



A Pilot Study on Prevalence of Hyperlipidemia in Cardiology Inpatient Department of a Tertiary Care Teaching Hospital

A Anil Babu^{*1}, S Rani², K G Revikumar³, Shafeeq Mattummal⁴, Durgesh Kumar K⁵

1. Department of pharmacy Practice, National College Of Pharmacy.

2. Department of pharmacy, Annamalai University.

3. Director, KIDS, Thiruvananthapuram-24.

4. Department of Cardiology, KMCT Medical College.

5. Department of Community Medicine, KMCT Medical College.

ABSTRACT

Hyperlipidemia induced cardiovascular complications are too common in the younger populations. The aim of the study is to identify the prevalence of hyperlipidemia in Cardiology Inpatient department of a tertiary care teaching hospital. 54.39% patients identified with Hyperlipidemia. Female populations were found to be 52% and the remaining were males. 55.29% of population comes under age of less than 60. This clearly showed up the risk of hyperlipidemia in the study population

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*Corresponding Author Email: toanilbabu@gmail.com

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INTRODUCTION

Cardiovascular complications are bearing the number one spot in the mortality and morbidity rates among other common diseases in the younger populations. In India the prevalence rate of cardiovascular complications due to Hyperlipidemia (HLP) are showing a dramatic increase especially in young adults. As per the reports from National commission on macroeconomics; a government of India undertaking, by 2015 its going to be 64 million population who will get affected with Coronary Artery Diseases (CAD's) in India, more intensely among CAD patients HLP will be assumed as the leading cause for its severity. Among the global cardiovascular disease population south Asians are headed up with the higher risk rate of Coronary Artery Diseases^{1&2}. The primary reasons for the development of coronary Artery disease is Hyperlipidemia which is characterized by the elevated Total Cholesterol Levels, Low density lipoproteins, triglycerides and decreased High density lipoprotein. For a period of past ten years studies in various populations reveals that the Hyperlipidemia has played a considerable role in the development of Atherosclerosis & CAD's³⁻⁵. Various studies across the globe reported that apart from Hyperlipidemia the major risk factors involved in Cardiovascular complications are smoking, hypertension, diabetes, high waist-hip ratio, sedentary lifestyle, psychosocial stress, and lack of consumption of fruits and vegetables⁶. There are modifiable and non modifiable risk factors which are reported in relation to the development of CAD. The modifiable risk factor reduction by consumption of healthy fatty diet, smoking and tobacco cessation & changes in the sedentary lifestyle will play a major role in the prevention of CAD's⁷. The Cardio metabolic changes and associated diseases are very common in Indian populations because of their poor quality of living including sedentary life styles, adiposity & build up of bad cholesterol and these prevalence rates are showing uniformity in all parts of the country including rural areas. The common risk factors associated with the major population were identified as the abnormal lipid elevation in the serum levels⁸. These increased frequencies of Hyperlipidemia and associated complications should be assessed and retrieved at the earlier stages to reduce the mortality and morbidity rate of such ailments. And thus it prompted us to make a study on the prevalence of Hyperlipimia in the admissible number of populations of tertiary care teaching hospital.

MATERIALS AND METHOD

A prospective observational study was conducted after getting approval from the Institutional Ethics Committee. The screenings of the study population were done in the cardiology Inpatient (IP) department of a tertiary care teaching hospital over a period of four months. All the

Inpatients those who got admitted to the cardiology department with various cardiovascular complications were screened for the study population. The study populations are thoroughly monitored with their various laboratorial and diagnostic data's and categorized in to different groups to analyze the prevalence rate of hyperlipidemia. The study was statistically analyzed for the dependence and independence by using Pearson Chi Square test, Confidence Interval (CI) and the descriptive statistics.

RESULTS AND DISCUSSION

During the study period a total of 1616 Inpatients were screened form the Inpatient department of Cardiology. Among the total of 1616 patients were screened 879(54.39%) patients were identified with Hyperlipidemia with elevated serum lipid levels which clearly indicates that more than half of the total populations screened from the cardiology IP department were diagnosed to have cardiovascular complications associated with hyperlipidemia, similar kinds of results were also shown in the study conducted by Prabhakaran et al in a North Indian population⁹. And the remaining 737(45.61%) of patients were identified with Non hyperlipidemia complaints. The same were also shown in the Table 1.

