



RESEARCH PAPER

Studies on life style and dietary pattern of selected hyperlipidemic subjects of Parbhani city in Maharashtra

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Abstract : Hypercholesterolemia or hyperlipidemia or dyslipidaemia, an another noncommunicable health problem. Hence, study was conducted with an objective to determine the socioeconomic status, information about dietary intake of hyperlipidemia. Thirty non-insulin dependent hyperlipidemic subjects (men and women) were selected from Parbhani city of Maharashtra state. Information on diet pattern, lifestyle, known risk factors for disease were collected. The information regarding their dietary habits, frequency of consumption of different food groups in a day etc. were collected. The actual food intake of the selected diabetic subjects was collected for the immediate past 24 hours. The intake of different nutrients per day by each selected subject was then calculated from the food intake values using food composition tables. Food and nutrient adequacy was calculated based on balanced diets and Recommended Dietary Allowances respectively. It was observed that from hyperlipidemic subjects were more from 50-60 years age group (76.66 %) respectively. Sex wise data indicated that more number of male were sufferers of hyperlipidemia (70 %). Hyperlipidemia was observed more among the subjects who were engaged in the service (36.66 % each). The income wise distribution indicated that there was increase in the number of subjects as the income was increased. A very high per cent (70%) of males were having hyperlipidemia. There were 6.66 per cent and 13.33 per cent subjects who had impaired lipid profile from 3-5 years and > 5 years duration. The increase in weight was experienced by all the selected 30 hyperlipidemic subjects after diagnosis of disorder. There were more than half with family history of hyperlipidemia. Oilseeds were consumed daily by 60 per cent hyperlipidemic respondents. It can be concluded that hyperlipidemia can be well controlled by modification in the diet and lifestyle.

Key Words : Hyperlipidemia, Socio-economic status, Diet history, Oilseed intake, Nutrient intake

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INTRODUCTION

Hypercholesterolemia or hyperlipidemia or dyslipidaemia, an another noncommunicable health problem is the most common factor in causing coronary heart disease. Lipid metabolism can be disturbed in

different ways. It leads to changes in plasma lipoprotein function and /or levels. This by itself and through interaction with other cardiovascular risk factors may affect the development of atherosclerosis. Dyslipidaemias cover a broad spectrum of lipid

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abnormalities, some of which are of great importance in coronary heart disease prevention. Dyslipidaemias may be related to other diseases (secondary dyslipidaemias) or to the interaction between genetic predisposition and environmental factors, since overweight, obesity and central obesity often contribute to dyslipidaemia. Elevation of total cholesterol and low-density lipoprotein-cholesterol has received most attention, particularly because it can be modified by lifestyle changes and drug therapies (Sevketet *al.*, 2012).

WHO (2017) classified the risk factors for CVD into three groups as behavioural risk factors such as tobacco use, physical inactivity unhealthy diet and harmful use of alcohol, metabolic risk factors such as raised blood pressure, raised blood sugar raised blood lipids and raised BMI, other risk factors such as advancing age, stress and ethical factor and excess homocysteine. Long term exposure to behavioural risk factor results in metabolic risk factors. These behavioural and metabolic risk factors often co exists in the same person and act synergistically to increase the individual's total risk of developing CVD.

MATERIAL AND METHODS

A total sample of 30 hyperlipidemic individuals between 40 to 65 years of age were selected for the study from Parbhani city. All the 30 selected subjects were personally interviewed by the investigator with the help of pretested questionnaire so as to elicit the information on their socio-economic background, diet pattern, lifestyle, known risk factors for disease. The nutrient intake of the selected subjects was determined by 24 Hours Recall Method. The information regarding their dietary habits, frequency of consumption of different food groups in a day etc. were collected. The actual food intake of the selected diabetic subjects was collected for the immediate past 24 hours. The intake of different nutrients per day by each selected subject was then calculated from the food intake values using food composition tables (Gopalanet *al.*, 2011). The collected data was consolidated, tabulated and analysed statistically (Gupta, 2014).

