Epidemiological evaluation of patients with Hyperlipidemia in a tertiary care Hospital set up in rural area of South India: A Cross sectional Study

Mohammed Muneersha T K1, Saravanakumar R T1, Revikumar K G2, Fathima Habeeba T E3

1Department of Pharmacy, Annamalai University, Annamalai Nagar, Chidambaram–608002, Tamil Nadu, India
2Kerala Institute of Drug Studies, Kavaradi Road, Pettah, Thriruvananthapuram-695024, Kerala, India
3Department of Pharmacy Practice, Nirmala College of Health Sciences, Nutmeg Gardens, Meloor, Kunnappilly P.O, Chalakudy, Thrissur-680311, Kerala, India

Article History:
Received on: 01 Nov 2020
Revised on: 25 Nov 2020
Accepted on: 02 Dec 2020
Published on:
Volume: 2020, 11 Issue: 4
Keywords:
Cardiovascular Diseases, Coronary Heart Disease, High Density Lipoprotein, Hyperlipidemia, Low Density Lipoprotein, Serum Total Cholesterol, Triglycerides

ABSTRACT

Epidemiological study is a simple, reliable method for quantifying body size and proportions. This study was aimed to evaluate the association of selected & established demographic parameters of patients with Hyperlipidemia in a rural hospital set up. This study was a hospital-based cross sectional study conducted in patients with newly diagnosed Hyperlipidemia in an age group of 30 to 70 years attending Cardiology Department of a tertiary care hospital in south India. Based on the lipid profile, the subjects were grouped into Normal and Test groups and demographic data and serum lipid profile were recorded in previously designed Data Collection form and statistically analyzed. The result from this study shows that the body weight, height, Body Mass Index and waist circumference of the test population were significantly higher than that of the control population. Also Fasting Blood sugar level, Systolic BP and Diastolic BP were found to be significantly higher in Test group when it compares with the control group. Based on the result from this study, we shall conclude that Body Mass Index, Waist Circumference, Fasting Blood Sugar, and Blood Pressure are very sensitive indices for predicting the elevated biomarkers of Hyperlipidemia.

*Corresponding Author
Name: Mohammed Muneersha T K
Phone: +91-9526526117
Email: mmshahtk@gmail.com

ISSN: 0975-7538
DOI: https://doi.org/10.26452/ijrps.v11i4.3676

INTRODUCTION

The Cardiovascular Diseases (CVD) are conditions that are very much associated with the heart and circulatory system and considered as one of the main causes of morbidities and mortalities worldwide (Roth et al., 2014). The overall risk for Cardiovascular Diseases reaches 50% for an individual at the age of 30 years without a known risk for CVD. Coronary Heart Disease (CHD) accounts for approximately 33 to 50% of the total cases of Cardiovascular Diseases (Benjamin et al., 2017). There are many modifiable risk factors which lead to Cardiovascular Diseases such as Hypertension, Hyperlipidemia, Obesity, Diabetes, tobacco use and sedentary lifestyle (Gupta et al., 2008). But the risk factors like age, genetic factors, and family history are not modifiable. Hyperlipidemia is a disorder of lipoprotein metabolism, which includes a number of abnormalities such as hypercholesterolemia, hypertriglyceridemia and low levels of high-density lipoprotein cholesterol (Gupta and Gupta, 2010). Hyperlipidemia is defined as per National Cholesterol
Hyperlipidemia is the commonest cause of the coronary heart disease (CHD) and their incidence has been rising all over the world thereby increasing the morbidity and mortality due to cardiovascular diseases and is present in a substantial proportion of young adults also (Shah and Mathur, 2010). The World Health Organization estimates that Hyperlipidemia is associated with more than half of global cases of ischemic heart disease and more than 4 million deaths per year (Brewer, 2003). The prevalence of Hyperlipidemia has been increasing worldwide. Recently World Health Organization (WHO) has declared that by 2022, 60% of cardiovascular cases will be of Indian origin (Anil et al., 2016). In the Indian population, the prevalence of Hyperlipidemia is found to be around 13.9% (Dixit and Jagan, 2016). But the regional disparity exists in prevalence rate with its highest rate in the south Indian population, which is 18.3% (Joshi et al., 2014). Various studies among Indian population point to the high prevalence of Hyperlipidemia and the surveillance of cardiovascular risk factors conducted by the Indian Council of Medical Research (ICMR) in various Indian states showed that the urban Indian population has a higher prevalence of when compared with the rural population. Considerable differences in the prevalence of Hyperlipidemia were observed among rural populations in different Indian states, with Kerala reporting the highest prevalence (Aslesh et al., 2016). Kerala is one of such state in India with a high burden of cardiovascular diseases, but there is no significant difference in the prevalence of cardiovascular risk factors in the urban and rural populations (Thankappan et al., 2010).

