

Incidence of Dyslipidemia Among Nondiabetic Normontensive Indian Population

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ABSTRACT

Dyslipidemia is now considered as an independent risk factor for cardiac disease worldwide. Lipid abnormalities are major risk factors for premature cardiovascular disease (CVD). There are emerging evidences of premature CVD occurring among Indians, at least 10 years earlier as compared to other ethnic groups. In this context, the present study was designed with aim to determine lipid levels and to compare the lipid levels and prevalence of dyslipidemia in a non-diabetes and non-hypertensive patients in Bhopal District. The participants were in the age group between 18-80 years. Overall prevalence of dyslipidemia was 26.6% among study subjects. 26%, 25.3%, 18.1% and 51.3% of participants had high serum cholesterol, high triglycerides, low high density lipoprotein (HDL), high low density lipoprotein (LDL) and high cholesterol/HDL ratio respectively. The prevalence of dyslipidemia was high among study population (26.6%). Screening programs should be conducted for early detection of dyslipidemia. Information, education and communication programs based on lifestyle modification like healthy diet habits, regular physical activity for weight control and tobacco cessation need to be implemented.

KEY WORDS: dyslipidemia, high density lipoprotein, premature cardiovascular disease

INTRODUCTION:

During past 20 years, India has experienced remarkable socioeconomic development, with the mean income increasing by several folds. Consequently, the lifestyles of people throughout the country have changed dramatically. Several epidemiologic studies in this context found that serum lipid concentrations were higher in a significant part of the population and that an increasing proportion of the population had dyslipidemia. Dyslipidemia is now considered as an independent risk factor for CVD worldwide^[1-4]. Dyslipidemia is a term to lipoprotein abnormalities including elevated serum Triglycerides (TG), increased Total Cholesterol (TC), increased LDL-cholesterol (LDL), increased VLDL cholesterol, and a reduced level of HDL-cholesterol (HDL)^[5-7]. Several studies have demonstrated that many middle-aged persons are at increased absolute risk for

developing CVD in the near future (e.g. 10-year risk). Due to high relative risk for CVD, long term (lifetime) risk for CVD is increased even when 10-year risk is not considered to be high, e.g., in young adults. Individuals especially with dyslipidemia have significantly higher mean TG, LDL and TC. The mean levels of TG, TC and LDL increased with successive increase in BMI and waist circumference in both genders^[8-10].

Cardiovascular events are the number one cause of morbidity and mortality worldwide. Although diabetes mellitus (DM) and hypertension (HTN) are two major contributors towards cardiovascular morbidity and mortality however, other risk factors should also be taken into account to reduce the number of casualties resulting from CVD. Dyslipidemia are often overlooked and under treated. Since this is independent risk factors for cardiovascular events, therefore health care professionals should consider dyslipidemia in order to improve assessment of cardiovascular risk and mortality. Framingham score must be used to stratify cardiovascular risk i.e. low, moderate and high score categories^[11-12].

Traditionally, diabetic and hypertensive patients are screened for dyslipidemias. Most of the

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time non-diabetic and normotensive patients do not get screened often as their disease is considered less life threatening. We determined the frequency of dyslipidemias in non-diabetic and normotensive subjects in this study. By early detection and management of this independent risk factor, we may be able to contribute for minimizing cardiovascular mortality and morbidity.

MATERIALS AND METHODS:

The study was conducted at Department of General Medicine, Peoples College of Medical Sciences & Research Centre, Bhanpur, Bhopal after obtaining clearance from Ethics Committee of Institute. This was a descriptive study. 154 normotensive, nondiabetic subjects (aged 20-80 years) both male and female, were included in this study. Sampling technique was non-probability purposive sampling. Subjects were considered to have dyslipidemia if any of the four criteria was present: Total cholesterol (TC) > 200. Triglycerides (TG) > 150. Low density lipoproteins (LDL) > 130 High density lipoproteins (HDL) < 40 mg/dl. Subjects with systolic blood pressure (SBP) less than 140 mmHg and diastolic blood pressure (DBP) less than 90 mmHg without medicinal use were taken as normotensive and with fasting blood sugar level < 126 mg/dl were defined as non-diabetic and included in the study. Subjects with systolic blood pressure (SBP) greater than 140 mmHg and diastolic blood pressure (DBP) greater than 90 mmHg with fasting blood sugar level > 126 mg/dl, or known diabetic and known hypertensive were excluded from the study. All subjects fulfilling the inclusion criteria were selected for this study. An informed consent was taken from all the participants.

