentary co-efficient were chosen as controls. The same questionnaire was completed by both groups. Informed consent was taken in all cases.

Fasting blood samples were taken to estimate lipid profile. Plasma levels of cholesterol, triglyceride, high density lipoprotein and low density lipoprotein were measured. Normal values considered for total cholesterol <200 mg/dl, HDL>35 mg/dl, LDL <130 mg/dl and triglyceride 53-150 mg/dl. The study was carried out from September 2005 to April 2007.

Results

The following observations were obtained from an analysis of the questionnaires completed by both study and control groups: (1) all participants of both groups were of more or less the same economic status as ascertained by monthly income *vs.* number of dependants analysis; (2) no individuals from either group engaged in any form of physical exercise habits (*i.e.*, aerobic, isotonic, isometric or passive); (3) all individuals of both groups were non-smoking and did not consume alcohol; (4) dietary habits (total calorie-intake, calories from fat, *etc.*) of the participants in both groups were similar. The above criteria have therefore been excluded from the comparative analysis in our present study.

A significant increase in cholesterol, low density lipoprotein (LDL), very low density lipoprotein (VLDL) and triglycerides (Tgs) and a significant decrease in high density lipoprotein (HDL) ($p<0.001$) were observed among sedentary workers. Results are summarized below:

Table 1: Lipid profile in sedentary and non sedentary subjects (Chol, Tg, LDL)

Blood lipids	Sedentary workers n=50			Non sedentary workers n=50		
	Raised	At or near upper limit	Well below upper limit	Raised	At or near upper limit	Well below upper limit
Cholesterol	21 (42%)	12 (24%)	17 (34%)	4 (8%)	10 (20%)	36 (72%)
Triglyceride	11 (22%)	12 (24%)	27 (54%)	5 (10%)	11 (22%)	34 (68%)
LDL	18 (36%)	11 (22%)	21 (42%)	7 (14%)	11 (22%)	32 (64%)

Table-2: Lipid profile in sedentary and non sedentary subjects (HDL)

Blood lipids	Sedentary workers n=50		Non sedentary workers n=50	
	Normal	Reduced	Normal	Reduced
HDL	37 (74%)	13 (26%)	42 (84%)	8 (16%)

