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A Secondary Survey to find the Percent Prevalence of Hypercholesterolemia in Young Adults, who attended the Master Health Check Up at Government Royapettah Hospital, Chennai, Tamil Nadu.

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ABSTRACT

Morbidity and Mortality due to cardiovascular diseases amongst young adults is increasing at an alarming rate and it is essential to do risk assessment and early intervention. Hypercholesterolemia is a known risk factor of cardiovascular diseases and surprisingly many studies done conclude that high cholesterol is seen in significantly high proportions of young adults, less than 45 years old and early intervention decreases the rate of future cardiac events significantly. This study is a secondary survey of patient results from Master Health Check-up register from March 2022 to August 2022 and included 1968 patients. Our primary end point is patients < 45 years having cholesterol derangements. Of the 725 patients less than 45 years old, 425 had Cholesterol derangements (60%), which is a significant proportion. Of the 425 patients who had cholesterol derangements, 285 were males (67%) and 140 were females (33%). Using, Two Proportion Z-Test, Statistical Comparison was done and the Value of Z was 6.5633. The *p* was <.00001 which is Statistically Significant. Thus, our study concludes that significant proportion of young adults had Cholesterol Derangements and Males had significantly more occurrence of cholesterol derangements than females in this study population.

Keywords: Dyslipidemia, Young Adults, Cardiovasuclar Diseases, Cholesterol.

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INTRODUCTION

Cardiovascular Disease (CVD) remains the leading cause of Death [1]. CVDs are a group of Disorders of the Heart and Blood Vessels which includes: Coronary Heart Disease (CHD) – a Disease of the Blood Vessels supplying the Heart Muscle; Cerebro Vascular Disease – a Disease of the Blood Vessels supplying the Brain etc.,

In Recent Times, there is substantial increase in morbidity and mortality due to Young Age Cardiovascular events especially the CHDs. There are several established modifiable risk factors for CHDs [2] like Hypertension, Dyslipidemia, Smoking, Obesity, and Diabetes Mellitus (DM) and it is imperative to screen appropriate patient populations and treat the underlying abnormalities, as part of the Primary Preventative Strategies to reduce the burden of CHD. Of these, raised serum cholesterol concentration is the most important predictor of the morbidity and mortality associated with the CHDs [3].

It is an established fact that atherosclerosis of blood vessels is the underlying pathology and the most important point to be noted is that these atherosclerotic changes begin to develop at an early age [4]. According to the Cardiovascular Risk in Young Finns Study, Adolescent cholesterol metabolism predicts coronary risk factors at middle age. Moreover, in patients with multiple risk factors, morbidity/mortality occurs earlier and more severely. Hypertensive Men have a 10-fold increase in cardiovascular disease and coronary heart disease risk, especially when high cholesterol is also present [5]. Therefore, in high-risk populations, prevention strategies must begin at a very early age. Prevention strategies may include cholesterol lowering agents, in addition to diet and exercise and other Lifestyle Modifications. The decrease in the risk of coronary heart disease by using the cholesterol lowering agents will in turn reduce overall mortality especially among patients who are having higher risk of death from coronary heart disease [6]. Studies done earlier show that a decrease in the total cholesterol level and low-density lipoprotein cholesterol level by 1% results in a 2% reduction in the risk of coronary heart disease [7].

Keeping these in mind, this current study, a secondary survey was taken up, with main aim to assess the burden of Dyslipidemia in asymptomatic patient group, mainly young adults lesser than 45 years old [8] who attended the Master Health Check Up and had preliminary lab investigations done as part of their Health Care.

MATERIALS AND METHODS

This is a Secondary Survey Analysis of existing data which was collected from MHC Lab Register.

Master Health Check Up includes a thorough clinical examination of each patient registering in the MHC OP and package also includes many lab investigations like Blood Glucose, Blood Urea, Serum Creatinine, Total Cholesterol, Total Protein, Albumin levels in Fasting Samples.

The main end point of this secondary data analysis was patients less than 45 years (Young Adults) having cholesterol derangements.

Secondary end points were

- Males less than 45 years with cholesterol derangements
- females less than 45 years with cholesterol derangements.

RESULTS

Our Study used the lab results of MHC Patients from March 2022 to August 2022 (6 months).

Total entry was 1968 samples, of which 1256 were males (64%) and 712(36%) were females.

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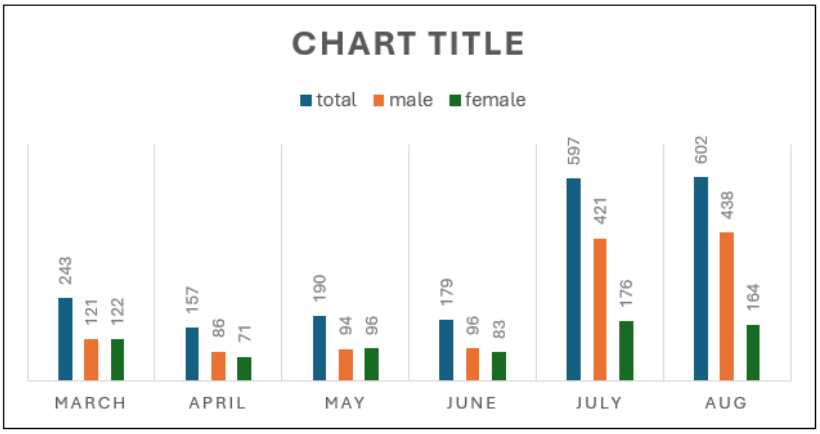

Chart 1: Total Number of Samples and Gender Wise Distribution

Our primary end point is patients < 45 years having cholesterol derangements.