The demographic information such as name, age, gender was noted. Patients were interviewed and investigated for absence of hypertension, diabetes, renal, hepatic or cardiac disease. All patients in the study were specifically investigated for fasting cholesterol, triglycerides, low density lipoproteins and high-density lipoproteins. All this information was collected and noted in a proforma. The data was entered into SPSS version 20 and analyzed.

RESULTS:

A total of 154 patients were included in this study and among them Male and Female were 96 (62.3%) and 58 (37.7%) respectively. Age range of the population was 18-80 years. NAFLD positive cases were 15 (9.7%) only. The number and percentage of smoking, Tobacco and alcohol users were 65 (42.2%),

84 (54.5%) and 61 (39.6%) respectively.

Among all patients with dyslipidemia, 26% had total cholesterol, 25.3% had triglycerides, 18.1 % had LDL and 26 % had HDL. (Table 2, Figure 1-4). Table 3 showed distribution of dyslipidemia in selected population and had 26.6%.

Table1: Distribution of Study Population (n=154).

Variable	Frequency(n)	Percentage (%)
Gender	Female	58
	Male	96
NAFLD	Negative	139
	Positive	15
Smoking	Negative	89
	Positive	65
Tobacco	Negative	70
	Positive	84
Alcohol	Negative	93
	Positive	61
CAD	Negative	141
	Positive	13

Table 2: Distribution of lipid profile in study population (n=154).

Dyslipidemia	Frequency (n)	Percentage (%)
Total cholesterol (TC) > 200	40	26
Triglycerides (TG) > 150	39	25.3
Low density lipoproteins (LDL) > 130	28	18.1
High density lipoproteins (HDL) < 40 mg/dl	79	51.3

Table 3: Distribution of Dyslipidemia in Study Population.

Dyslipidemia	Frequency	Percent
No	1	0.6
Yes	41	26.6
Missing (Blank)	112	72.7

DISCUSSION:

Dyslipidemia is one of the major risk factors for CVD. Many researchers have been done in the field of standard risk factors like diabetes and hypertension. This study addressed the issue of dyslipidemia among subjects 18-80 years of age, whose are non-diabetic and normotensive patients and for whom dyslipidemia is the most important modifiable risk factor. The prevalence of dyslipidemia was 41% and found concordant with studies in India. Previous studies showed prevalence of dyslipidemia

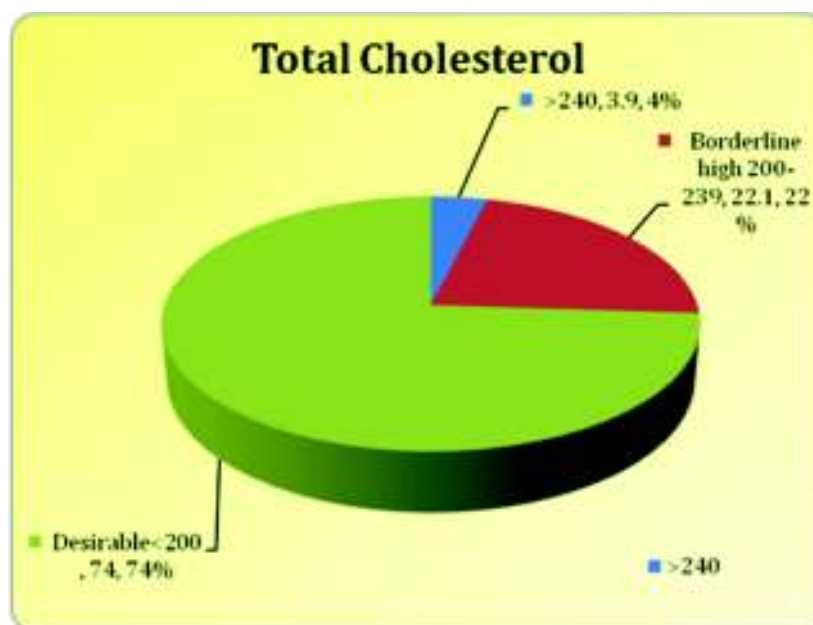


Figure 1 Showing that the 74% samples Desirable<200, Borderline high 200-239 is 22.1% and 4% samples is >240.mean and Sd of total cholesterol 163.60 ± 45.52 .

