

## Socio-Economic Status and Health profile of Hyperlipidemia Patients

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### Abstract

In the present research study focused on socio-economic status and health profile of Hyperlipidemia patients

**Materials and Methods:** The study was carried out in corporate hospitals in Bangalore city. Total Sample comprising of randomly selected 400 Hyperlipidemia patients in the age group of 30-60 years using hospital record.

**Result and Discussions:** The results indicate that majority found males (75.0%) followed by female 25%. It is observed that 51 percent of male were pre-obese compare to female (41.5%). However, 21.3% of female were obese as compared to male (13.4%) established statistically non- significant ( $p>0.05$ ). Waist hip ratios indicate majority of males (90.5%) and females (89.4%) were overweight. Most of the hyperlipidemia patients were hypertensive 38.2% of male and 40.4% of female. Majority of them having high cholesterol (55.9% male & 69.1% female) followed by high LDL (35.6% male & 46.8% female). However, majority of the female having excessive sweating as clinical sign and few of them were having chest pain. Other diseases status most of the respondents were having stress (60.1% male & 52.1% female). **Conclusion:** Study showed most of the Hyperlipidemia patients was obese/ overweight. Incidence of elevated cholesterol and high blood pressure found predominant. Chest pain and confusion among gender found significant. Effective Counseling and intervention programmes are essential to bring about healthy status of Hyperlipidemia patients.

Key words: Hyperlipidemia, Cardiovascular disease, Cholesterol, LDL

## Introduction:

Cardiovascular diseases are leading cause of death in both industrialized and developing countries (**Bairey Merz CN et al., 2002**). CAD is usually due to atherosclerosis of large and medium sized arteries (**Benner JS et al., 2002**). The primary risk factor which accelerates the formation of atherosclerosis is the elevated levels of cholesterol and triglyceride in the blood (**Chattopadhyaya R et al., 1996**). High levels of low-density lipoprotein (LDL) accumulate in the extracellular sub endothelial space of arteries and are highly atherogenic and toxic to vascular cells (**Chaturvedi V et al., 2007**). The cardiovascular disease risk from increased LDL cholesterol is supported by observations that cholesterol-lowering therapy greatly diminishes the clinical manifestations of atherosclerosis, particularly since the advent of inhibitors of 3-hydroxy-3-methylglutaryl coenzyme A reductase (i.e., statins) that profoundly lower LDL cholesterol (**Cramer JA, 2002**). Prevention is better than cure. One way to reduce CAD incidence is by incorporating changes in healthy lifestyle by educating, screening, detecting and treating modifiable risk factors. In India, there has been an alarming increase in the prevalence of CVD over the past two decades so much so that accounts for 24% of all deaths among adults aged 25–69 years (**Sample Registration System, Million Death Study, 2007**). Asian Indians have been found to develop CVD at a younger age than other populations (**Enas EA, et al, 1992**). The likely causes for the increase in the CVD rates include lifestyle changes associated with urbanization and the epidemiologic and nutritional transitions that accompany economic development (**Omran AR 1971**). Dyslipidemia has been closely linked to the pathophysiology of CVD and is a key independent modifiable risk factor for cardiovascular disease (**Groundy and Small LDL, 1997; Haffnar 1999**). While Asian Indians are known to have a unique pattern of dyslipidemia with lower HDL cholesterol, increased triglyceride levels and higher proportion of small dense LDL cholesterol, there have been no large scale representative studies on dyslipidemia to assess the magnitude of the problem in India. The risk is associated with concomitant hypertension and dyslipidemia, is an additional sum of the individual risk factors (**Stamler, et al, 1986 ; Castelli and Anderson, 1986**) Some of the studies found that the treatment of dyslipidemia has favorable effects on both coronary and cerebrovascular events, than to independent decrease the blood pressure benefit (**Nickenig et al 1999 ; Cardillo et al, 2000**). Therefore, Dyslipidemia and hypertension can serve as an easy clinical approach to know persons at greater risk for the and timely interference directed to decrease CVD events (**Dhananjay Yadav et al, 2014**) Hyperlipidemia is caused by overabundance of lipids or fatty substances in the blood and is an important risk factor in development of atherosclerosis and heart disease. Hyperlipidemia may be caused by genetic factors or by generalized metabolic disorders like diabetes mellitus, excessive alcohol intake, hypothyroidism, or primary biliary cirrhosis. Alteration in Cholesterol, triglyceride and very low-density lipoproteins (VLDL), low-density lipoproteins (LDL) and intermediate density lipoproteins (IDL), which are different forms of lipids, responsible for possible complications in human body such as acute pancreatitis, occlusion of blood vessels and reduced elasticity of the lumen of the artery. Moreover risk increases with diabetes mellitus, hypothyroidism, nephrosis, alcoholism, use of oral contraceptives, family history of Hyperlipidemia and improper diet that is high in fat and cholesterol. In the present study focus on gender wise impact of somatic, clinical status and diseases pattern of Hyperlipidemia patients. The information gained could consequently be helpful to design and initiate comprehensive programmes for detection and control of Hyperlipidemia and its complications (Phogat *et al*, 2010).