Table 1: Disease categorization total Populations (N=1616)

Disease	Percentage
Hyperlipidemia Population	54.39 (879)
Non Hyperlipidemic Population	45.61 (737)

Gender categorization of Total Population (N=1616)

From the total population were screened a total of 784(48.51%) patients were males and 832 (51.49%) patients were females. This clearly indicates that the females are showing higher prevalence rates towards the cardiovascular diseases. The similar kind of prevalence rate of cardiovascular diseases is also reported with the study conducted on elderly rural populations in Wardha district by Rajnish Joshi¹⁰.

Gender Categorization of Hyperlipidemia population (n=879)

The gender categorization of the study population indicates that the higher prevalence of hyperlipidemia is diagnosed with female population with a rate of 52% and the remaining 48% of study population were males. This is shown in Table 2. Similar kinds of prevalence rates were also reported in Study of Hypertension and Hyperlipidemia in the Adolescent population of Central India conducted by Vijay Bhalavi¹¹.

Table 2: Gender Categorization of Study population (n=879)

	HLP¹ Alone	HLP+DM +HTN²	HLP+ DM³	HLP+ HTN⁴	HLP+ CHF⁵	HLP+ COPD⁶	TOTAL
Male	333	24	23	39	2	1	422
Female	16	140	136	86	53	26	457
Total	349	164	159	125	55	27	879

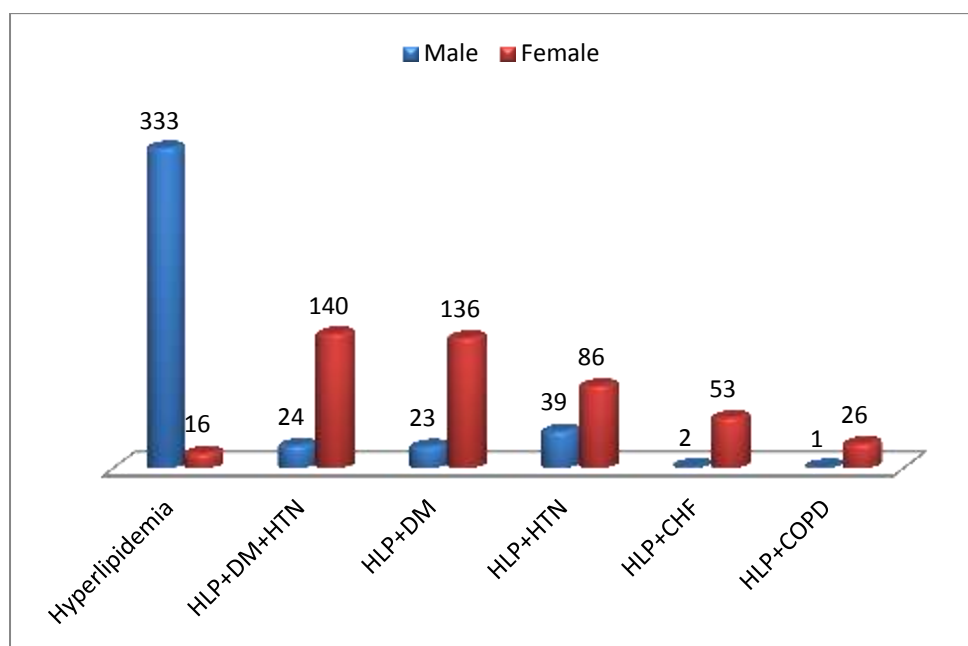
1-Hyperlipidemia, 2- Hyperlipidemia+ Diabetes Mellitus+ Hypertension, 3- Hyperlipidemia+ Diabetes Mellitus, 4- Hyperlipidemia+ Hypertension, 5- Hyperlipidemia+ Congestive heart Failure, 6-Hyperlipidemia+Chronic Obstructive Pulmonary Disease.

	Degrees of freedom	Chi square test statistic	P value
PEARSON CHISQUARE	5	537.9	0.000

Here p value is less than the significant level 0.05 so we accept the hypothesis that disease classification and gender are dependent.

Correlation of Gender- disease Classification

The study also performed to correlate the Gender-Disease Classification in the study population and it is shown that maximum percentage of patients comes under hyperlipidemia alone category and they are males. Least percentage of patients comes under hyperlipidemia with congestive heart failure category and they are also in males. In female category maximum percentage of patients comes under fifth disease classification which is shown in Figure 1.