RESULTS AND DISCUSSION

Table 1 shows the general information hyperlipidemic subjects. It was observed that from hyperlipidemic subjects were more from 50-60 years age

group (76.66 %), respectively. Sex wise data indicated that more number of male were sufferers of hyperlipidemia (70 %). Hyperlipidemic subjects maximum were from nuclear families (50%, respectively). There were only 6.66 per cent hyperlipidemic subjects from extended families. Educational status of subjects revealed that there was no specific trend observed according to educational status for hyperlipidemic subjects. Higher secondary school educated subjects were more in the hyperlipidemic group (26.66%) than other categories of education except illiterate hyperlipidemic subjects. It is surprising to note that the sizable number (26.66 %) of illiterate subjects suffered from hyperlipidemia.

Hyperlipidemia was observed more among the

Table 1 : General information of the selected hyperlipidemic subjects (n=30)

Sr. No.	Particulars	Hyperlipidemic subjects (n=30)	
		Number	Percentage
1.	Age in years		
	40-50	07	23.33
	50-60	23	76.66
2.	Sex		
	Male	21	70.00
	Female	9	30.00
3.	Type of the family		
	Joint	13	43.33
	Nuclear	15	50.00
	Extended	02	6.66
4.	Educational status		
	Illiterate	08	26.66
	Primary school	05	16.66
	Secondary school	05	16.66
	Higher Secondary school	08	26.66
	Graduate	04	13.33
	Postgraduate	-	-
5.	Occupation		
	Service	11	36.66
	Business	05	16.66
	Farmering	6	20.00
	Home maker	8	26.66
6.	Monthly family income		
	Rs.<15,000	03	10.00
	Rs.15,000- 30,000	10	33.33
	Rs.30,000 - 40,000	03	10.00
	Rs. >40,000	14	46.66

subjects who were engaged in the service (36.66 % each). The income wise distribution indicated that there was increase in the number of subjects as the income was increased. Maximum number (46.66 %) of subjects were from higher income category (> Rs.40,000/ per month).

It is evidenced from the data that elder population form the selected group was suffering from the disorders. Male patients were more than female patients. A very high per cent (70%) of males were having hyperlipidemia. Shrivastva *et al.* (2014) while studying the dietary pattern and lifestyle of diabetic patients reported the higher prevalence of diabetes in the age group 46-65 years. As age increases the activity of pancreas and synthesis of HDL cholesterol may be reduced. Kaur and Karla (2009) reported that in nuclear families the similar trend of observations was noticed in the patients with hyperlipidemia with regard to age and type of family (Haribabu, 2012). The occupational status determines the stress level of the individual which is one of the predisposing factors for the accumulation of fat in the blood vessels which leads to the health risk of the selected hyperlipidemics.

Information of Subjects Regarding Various Aspects of Hyperlipidemia :

Information of subjects with regard to disorders among the selected subjects is presented in Table 2.

Among the total selected with regard to hyperlipidemia it was noticed that maximum (43.33%) subjects were suffering from one year followed by the 36.66 per cent subjects had hyperlipidemia suffering from 1- 3 years. There were 6.66 per cent and 13.33 per cent subjects who had impaired lipid profile form 3-5 years and > 5 years duration.

The hyperlipidemic subjects having family history of disorder were 60 per cent, out of which 33.33 per cent reported it from maternal side and 26.66 per cent from paternal side. There were 40 per cent subjects who did not have family history of hyperlipidemia.

The instructions given by doctors were followed by only 13.33 per cent hyperlipidemic subjects. Remaining 86.66 per cent respondents did not follow doctor's instructions.