## Materials and Methods:

The study was carried out at corporate hospitals in Bangalore city, Karnataka. The sample comprising of 400 hyperlipidemic patients (306 males and 94 females) were randomly selected. The patient's age range as inclusion criteria was 30-60 years. The secondary data was collected using validated questionnaire. The tools were developed to collect the information on socio-economic, clinical status, health profile and somatic status of the selected patients. The samples in the study were subjected to clinical examination. In personal interviews of the

patients detailed history was collected regarding their socio economic status, medical history, hyperlipidemia related complications, clinical symptoms and their system reviews.

The anthropometric measurements like height, weight, waist and hip circumference was measured for the subjects using standard procedure, The waist circumference was measured at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest. Hip circumference was measured around the widest portion of the buttocks. The measurements were taken in the normal relaxed condition of the patients. The body mass index was calculated using the formula weight in kg divided by height in meter square and waist hip ratio was expressed as ratio of the circumference of the waist to that of the hips.

TABLE – 1  
Basic Information of the Respondents

N=400

Characteristics	Category	Respondents	
		Number	Percent
Age group (years)	31-40	175	42.8
	41-50	112	28.0
	51-60	113	28.2
Gender	Male	306	75.0
	Female	94	25.0
Marital status	Married	400	100.0
	Unmarried	0	0.0
Number of children	No	27	6.8
	One	129	32.2
	Two	204	51.0
	Three	40	10.0
Total		400	100.0

TABLE – 2  
Socio economic Information of the Respondents

N=400

Characteristics	Category	Respondents	
		Number	Percent
Place of Residence	Rural	32	8.0
	Urban	368	92.0
Type of family	Nuclear	367	91.8
	Joint	33	8.2
Religion	Hindu	391	97.7
	Muslim/Christian	9	2.3
Family income/month	Rs.10,000-20,000	70	17.5
	Rs.20,000-30,000	154	38.5
	Rs.30,000-40,000	70	17.5
	Above Rs.40,000	106	26.5
Total		400	100.0

TABLE – 3  
Health Aspect of the Respondents

N=400

No	Aspects	Response	Respondents	
			N	%
1	Surgery during last 5 years	Yes	63	15.7
		No	337	84.3
2	Blood pressure taken in last 3 months	Yes	260	65.0
		No	140	35.0
3	Cholesterol measured in previous 3 months	Yes	288	72.0
		No	112	28.0
4	Frequency of Health checkup	Once in 6 months	38	9.5
		Once in year	145	36.2
		Not done until now	31	7.8
		If Doctor advice	186	46.5
	Total		400	100.0