**Figure 1: Gender- Co morbid Disease Classification**

Classification as per the Adult Treatment Plan III from the total study population the mean value of Total Cholesterol were found to be as 211.89 ± 53.00 mg/dl, Triglyceride concentration with a

mean value of 163.85 ± 33.51 mg/dl, in case of low density lipoprotein the mean value were found to be as 133.99 ± 26.48 mg/dl and in case of high density lipoprotein mean value were showed to be as 31.11 ± 6.01 mg/dl. From the data observed it was noted that the elevated levels of Total cholesterol, Triglycerides and Low density lipoproteins are high in female populations with prevalence rate of 54%, 53.14% & 52.35% respectively and decreased levels of High density lipoproteins are higher in Females with a prevalence rate of 92.34% when compared to that of males. These abnormal levels of lipids in females conclude the higher prevalence rate of hyperlipidemia in females than males. This is shown in Figure 2, 3, 4 & 5.

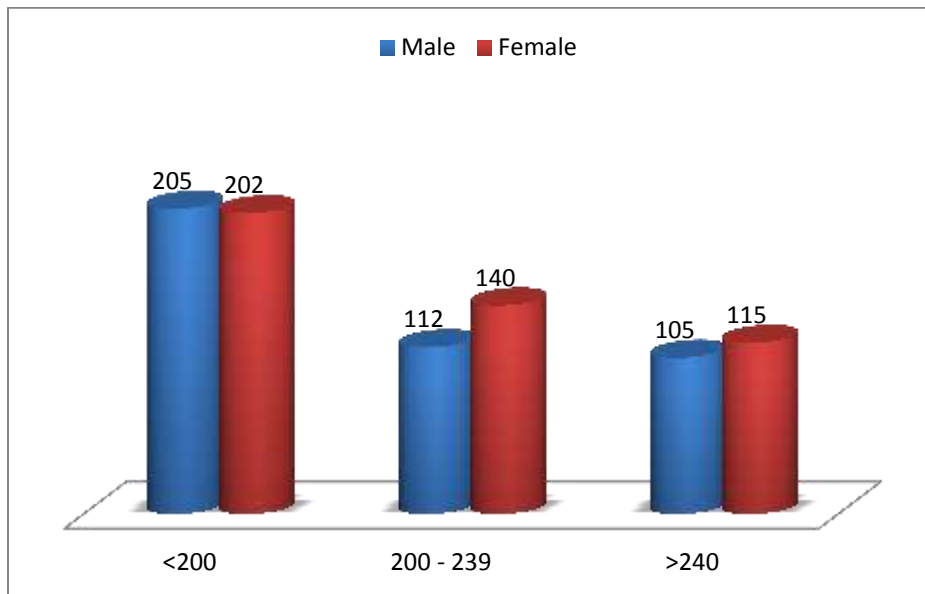


Figure 2: Total cholesterol concentration (n=879)

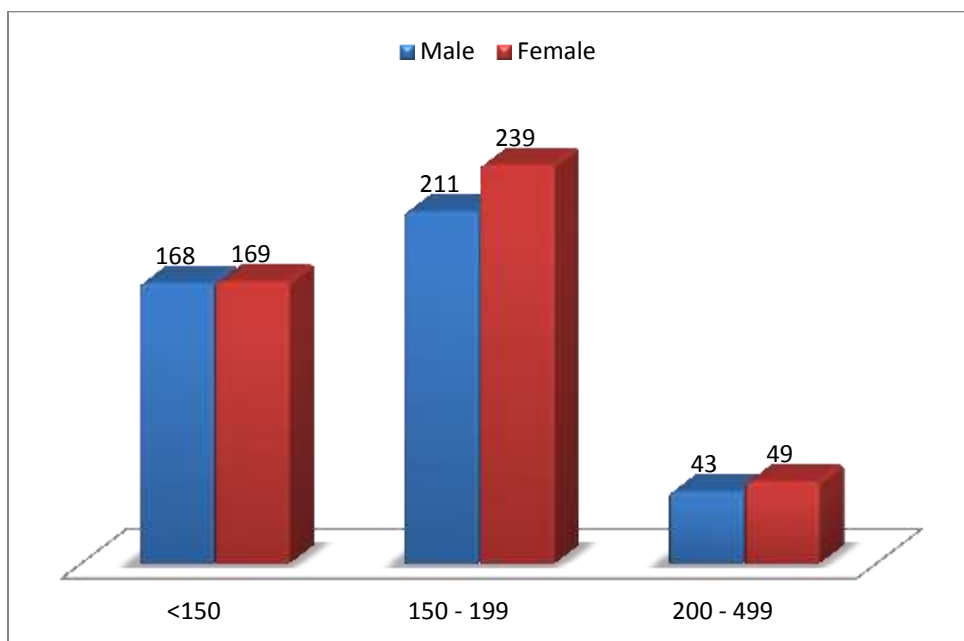


Figure 3: Triglyceride concentration (n=879)