The increase in weight was experienced by all the selected 30 hyperlipidemic subjects after diagnosis of disorder. All the hyperlipidemic subjects occasionally checked lipid profile. There were more than half with

Sr. No.	Particulars	Hyperlipidemic subjects (n=30)	
		Number	Percentage
1.	Period of diagnosis		
	>5	4	13.33
	3-5	2	6.66
	1-3	11	36.66
	<1	13	43.33
2.	Family history of disease		
	Maternal		
	Paternal	10	33.33
	None	8	26.66
		12	40.00
3.	Instructions of doctors		
	Follow	4	13.33
	Do not follow	26	86.66
4.	Weight change after diagnosis		
	Increased	30	100.0
	Decreased	-	-
	No changed	-	-
5.	Checking of blood sugar/ lipid profile is done		
	Yes	30	100.0
	No	-	-
6.	Frequency of blood checkup		
	Occasionally	30.00	100.0
	Monthly	-	-
	Fortnightly	-	-
	Weekly	-	-

family history of hyperlipidemia. Family history reflects not only genetic susceptibility, but also interventions between genetic, environmental, current and behavioural factors. Individuals with genetic susceptibility develop disease at an earlier age (James, 2013).

According to World Heart Federation (2012), our family's history of cardiovascular diseases indicate our risk. If a first-degree blood relative had coronary heart disease or stroke before the age of 55 years (for a male relative) or 65 years (for a female relative) our risk for CVD increases. The increase in the weight by all the hyperlipidemic and majority of diabetic subjects was noticed after diagnosis of disorders. It might be due to increased immobility of the subjects. The blood glucose was checked by all the selected diabetic subjects but they were not conscious about it and all the hyperlipidemic subjects checked occasionally lipid profile.

Dietary pattern of selected and hyperlipidemic subjects :

Dietary pattern of the selected subjects under study (Table 3) showed that there were 66.66 percent each vegetarian and non vegetarian hyperlipidemic subjects. In hyperlipidemic group non vegetarian 6.66 per cent.

Table 3: Dietary pattern of selected subjects		(n=30)	
Sr. No.	Diet pattern	Hyperlipidemic subjects (n=30)	
		Number	Percentage
1.	Food habits		
	Vegetarian	8	26.66
	Non vegetarian	20	66.66
	Ovo vegetarian	2	6.66
2.	Meal pattern		
	2 meals a day	02	6.66
	3 meals a day	18	60.00
	4 meals a day	05	16.66
	5 meals a day	05	16.66
3.	Diet restrictions		
	Sugar	-	-
	Sweets	08	26.66
	Salt	15	50.00
	Fat	02	6.66
	Fluid	-	-
	Bakery products	-	-
	None	05	16.66
4.	Consumption of salads		
	Yes	13	43.33
	No	17	56.66
	Amount consumed		
	? 100g	5	16.66
	50- 100g	8	26.66
5.	Consumption of fruits		
	Yes	30	100.0
	No	-	-
	Frequency		
	Daily	1	3.33
	2-4 time in a week	6	20.00
	Weekly	15	50.00
	Occasionally	03	10.00
6.	Fasting		
	Yes	06	20.00
	No	24	80.00
7.	Frequency of fasting		
	Once a week	02	6.66
	? 2 times	03	10.00
	Fortnightly	1	3.33

Most of the subjects (60 %) from this groups were following 3 meal pattern followed by 4 meal pattern (16.66 %). Only two respondents were taking meals twice a day, and 16.66 per cent hyperlipidemic subjects were eating five times in a day.

About 50 per cent hyperlipidemic subjects avoided salt followed by sweets (26.66 %). Bakery products were not restricted by even a single subject hyperlipidemic groups. No restrictions for any ingredient were followed by 5 hyperlipidemic patients. Salad was consumed only by 43.33 per cent hyperlipidemic individuals under study. Remaining 56.66 per cent hyperlipidemics avoided salads.

All the selected subjects included fruits in their diet however, the frequency of consumption was very less. Most of them (50 %) were consuming fruits once a week from hyperlipidemic group.

There were only six hyperlipidemic subjects who were practicing fasting once a week. Majority of subjects from the groups did not practice it.