TABLE – 4  
Body mass index of the Respondents

N=400

Body mass index (BMI)	Category	Response						$\chi^2$ Test
		Male		Female		Combined		
		N	%	N	%	N	%	
Normal	18.5-22.9	49	16.0	13	13.8	62	15.5	4.98 <sup>NS</sup>
Over weight	23.0-24.9	60	19.6	22	23.4	82	20.5	
Pre obese	25.0-29.9	156	51.0	39	41.5	195	48.8	
Obese	> 30.0	41	13.4	20	21.3	61	15.2	
Total		306	100.0	94	100.0	400	100.0	

NS: Non-significant,  $\chi^2$  (0.05, 1df) = 3.841

TABLE – 5  
Waist hip ratio of the Respondents

N=400

Waist hip ratio	Response						$\chi^2$ Test
	Male		Female		Combined		
	N	%	N	%	N	%	
Normal	29	9.5	10	10.6	39	9.7	0.11 <sup>NS</sup>
Over weight	277	90.5	84	89.4	361	90.3	
Total	306	100.0	94	100.0	400	100.0	

NS: Non-significant,  $\chi^2$  (0.05, 1df) = 3.841

TABLE – 6  
Type of Illness of the Respondents

N=400

No	Type of Illness	Gender	Response				$\chi^2$ Test
			Yes		No		
			N	%	N	%	
1	High blood pressure	Male	117	38.2	189	61.8	0.15 <sup>NS</sup>
		Female	38	40.4	56	59.6	
2	Angina	Male	25	8.2	281	91.8	0.05 <sup>NS</sup>
		Female	7	7.4	87	92.6	
3	Heart diseases	Male	8	2.6	298	97.4	0.79 <sup>NS</sup>
		Female	1	1.1	93	98.9	
4	Elevated Cholesterol	Male	171	55.9	135	44.1	5.23*
		Female	65	69.1	29	30.9	
5	Elevated Triglycerides	Male	86	28.1	220	71.9	4.28*
		Female	37	39.4	57	60.6	
6	Elevated Low density lipoprotein Cholesterol	Male	109	35.6	197	64.4	3.85*
		Female	44	46.8	50	53.2	
7	Heart rhythm disturbance	Male	23	7.5	283	92.5	1.62 <sup>NS</sup>
		Female	11	11.7	83	88.3	
8	Diabetes mellitus	Male	68	22.2	238	77.8	0.45 <sup>NS</sup>
		Female	24	25.5	70	74.5	
9	Hyper and Hypo thyroid	Male	36	11.8	270	88.2	0.00 <sup>NS</sup>
		Female	11	11.7	83	88.3	
10	Obesity	Male	74	24.2	232	75.8	0.02 <sup>NS</sup>
		Female	22	23.4	72	76.6	

\* Significant at 5% level, NS: Non-significant,  $\chi^2$  (0.05, 1df) = 3.841

TABLE – 7  
Clinical status of the Respondents

N=400

No	Clinical status	Gender	Response				$\chi^2$ Test
			Yes		No		
			N	%	N	%	
1	Chest pain	Male	71	23.2	235	76.8	4.76*
		Female	12	12.8	82	87.2	
2	Whitish ring around the eye's iris	Male	34	11.1	272	88.9	1.05 <sup>NS</sup>
		Female	7	7.4	87	92.6	
3	Excessive Sweating	Male	113	36.9	193	63.1	0.49 <sup>NS</sup>
		Female	31	33.0	63	67.0	
4	Bowel habits (regular or irregular)	Male	57	18.6	249	81.4	1.15 <sup>NS</sup>
		Female	13	13.8	81	86.2	
5	Left arm pain / Neck pain	Male	38	12.4	268	87.6	0.78 <sup>NS</sup>
		Female	15	16.0	79	84.0	
6	Confusion	Male	18	5.9	288	94.1	9.64*
		Female	15	16.0	79	84.0	