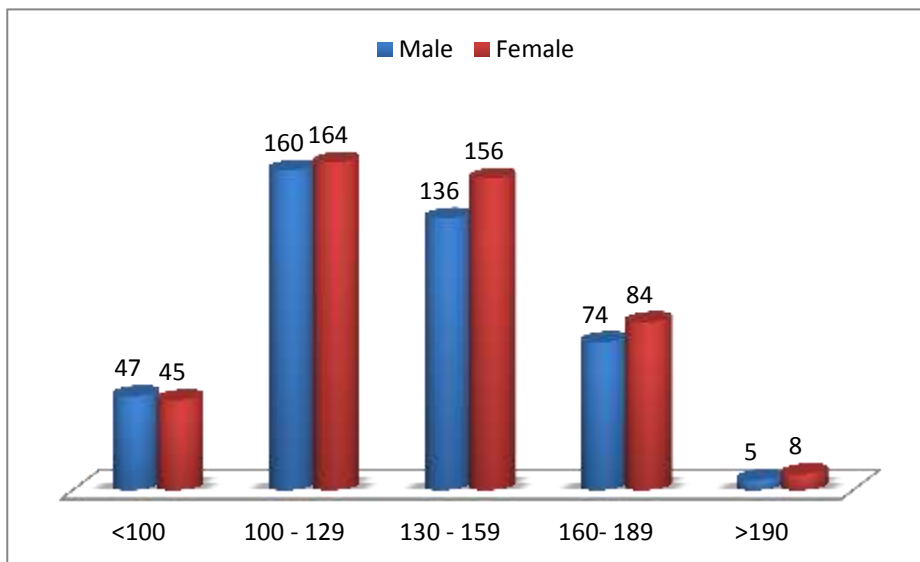


Figure 4: Low Density Lipoprotein concentration (n=879)

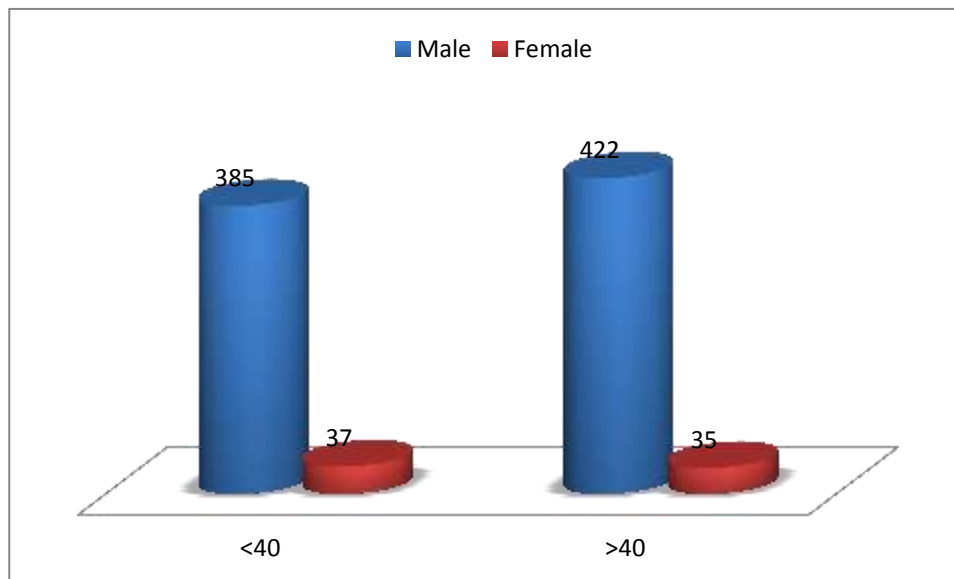


Figure 5: High Density Lipoprotein Concentration (n=879)