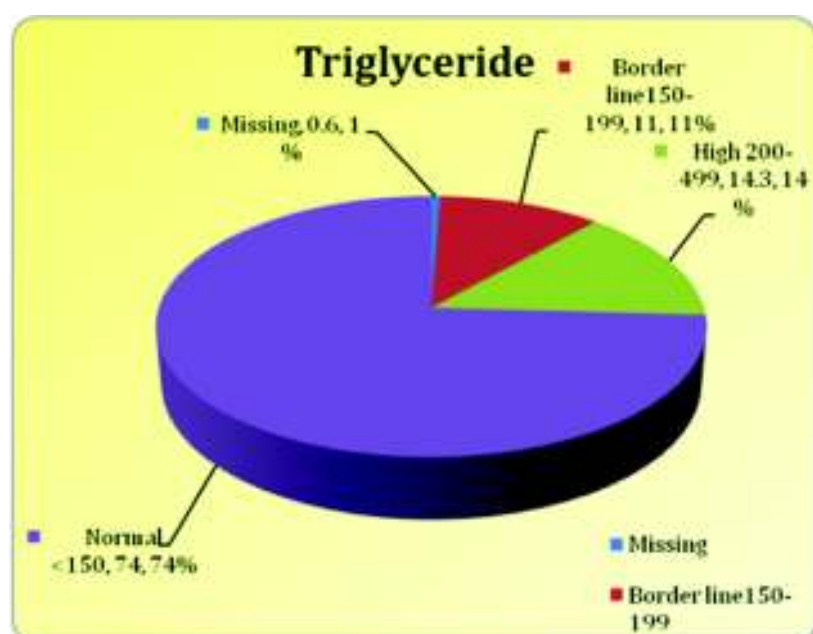


Figure 2: Showing that the 74% samples Normal<150, 14% samples is high200-499, 11% lies in Border line 150-199 and 1% is missing data.

in adult population was found to be 56% to 75.9%^[13-15].

The mean age of the samples in our study was 55.49 ± 17.23 years as compared with study of Estari et al, where the mean age of the subjects was 42.2 ± 10.3 years. So, we see that the age group selected in studies are quite higher and belongs to population at higher risk for cardiovascular events^[1].

As dyslipidemia is major contributing factor in cardiovascular risk much research has been done

worldwide in different geographical regions. A study was conducted by Mahalle et al had the total cholesterol of the subjects was 179 ± 15.8 gm./dl, which is more than our data, which is 163.60 ± 45.52 mg/dl and is comparable with the above study^[16].

The mean triglycerides of the samples in our study was 120.76 ± 66.82 mg/dl as compared with the study conducted by Wankhade et al, where mean serum triglycerides of the subjects were $127.67 \pm$

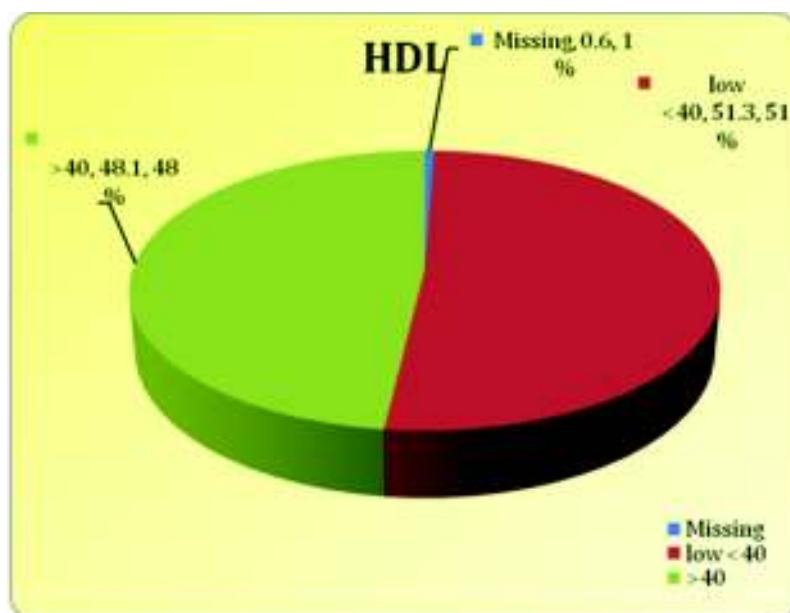


Figure 3: Showing that the HDL in >40 samples is 48%, low <40 is 51% and 1% is missing data Mean and Sd of HDL is 39.75 ± 16.99 .