\* Significant at 5% level, NS: Non-significant,  $\chi^2$  (0.05, 1df) = 3.841

TABLE – 8  
Diseases Condition f the Respondents

N=400

No	Diseases Condition	Gender	Response				$\chi^2$ Test
			Yes		No		
			N	%	N	%	
1	Acute Gastritis	Male	139	45.4	167	54.6	2.25 <sup>NS</sup>
		Female	51	54.3	43	45.7	
2	Heart burns	Male	87	28.4	219	71.6	0.32 <sup>NS</sup>
		Female	24	25.5	70	74.5	
3	Blood clots	Male	13	4.2	293	95.8	4.13*
		Female	0	0.0	94	100.0	
4	Liver diseases	Male	21	6.9	285	93.1	0.03 <sup>NS</sup>
		Female	6	6.4	88	93.6	
5	Stress	Male	184	60.1	122	39.9	1.89 <sup>NS</sup>
		Female	49	52.1	45	47.9	
6	Pancreatic diseases	Male	12	3.9	294	96.1	1.01 <sup>NS</sup>
		Female	6	6.4	88	93.6	
7	Lung disease	Male	23	7.5	283	92.5	1.22 <sup>NS</sup>
		Female	4	4.3	90	95.7	
8	Weakness	Male	61	19.9	245	80.1	1.01 <sup>NS</sup>
		Female	19	20.2	75	79.8	
9	Osteoporosis	Male	27	8.8	279	91.2	10.75*
		Female	20	21.3	74	78.7	
10	Depression	Male	35	11.4	271	88.6	2.81*
		Female	17	18.1	77	81.9	
11	Weight loss	Male	5	1.6	301	98.4	0.10 <sup>NS</sup>
		Female	2	2.1	92	97.9	
12	Arthritis	Male	30	9.8	276	90.2	2.84*
		Female	4	4.3	90	95.7	

\* Significant at 5% level, NS: Non-significant,  $\chi^2$  (0.05, 1df) = 3.841

### Results and Discussion:

Table-1 depicts the Basic Information of the Respondents. Majority of the respondents were found in age of 31-40 years (42.8%) followed by 51-60 years (28.2%) and 41-50 years (28.0%). With regards to gender higher male respondents (75.0%) noticed than female (25.0%). All subjects were married (100%). majority of the respondents had two children (51.0%) followed by one (32.2%) and three (10.0%) children. Socio economic Information of the Respondents represents in Table-2. The finding reveals that majority of the respondents were residing in urban areas (92.0%) as compared to rural background (8.0%). Nuclear family trend was observed among the respondents. Table-3 depicts the Health Aspect of the Respondents The study results showed that majority of the respondents were not undergone any surgery in the last 5 years (84.0%) and only few respondents were undergone minor to major surgeries (15.7%) in the last 5 years. Most of the subjects were taken their blood pressure checkup in the last 3 months (65.0%) followed by (35.0%) were not taken their blood pressure in the last 3 months and majority of the subjects were undergone cholesterol checkup (72.0%) followed by (28.0%) were not undergone cholesterol checkup. Forty seven percent of the respondents had undergone health checkups as for the doctor advice only. Frequent checkups have been commonly considered as an important measure to improve population health. Presumably, the health checkups result in early detection and early treatment of conditions, reducing the incidence of serious diseases and delaying the onset of poor health, and consequently reducing medical expenses (INUI Tomohiko et al, 2017).

Body mass index of the Respondents in Table-4 observed that higher percentage of the females were obese and overweight category (21.3% & 19.6%) than males. Lesser number of males (16.0%) and females (13.8%) were normal Body mass index. The difference among Respondents by Body mass index by Gender was statistically non-significant ( $p>0.05$ ). However, for Asians it is recommended that the BMI should be between 18.5 and 23.0-24.9, since, they tend to have higher percentage body fat even at lower BMI compared to Caucasians and Europeans, which puts them at higher risk of chronic non-communicable diseases (**Dietary Guidelines for Indians (NIN, 2011)**). Table-5 represents Waist hip ratio of the Respondents reveals that majority of the males (90.5%) and females (89.4%) were overweight and they had waist hip ratio of more than 0.9 among males and 0.8 among females. The difference of waist hip ratio among the gender was statistically non-significant ( $p>0.05$ ). The waist circumference and waist-to-hip ratios are useful for estimation of central and truncal obesity respectively.