Majority of the hyperlipidemics were non vegetarians. This may be one of the reasons that their cholesterol levels were high as the animal foods are rich sources of cholesterol. Maximum respondents followed three meal pattern. Salt was restricted by maximum hyperlipidemic individuals. Very few subjects restricted fat. Infact the selected subjects are overweight subjects according to their BMI. Hence, restriction of fat and refined sugar is essential for hyperlipidemics group. Moreover fat restriction is essential for hyperlipidemic individuals but it is not restricted by majority of the selected subjects. This might be another reason for increased cholesterol levels. Vidya *et al.* (2013) studied on impact of supplementation of hypocholesterolemic mix on the selected hypercholesterolemic subjects. Hypocholesterolemic mix was formulated using the hypocholesterolemic ingredients such as barley (15 g), soy flour (20g), curry leaves (5 g.), garlic (10 g.) and amla (10g) and eighty patients were selected for supplementation and divided in 2 group experimental group was supplemented with 100g/day of hypocholesterolemic mix for a period of four months. Supplementations of hypocholesterolemic mix significantly reduced the total cholesterol, LDL, VLDL, triglycerides, TC/ HDL, LDL/ HDL, weight, BMI, WHR, blood pressure and increased the level of HDL. It does not affect the levels of fasting glucose, SGOT, SGPT, alkaline phosphatase, serum creatinine, urea, urea/ creatinine and hemoglobin. Therefore it was proved potential to reduce the consequences of hypercholesterolemic without affecting the function of other vital organs.

Fruits and vegetables have a high content of vitamins, minerals, antioxidants and phytochemicals and play a positive role in preventing CVD and diabetes (European Heart Network, 2002). The bakery products restriction

should have been there for diabetic subjects in view of their higher glycemic index. Its very surprising that diabetic subjects except very few did not include salad in their diet though it is an essential item in the daily diet it was noticed that all subjects ate fruits. Though the fruits are rich in carbohydrates, their consumption in limited amount is essential for both the group of patients.

Oil and oilseeds consumption pattern of the selected hyperlipidemic subjects :

Oil and oil seed consumption pattern of the selected hyperlipidemic subjects is presented in Table 4. Soybean

Table 4 : Oils and oilseeds consumption pattern of the selected subjects (n=30)

Sr. No.	Consumption pattern	Hyperlipidemic subjects (n=30)	
		Number	Percentage
1.	Oil used for cooking		
	Sunflower	8	26.66
	Soybean	18	60.00
	Safflower	03	10.00
	Groundnut	18	60.00
2.	Consumption of nuts and oil seed		
	Yes	30	100.0
	No	-	
3.	Gingelly seeds	30	100.0
	Groundnuts	30	100.0
	Coconut	30	100.0
	Flaxseed	30	100.0
	Niger seed	30	100.0
	Almond	22	73.33
	Cashew nuts	24	80.00
	Garden cress seed	2	6.66
	Pistachio	4	13.33
	Walnut	6	20.00
4.	Frequency of oilseed consumption	18	60.00
	Daily	5	16.00
	2-4 times in a week	3	10.00
	Weekly	4	13.33
	Occasionally		
5.	Amount consumed (g)		
	<10	03	10.00
	10-25	12	40.00
	26-50	11	36.66
	>50	4	13.33

oil was used by 60 per cent hyperlipidemic subjects followed by sunflower (10 %), groundnut (26.66 %).

Nuts and oilseeds were consumed by all 100 per cent selected hyperlipidemic subjects. All 100 per cent hyperlipidemic subjects consumed groundnuts, gingelly seed, coconut, flaxseed and niger seed. The next preference was given to cashew nuts (80 %) and almonds (73.33%). Other nuts and oilseeds were consumed by less number of hyperlipidemics.

Oilseeds were consumed daily by 60 per cent hyperlipidemic respondents. An amount of 10 to 25g oil seeds were consumed by 40 per cent hyperlipidemic subjects, followed by 25 to 50 g consumption by 36.66 per cent hyperlipidemic subjects. Very few respondents from the group consumed oilseeds less than 10g and more than 50g.

The oil consumption practices of the selected subjects were healthy. They used different oils which might be helping them to make up the fatty acid ratio. Different types of oilseeds were consumed by respondents. Consumption of healthy oilseeds such as flaxseed and almonds are advantageous for improving the cardiac function while niger seed being rich in iron and protein may help to built up haemoglobin level. There was variation in consumption frequency of oilseeds by hyperlipidemic subjects.

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