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LIPID PROFILE;
CORRELATION WITH HIGH SOCIO-ECONOMIC STATUS AMONG ADULT MALES

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ABSTRACT… Objective: To assess the lipid profile among adult males belonging to high socioeconomic status and to probe the dietary habits playing a key role as causative factors in multiple complicated and grievous health hazards e.g. hyperlipidemia, hypertension, diabetes and ischemic heart diseases, which can be managed by just controlling diet and regular exercise. **Study Design:** Cross sectional observational study. **Period:** From March 2003 to September 2003. **Subject & Setting:** In this study, research was conducted for 150 respondents of age 20-50 belonging to high socioeconomic status in three posh areas of Faisalabad city, by using simple random sampling technique and SPSS was used for statistical analysis. **Results:** It was concluded that lipid profile including LDL, HDL, TG and TC had a significant relationship with high socio-economic status adult males and recommendations were designed to avoid the problems related with hyperlipidemia in the said class.

Key words: Lipid Profile, adult males, high socioeconomic status.

INTRODUCTION

It was observed that among the patients admitted and seeking admission in Coronary Care Unit (C.C.U.) at Allied Hospital Faisalabad, number of adult males belonging to upper middle and high socioeconomic class, with Ischeamic Heart Disease was at an alarming stage. Observing their lipid profile, it was observed that most of the respondents were either touching or have crossed the upper limits of their lipid profile. Therefore, by designing this study, an effort was made to probe the correlation between lipid profile and socioeconomic status among adult males and the hypothesis was developed that lipid profile was supposed to be in abnormal limits among adult males belonging to upper socioeconomic status, most probably due to their dietary habits and sedentary lifestyle. To take food items, rich in saturated fats, trans fatty acids, refined cholesterol, animal proteins and fine starch with least exertion is routine practice in the said class, which may lead to hyperlipidemia, atherosclerosis, plaque formation, resulting in Diabetes, Hypertension, Ischeamic Heart Disease and Myocardial Infarction.

In urban area, adult males from high socioeconomic class are used to luxurious lifestyle as compared to the vernaculars residing in rural area with exertion and tough lifestyle low socioeconomic status, having not bad lipid profile as that of urban area. The traditional life-style and eating patterns among males residing in rural areas of

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Pakistan have been found to be associated with a desirable lipid profile as compared to those living in urban settings. It might be a contributing factor to the low incidence of coronary heart disease in rural areas. It was stated that diet low in saturated fats reduces low-density lipoprotein, whereas a diet high in monounsaturated fats (e.g. olive oil) increases high-density-lipoprotein, mainly leads to a lipid profile, that favours the prevention of coronary heart diseases which was not true for urban dwellers[1].

High blood pressure, or hypertension due to hyperlipidemia, is defined as a blood pressure higher than or equal to 140 mm Hg systolic pressure and higher than or equal to 90 mm Hg diastolic pressure in adults. Blood pressure is measured in millimeters of mercury (mm Hg). High blood pressure with bad lipid profile directly increases the risk of ischeamic heart diseases (which leads to heart attack) and stroke (or brain hemorrhage), especially along with other risk factors. High blood pressure can occur in children or adults, but is particularly prevalent in middle-aged and elderly obese people, heavy drinkers and women who are smokers and taking birth control pills. Individuals with diabetes mellitus, gout or kidney disease have a higher frequency of hypertension.

Physical inactivity is a major risk factor for developing coronary artery diseases. Coronary artery disease is characterized by deposits of fatty substances, cholesterol, calcium and other substances in the inner lining of arteries that supply blood to the heart muscle. It also contributes to other risk factors, including obesity, high blood pressure, high triglycerides, a low level of HDL-cholesterol ("good") cholesterol and diabetes. Even moderately intense physical activity such as brisk walk is beneficial if scheduled regularly for a total of 30 minutes or longer on most of the days[2].