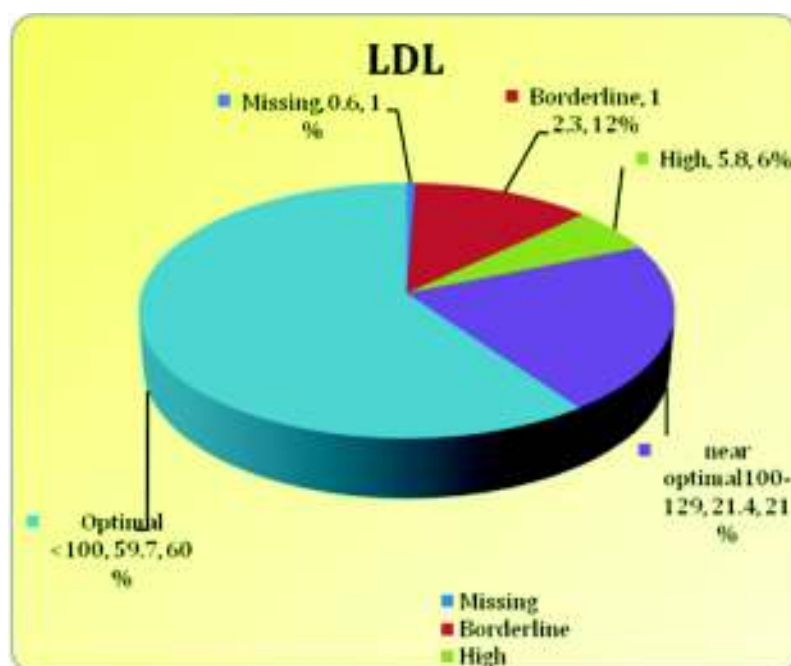


Figure 4: Showing that the LDL 60% samples has optimal <100, 21% samples has near optimal 100-129, 6% samples has lies in high, 12% samples lies in Borderline and 1% sample data is missing. Mean and Sd of LDL is 95.23 ± 34.57 .

58.37gm/dl, which is comparable to our study. In our study the mean LDL & HDL of the subjects were 95.23 ± 34.57 and 39.75 ± 17.10 mg/dl and compared to study conducted by Wankhade et al, reported 108.53 ± 29.47 gm/dl and 40.38 ± 8.33 mg/dl respectively which was higher^[17].

In our study the dyslipidemia was found in 26.6 %. When compared with studies conducted in

different countries. The prevalence of dyslipidemia in this study was lower than Korean population (44%). Among the Chinese population it was 35.5%. 44.2% had isolated hypertriglyceridemia, 14.7% had hypercholesterolemia and 28.0% had isolated low high-density lipoprotein cholesterol^[18,19]. Overall, 66.5% of Thai population had some form of dyslipidemia. Prevalence of high LDL, low HDL, and

high triglycerides were 29.6%, 47.1%, and 38.6%, respectively. The prevalence of dyslipidemia and hypertriglyceridemia among Saudi population was about 40% and 44% respectively. Similarly Dyslipidemia was high in Jordan population (75%) and in all the geopolitical zones of Nigeria with the consistent pattern being low HDL and high LDL^[14,20-22]. It is therefore concluded that our population is also higher risk for cardiovascular disease considering the percentage of dyslipidemia in our non-diabetic and normotensive population. As Our sample size is large to derive that the findings on the entire population. The consumption of unhealthy diet and lack of physical activity could be a major cause of high prevalence of dyslipidemia among this population. Furthermore, as nondiabetic, normotensive have low risk of dyslipidemia so it is suggested that regular awareness programs about benefits of healthy diet, regular physical activity and lifestyle modification and its benefits for reducing the risk of cardiovascular diseases at work places in this population might be helpful to reduce the risk. Emphasis should be given on screening programs for early detection of dyslipidemia should be conducted at work places. Those detected with dyslipidemia should be treated with lipid lowering drugs along with physical exercise and healthy diet which will help to prevent the development of cardiovascular diseases.

CONCLUSION:

It is concluded that high number of non-diabetes and non-hypertensive patients were found to have dyslipidemia across all age groups, it is suggested that an early intervention in the form of life style modification for such patients. Since the burden on our health care system is increasing every day in a form of life style illnesses in form of diabetes and hypertension.

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