RESULTS AND DISCUSSION

A total of 500 subjects were enrolled into the study as per the study specification. Table 1 shows the mean age and sex of control and test groups. The mean age of the control group was 48.6 years and that of the test group was 54.2 years, respectively. The mean age of all groups together was 51.4. The graphical representation of the mean age of Control and test groups are given as Graph 1. The control group comprised a total of 150 participants, with 86 males and 68 females. Whereas the test group comprised a total of 350 subjects with 164 males and 186 females. The gender distribution of Control and test groups are given as Graph 2. The increased number of incidence in female subjects in the test group indicates the chance of prevalence of Hyperlipidemia is more in woman population than men.
Table 1: The age and sex distribution of the control and test groups

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Control n=150</th>
<th>Test n=350</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>48.6</td>
<td>54.2</td>
</tr>
<tr>
<td>Sex Male</td>
<td>86</td>
<td>164</td>
</tr>
<tr>
<td>Female</td>
<td>68</td>
<td>186</td>
</tr>
</tbody>
</table>

It shows the t-test for the demographic details, including Body Weight, Height, Body Mass Index and Waist Circumference between Control and Test groups. The t-test of these demographic parameters showed a statistically significant difference (p<0.01) between test and control groups. The mean ± SD of demographic parameters, body weight, height, waist circumference and BMI are depicted in Table 2. It shows that the mean ± SD of body weight in of control group was 60±8.244 and that of the test group was 71.6 ± 10.2. The mean ± SD of height in the control group was 1.58±0.09, and that of the test group was 1.62±0.06. The mean ± SD of BMI in the control group was 24±4.4, and that of the test group was 26.9±3.3. The mean ± SD of waist circumference was found to be 31.13 ± 1.79 for the control group and 35.18 ± 2.69 and the test group. All the demographic parameters, including the Body Weight, Height, Body Mass Index and Waist Circumference of the test population, were found to be significantly higher when compared with that of the control group. The graphical representation of demographic parameters is given as in Graph 3 and the result shows an increase in body weight and Waist Circumference is highly associated with the parameters of Lipid Profile status. Maintenance of a disciplined lifestyle would definitely help to maintain the Lipid Profile values in limits.

The t-test was performed to compare Lipid Profile Parameters such as such Serum Total Cholesterol, Low Density Lipoprotein, High Density Lipoprotein and Triglycerides Control and Test groups. The
result shows that the mean ± SD of total cholesterol in the control group was 185.3±13.7 and that of the test group was 252.8±35.7. The mean ± SD of LDL in the test group was 109.3 ±13.1, and that of the test group was 145±23.11. The mean ± SD of HDL in the control group was 48.5±6.1 and that of the test group was 42.9±5.4. The mean ± SD of triglycerides in the control group was 103.7±17.1, and that of the test group was 143.9±38.2. The t-test of these Lipid Profile Parameters are shown a statistically significant difference (p<0.01) between Control and Test groups. Table 3 details the comparison of the levels of Total Cholesterol, LDL Cholesterol and Triglycerides; the parameters were found to be significantly higher in test population when compared with that of control population; whereas the level of HDL Cholesterol was higher in control population when compared with that of the test population. The graphical representation of all lipid profile parameters were shown in Graph 4. The t-test was performed to analyze the difference in associated risk Factors of Hyperlipidemia such as Fasting Blood sugar level, Systolic Blood Pressure and Diastolic Blood Pressure control and test group and Table 4 details the t-test for the associated risk Factors of Hyperlipidemia between test and control groups. Table 4 shows that the mean ± SD of Fasting Blood Sugar level in the control group was 86.3 ± 6.7 and that of the test group was 131.2 ± 34.6. The mean ± SD of Systolic Blood Pressure in the...
control group was 119.7±5.9 and that of the test group was 137.6±16.6. The mean ± SD of Diastolic Blood Pressure in the control group was 81.8±5.6, and that of the test group was 92±7.9. The t-test of these associated risk factors showed a statistically significant difference (p<0.01) between Control and Test groups. The graphical representation of Associated risk factors in Hyperlipidemia of Control and Test groups were shown in Graph 5. It shows that the Fasting Blood Sugar Level was found to be significantly higher in the Test group population when compared to that of the Control group. Also, the elevated Systolic Blood Pressure and Diastolic Blood Pressure in test group point a clear association of Blood Pressure and Hyperlipidemia. The result from the comparison of associated risk parameters of Hyperlipidemia clearly says that the control of fasting blood sugar and blood pressure in healthy range would found useful to maintain the lipid profile of Control group subjects.

CONCLUSIONS

The risk factors of Hyperlipidemia like age, genetic factors, and family history can’t be modified, but proper maintenance of body weight, Waist Circumference, Fasting Blood Sugar and Blood Pressure in the limits by appropriate diet and exercise would help people to maintain the Lipid Profile status in a normal range and that would help the people to stay away from Hyperlipidemia and thus from Cardiovascular Diseases. The quality of life and life expectancy of the general public can be improved by the maintenance of the Lipid Profile status in the normal range.

Funding Support

The authors declare that they had no funding support for this study.

Conflict of Interest

The authors declare that there was no conflict of interest for this study.

REFERENCES