Research focusing the heart disease and other circulatory disorders indicates that excessive consumption of food, high in fats, including lipids and sterols, causes high lipid profile i.e.hyperlipidemia, among adult males belonging to high socioeconomic class, increasing the risk of developing these diseases. In United States studies showed that as much as 50 percent of the caloric intake in a modern diet consists of fats. Other studies demonstrate that the likelihood of heart disease decreases when the intake of saturated fats is reduced. Recent research indicates that excessive consumption of trans fats, such as those produced in the hydrogenation of vegetable oil to make margarine, may also increase the risk of heart disease by raised levels of lipid profile[3].

Whitty et al[4], concluded that risk factors for cardiovascular diseases among adult males belonging to upper class, fed with butter and animal fats with sedentary life style having lipid profile in upper limits, were higher as compared to the individuals belonging to lower socioeconomic class, with normal lipid profile and without hypertension in South Asians.

Pradeepa et al[5], mentioned in results of his study that socioeconomic differences have been observed to be linked with the prevalence of Coronary Heart Diseases due to lipid profile differences between rich and poor classes of people in South Indian Population.

METHODS AND SUBJECTS

A questionnaire was developed to record age, occupation and routine dietary intake in each subject. A total of 150 subjects aged between 20-50 years belonging to high–socioeconomic class i.e. earning rupees fifty thousands and above per month, residing in Fasialabad were included by simple random sampling technique. A sample of 5ml. of blood from each subject under fasting state of 12-14 hrs was taken and the serum obtained was used for the estimation of certain blood lipids, i.e. HDL-cholesterol, LDL-cholesterol, Total cholesterol and Triglyceride levels. The mentioned blood lipid values in each individual were determined using chemical kits, specifically prepared for the tests, manufactured by Boehringer Mannheim Gmbh Germany (Cat No. 237574.

Determination of lipid profile

Lipid profile i.e. LDL, HDL, TC and TG in each case was determined under fasting state of 12-14 hours. Almost 5ml of blood was taken from the cubital vein with proper sterilization of respondent by using disposable syringe. The received samples were centrifuged at 1000 rpm for 10 minutes. The supernatant (serum) was processed for different required components:

1- Cholesterol (TC)

Cholesterol was determined by using kit method (Merk, 14366).

2- Determination of triglycerides (TG)

Triglycerides in blood serum were analyzed by using kit method (Merk,14354).

3- Determination of HDL Cholesterol

HDL cholesterol in blood serum was determined by using kit method (Merk, 14210).

Procedure

The chylomicron, LDL (low density lipoprotein) were precipitated by addition of phosphotungstic acid and magnesium chloride. After centrifugation, the supernatant fluid contains the HDL (high density lipoprotein) fraction which was for assessment of HDL with Merk Cholesterol Liquid Colour Test Kit.

4- Determination of LDL cholesterol

It was calculated by using the Friedwald formula (1972).

LDL cholesterol (mg/dl) = Total cholesterol-HDL cholesterol-Triglycerides/5

Statistical Analysis

The results obtained were tabulated and statistically analyzed using SPSS software version 12. Means, frequencies and percentages were calculated from the data.

RESULTS

The data obtained was presented in tabular form showing the results in the form of means, frequencies and percentages.

Table-I. Distribution of respondents according to their lipid profile

	No.	Minimum value	Maximum value	Mean
Age	150	29	46	38.5
TC	150	133	386	185.53
LDL	150	51	197	58.55
HDL	150	21.31	140	26.63
TG	150	50	700	195.97

Table I shows the descriptive values of mean which is measure of central tendency and reflect that mean age of the respondents was 38.5 years. Whereas, the mean values of Total Cholesterol, LDL, HDL and Triglycerides were 185.53, 58.5, 26.63 and 195.97 mg/dl respectively. The respondents were asked about their age and the feedback is presented in Table II.

Table-II. Distribution of respondents according to their age in terms of frequency and percentage

Age (years)	Frequency	%age
21-30	42	28.1
31-40	56	37.3
41-50	52	34.6
Total	150	100.0

Table-II shows the age distribution of the respondents. The table indicates that majority (37.3%) of the subjects belonged to the age group 31-40 years. Whereas, 34.6% of the subjects belonged to 41-50 years of age group. On the other hand, only 28.1% belonged to 21-30 years of age group.