Several studies have shown that the central obesity was directly correlated with chronic degenerative diseases especially metabolic syndrome. Waist-to-hip ratio of more than 0.9 among men and 0.8 in women and waist circumference 90cm for men and 80cm for women are associated with increased risk of several chronic diseases especially in Asian Indians (**Dietary Guidelines of Indians (NIN, 2011)**). Type of illness of the respondent's shows in Table-6, the results indicates that among the 400 hyperlipidemic subjects had high blood pressure males (38.2%) & females (40.4%). Angina noticed among males (8.2%) and females (7.4%). Very less subjects were responding to heart disease among males (2.6%) and females (1.1%). The difference of high blood pressure, angina and heart diseases among the gender was statistically non-significant ( $p>0.05$ ).

Majority of subjects were elevated cholesterol males (55.9%) females (69.1%) followed by high LDL cholesterol males (35.6%) females (46.8%), high triglycerides males (28.1%), and females (39.4%). The statistical result depicts significant difference among gender on Elevated Cholesterol, Elevated Triglycerides and Elevated Low density lipoprotein Cholesterol ( $p<0.05$ ). Few of the subjects were had heart rhythm disturbance males (7.5%), females (11.7%) followed by Diabetes mellitus had males (22.2%) females (25.5%), hyper and hypothyroid among males (11.8%) and females (11.7%). Further obesity noticed with males (24.2%) and females (23.4%). Most of the hyperlipidemia patients were had high blood pressure, elevated cholesterol and high LDL cholesterol and triglycerides are major risk factor for coronary artery diseases. There exists difference in gender on above illness found non-significant ( $p>0.05$ ). Table-7 reveals that Clinical status of the Respondents of the hyperlipidemia patients most of the patients were response to excessive sweating in males (36.9%) & females (33.0%) followed by chest pain males (23.2%) & females (12.8%). Most of the males were had irregular bowel habits (18.6%) than females (13.8%), most of the females were had left arm pain (16.0%) as compared to males (12.4%) followed by confusion females (16.0%) than males (5.6%) and whitish ring around the eye's iris males (11.1%) than females (7.4%). However, the difference in gender with respect to chest pain and confusion found statistically significant ( $p<0.05$ ) where as non-significant noticed with other clinical symptoms ( $p>0.05$ ).

Response on Diseases Condition represents in Table 8 the study found out majority of the males had stress (60.1%) than females (52.1%) followed by acute gastritis females (54.3%) than males (45.4%) and weakness more in females (20.2%) than males (19.9%), most of the females (21.3%) had osteoporosis than males (8.8%). Further, Depression found high in females (18.1%) than males (11.4%), followed by arthritis males (9.8%), females (4.3%). Few subjects had weight loss males (1.6%) and females (2.1%), Lung disease with 7.5% males & 4.3% among females. However significant difference among gender noticed with Blood clots, Osteoporosis, Depression and Arthritis ( $p<0.05$ ) where as non-significant with other disease conditions ( $p>0.05$ ).

### **Conclusion:**

Study showed most of the Hyperlipidemia patients were obese and overweight. Incidence of Elevated cholesterol and high blood pressure found predominant. Chest pain and confusion among gender was found statistically significant. Blood clot and Osteoporosis between genders express significant. Motivation towards regular checkup required to persons to avoid incidence of diseases and to maintain good health status. Counseling and intervention programmes are very much essential to bring about healthy status of Hyperlipidemia patients.

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