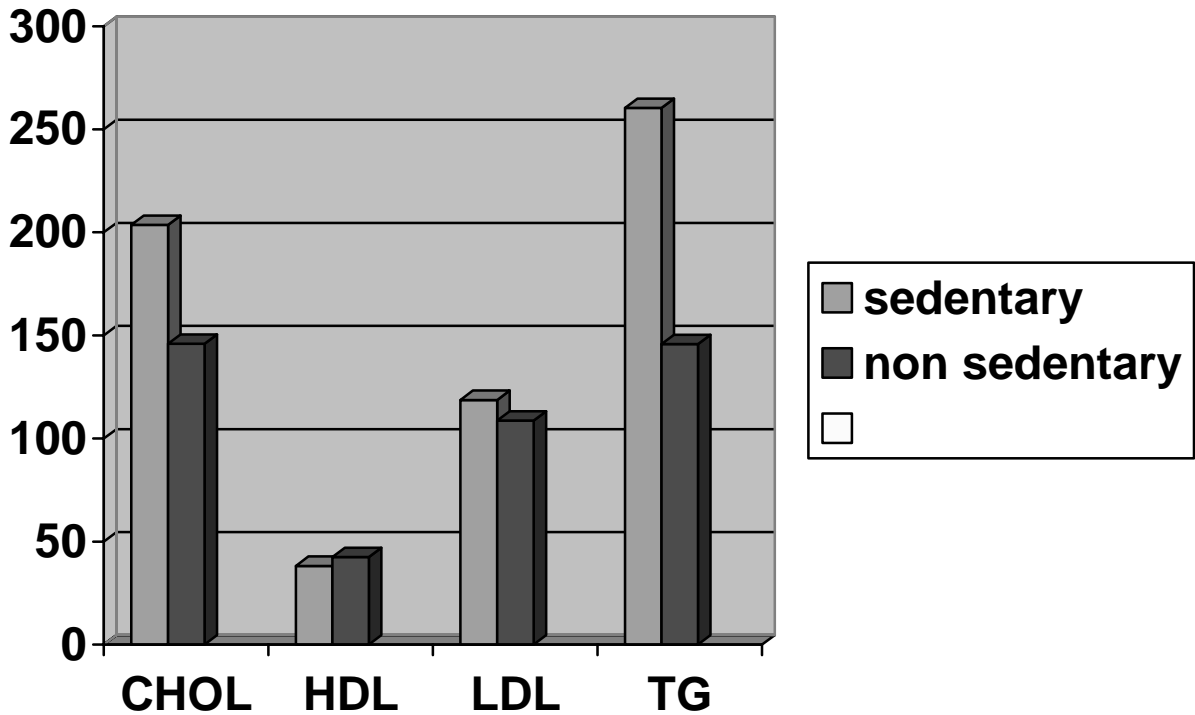


Figure 1: MEAN LEVELS OF LIPID PROFILE

Discussion

In different studies, obesity, hypertension, raised level of cholesterol were identified as important risk factors for CHD. In our study, the plasma cholesterol level was significantly higher in sedentary workers than in the control group which may suggest that sedentary

workers are at higher risk for CHD. It was established that total cholesterol and LDL-cholesterol are major independent risk factors for CHD, while on the contrary there is an inverse relationship between HDL-cholesterol concentration and CHD incidence; triglycerides, though less convincing, are also a risk

factor for CHD. In middle-aged and elderly white men, a high level of fasting triglycerides is a strong risk factor of IHD independent of other major risk factors, including HDL cholesterol. High-density lipoprotein (HDL) is one of the five major groups of lipoproteins (chylomicrons, VLDL, IDL, LDL, HDL) that enable lipids like cholesterol and triglycerides to be transported within the water-based bloodstream. In healthy individuals, about thirty percent of blood cholesterol is carried by HDL.^[1]

It is hypothesized that HDL can remove cholesterol from atheroma within arteries and transport it back to the liver for excretion or re-utilization, which is the main reason why HDL-bound cholesterol is sometimes called "**good cholesterol**", or HDL-C. A high level of HDL-C seems to protect against cardiovascular diseases, and low HDL cholesterol levels (less than 40 mg/dL or about 1mmol/L) increase the risk for heart disease.^[1] Cholesterol contained in HDL particles is considered beneficial for the cardiovascular.

Low-density lipoprotein (LDL) is a type of lipoprotein that transports cholesterol and triglycerides from the liver to peripheral tissues. LDL is one of the five major groups of lipoproteins; these groups include chylomicrons, very low-density lipoprotein (VLDL), intermediate-density lipoprotein (IDL), low-density lipoprotein, and high-density lipoprotein (HDL), although some alternative organizational schemes have been proposed. Like all lipoproteins, LDL enables fats and cholesterol to move within the water-based solution of the blood stream. LDL also regulates cholesterol synthesis at these sites. It is used medically as part of a cholesterol blood test, and since high levels of LDL cholesterol can signal medical problems like cardiovascular disease, it is sometimes called *bad cholesterol*, (as opposed to HDL,

Hence the increased levels of LDL-cholesterol and Tgs and the decreased level of HDL cholesterol in sedentary workers as compared with control subjects also confirms increased relative risk of cardiovascular disease for sedentary workers.

Conclusion

This study as other ones showed a tendency to have dyslipidaemia in sedentary individuals. A little regular exercise can alleviate this problem. Even a small amount of weight loss can cause significant reduction in serum triglyceride level and thus reduce the risk of cardiovascular disease. So a regular exercise is advisable to all sedentary individuals.

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