Categorization of Hyperlipidemic population (n= 879)

The study population categorization shows that Diabetes mellitus, Hypertension, CHF and COPD are the most common co morbid conditions identified along with Hyperlipidemia. A total of 39.70% of populations were diagnosed to have Hyperlipidemia alone, 18.65% of patients were identified with Hyperlipidemia with Diabetes mellitus & Hypertension as the co morbidities, 18.11% of population were identified as Hyperlipidemia with Diabetes mellitus as the co morbidities, 14.22% were identified to have Hyperlipidemia with Hypertension as the major complication, 6.25% of patients identified as Hyperlipidemia with CHF and 3.07% of population were diagnosed to have Hyperlipidemia with COPD as the co morbid complications. The same

was also correlated in Figure 6. The Hyperlipidemia is a commonly occurring macrovascular complication in the Diabetes mellitus patients which is considering as one of the characterized risk factor for the development of cardiovascular diseases in the study population this was also correlates with the study done by Ambrish Mithal et al¹².The categorization data Further reveals that hypertension were the another most common complications associated with Hyperlipidemia in the study population, the same was also correlates with the study conducted on a general health checkup camp by Justin Easow Sam¹³.

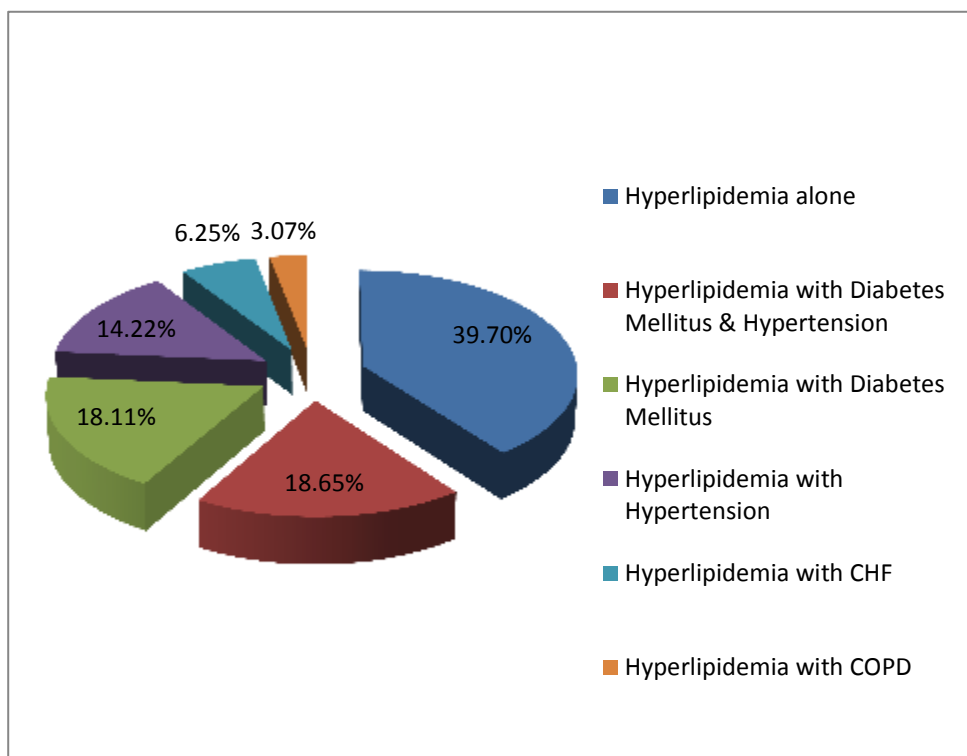


Figure 6: Categorization of Hyperlipidemic Population (n= 879)

Age group Categorization of Study population (n=879)

The minimum and maximum age of the study population were found to be 40 and 89 respectively and the average age of the study population were found to be 60.17 with a standard deviation of 12.942.

	n	Minimum	Maximum	Average Age	SD	CI
Age	879	40	89	60.17	12.942	60.17±12.942

According to different age groups in the study population the highest prevalence rate shown with an age group in between 50-59 with 35.15%, followed by 22.41% of study population found in between 60-69, 19.23% in between 40-49, 12.63% in between 70-79 and 10.53% of study population comes in between 80-89 respectively. This is clearly shows that the prevalence is higher in adult population with age more than 50. A similar kind of results was also shown up in

the study conducted by M Estari on an urban Indian population in Warangal district¹⁴. This has shown in Table 4.