Table-III. Distribution of the subjects according to their occupation		
Occupation of respondents	**Frequency**	**%age**
Businessman	55	36.7
Lawyer	48	32.0
Doctors	22	14.7
Govt. Servant	25	16.7
Total	150	100.0

Table-III shows that 36.7% of the subjects were businessmen by profession. Whereas, 32.0% and 16.7% were lawyers and govt. servants respectively. Only 14.7% of the subjects were found to be doctors by profession.

Table-IV. Percentage of Total Cholesterol (TC) level		
TC level (mg/dl)	**Frequency**	**%age**
130-220 (Normal value)	11	8.4
221-290	130	86.6
291-360	9	6.0
Total	150	100

Table-IV shows that 86.6% of the subjects had TC level to be221-290 mg/dl. Whereas, 8.4% of the subjects had normal level i.e 130-220 mg/dl, and only 6.0% had 291-360 or above mg/dl TC level.

Table-V. Percentage of LDL level		
LDL Cholesterol level (mg/dl)	**Frequency**	**%age**
30-90 (Normal value)	42	28.0
91-120	27	18.0
121-160	81	43.9
Total	150	100

Table-V shows that 28.0% of the subjects had LDL-cholesterol level less than 90 mg/dl i.e. normal. Whereas, 43.9% and 18.0% of the subjects had 121-160 and 91-120mg/dl level, respectively which is more than the recommended standard values.

Table-VI. Triglycerides (TG) level		
Triglycerides (TG) level	**Frequency**	**%age**
150-200 (Normal value)	40	26.6
201-250	45	29.1
251 and above	50	44.3
Total	150	100

Table-VI shows that 26.6% of the subjects had TG level less than 200 mg/dl.. Whereas, 44.3% of the subjects had TG level more than 251 mg/dl. On the other hand 29.1% of the subjects had 201-250 TG mg/dl.

DISCUSSION

The present study was conducted to compare lipid profile of adult males of different age groups of high socio-economic status. The results obtained were statistically analyzed and discussed as following.

The results regarding age of the respondents showed that majority (37.3%) of the subjects belonged to 31-40 years age group. Whereas, 34.6% of the subjects belonged to 41-50 years of age group. On the other hand, only 28.1% of the individuals belonged to 21-30 years of age group. It is depicted from these results that all of the subjects belonged to young and middle-aged group i.e. 31-40 years.

Most of the respondents informed that their diet was rich in fats and cholesterol. As shown by the data, they took fried, meat, egg, BBQ, beverages and oils whereas they had rare usage of vegetable,, cereals and pulses. Their lavish lifestyle was almost without any exercise resulting fat deposition in their body which increased TG, TC level in their blood serum.

Regarding Total Cholesterol (TC) level, results showed that 86.6% of the subjects had the TC level 221-290 mg/dl whereas, 8.4% of the subjects were having 139-220 mg/dl and only 6.0% had 291-360 mg/dl or above.

CONCLUSIONS

Lipid profile parameters were observed in the serum of adult males of high socio-economic status in posh areas of Faisalabad city. Lipid profile included low-density lipoprotein cholesterol (LDL), high-density lipoprotein cholesterol (HDL), Triglycerides (TG), Total cholesterol (TC) serum levels. Based on the present study serum HDL, serum LDL, TG and TC had a significant correlation with high socio-economic class adult males. Most of the respondents informed that their diet was rich in fats and cholesterol as shown by the data. They used to eat fried food, meat, egg, BBQ, beverages and karaies whereas; they had rare usage of vegetables, fruits, cereals and pulses. Their lavish lifestyle was a problem-creating factor for them, as they had almost zero physical exercise practices. Resulting, fats deposition in their body which increased TG, TC level in lumen of blood vessels, their lipid storage. In the light of depictions of the above study following recommendations may be designed:

Effort must be made to maintain lipid profile parameters with in optimal range through the awareness about using balanced diet and regular exercise.

The use of unsaturated fats and fibrous food should be increased in diet of adult males.

In order to control blood cholesterol levels, proper nutritional guideline should be provided to a common man.

It may also be suggested that study should be conducted in different parts of the country to know the geographic and genetic distribution of risk factors in high socio-economic class adult male along with the special health problems related to this class.

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