Table 4: Age group Categorization of Study population (n=879)

	HLP ¹	HLP+HTN+DM ²	HLP+DM ³	HLP+HTN ⁴	HLP+CHF ⁵	HLP+COPD ⁶	TOTAL
<50	25	10	12	118	2	0	167
50 - 59	158	62	64	3	20	12	319
60 - 69	93	36	36	4	15	7	191
70 - 79	43	30	27	0	10	1	111
80 - 89	30	26	20	0	8	7	91
TOTAL	349	164	159	125	55	27	879

1-Hyperlipidemia, 2- Hyperlipidemia+Diabetes Mellitus+Hypertension, 3- Hyperlipidemia+Diabetes Mellitus, 4- Hyperlipidemia+Hypertension, 5- Hyperlipidemia+Congestive heart Failure, 6-Hyperlipidemia+Chronic Obstructive Pulmonary Disease.

	Degrees of freedom	Chi square test statistic	P value
Pearson chi square	20	562.6	0.000

Here p value less than the significant level so we accept the hypothesis that age and disease classification are dependent.

Age-Disease Correlation

The study also analyzed for the relationship between the age and disease variability. Highest percentage of patients belongs to first age category with HLP & HTN. Maximum number of patients were belongs to second age interval. The same was also given in the figure 7

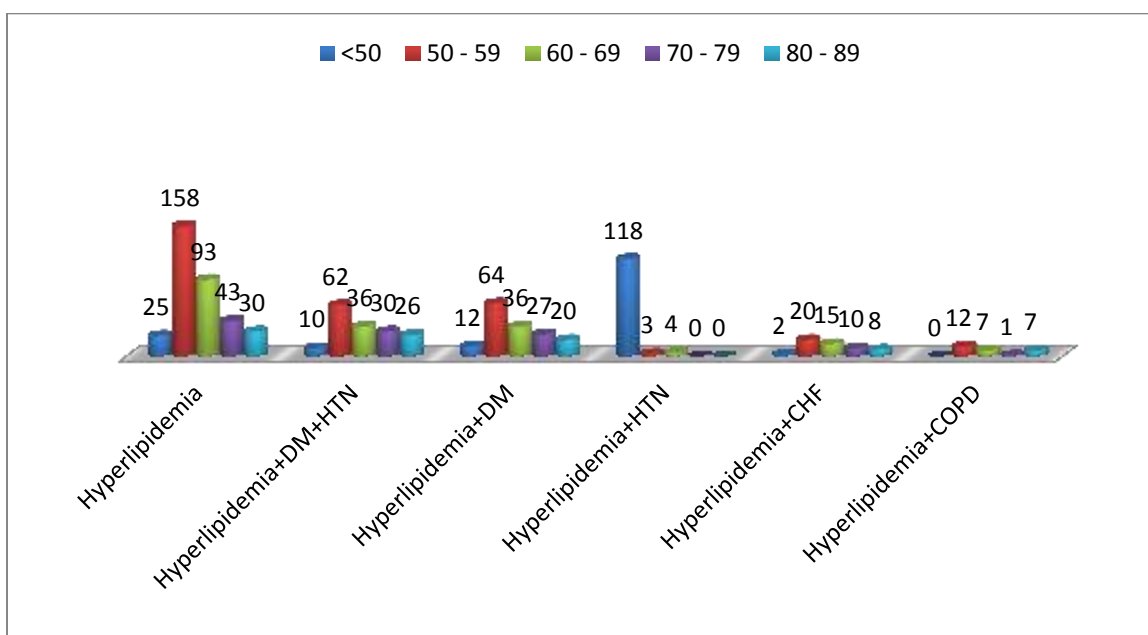


Figure 7: Age-Disease Correlations

CONCLUSION

The study concludes that the higher prevalence rate of Hyperlipidemia in Cardiovascular patients clearly exhibit that the morbidity and mortality rate of cardiovascular disease patients will increase because of the Hyperlipidemic conditions. Other than Hyperlipidemia, HTN & DM are identified as the major complications in the cardiovascular disease patients. On these circumstances the clinical pharmacist should play an important role in the detection, monitoring and educating the patient regarding the risk factors and ways to improve the quality of life to reduce the morbidity and mortality rate of cardiovascular patients and also improve the healthcare of the population.

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