Of the 725 patients less than 45 years old, 425 had Cholesterol derangements (60%), which is a significant proportion.

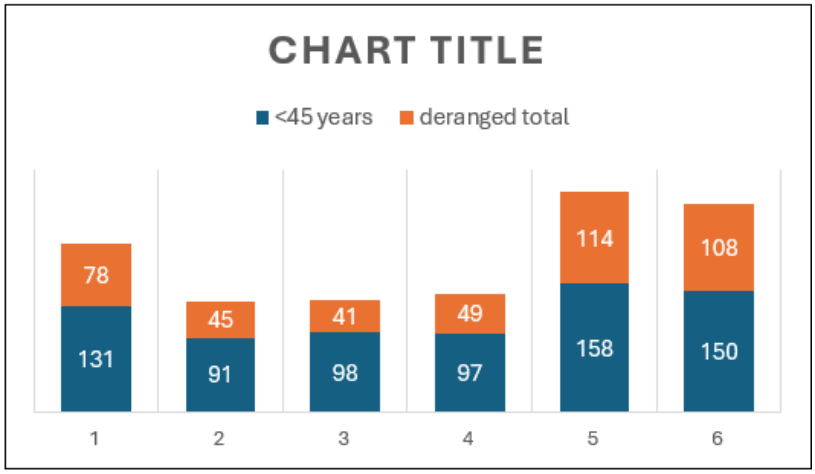

Chart 2: Total Number of Patients Less than 45 years Old who had Cholesterol Derangements

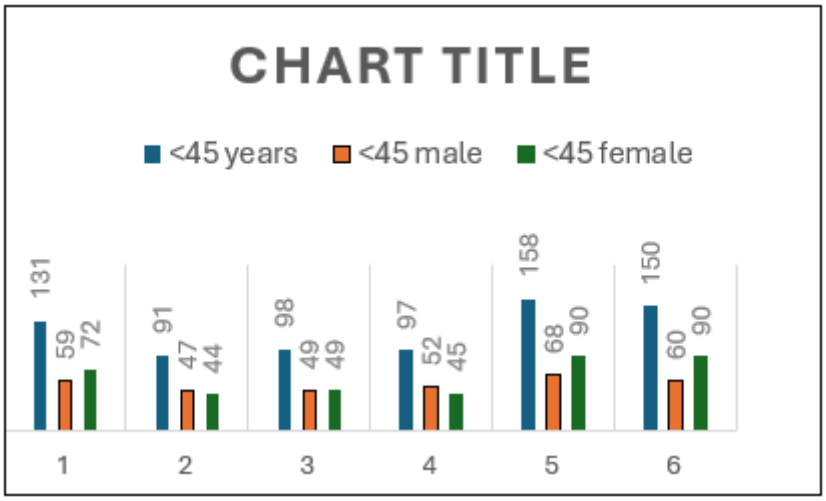

Chart 3: Gender Distribution of <45 years old Patients with Cholesterol Derangements.

Of the 425 patients who had cholesterol derangements, 285 were males (67%) and 140 were females (33%), which clearly shows significantly higher proportion of Males having cholesterol derangements than Females.

Statistics

Our primary end point is patients less than 45 years old.

Table 1 shows the Statistical Comparison Of 2 Proportions (Of Total < 45 Years old patients, One with Cholesterol Derangements and the Other Without Cholesterol Derangements).

Using, Two Proportion Z-Test, Statistical comparison was done (at a *p* value 0.05). The Value of Z is 6.5633. The *p* is <.00001 and it is highly significant.

Table 2 shows the Statistical Comparison Of 2 Proportions (Males with Cholesterol Derangements and Females with Cholesterol Derangements). Using, Two Proportion Z-Test, Statistical comparison was done (at a *p* value 0.05). The Value of Z is 9.9184. The *p* is <.00001 and it is highly significant.

S.No	Number of Patients less than 45 years old	Number of Patients less than 45 years old with Cholesterol Derangements	Number of Patients less than 45 years old without Cholesterol Derangements	Statistical Significance	Remarks
1	725	425	300	The Value Of Z is 6.5633. The *p* is <.00001.	The Result is Significant at *p*<0. 05

Table 1: Statistical Comparison Of 2 Proportions (Of Total < 45 Years old patients, One with Cholesterol Derangements and the Other Without Cholesterol Derangements)

S.No	Number of Patients less than 45 years old with Cholesterol Derangements	Number of males less than 45 years old with Cholesterol Derangements	Number of Females less than 45 years old with Cholesterol Derangements	Statistical Significance	Remarks
1	425	285	140	The Value Of Z is 9.9184. The *p* is <.00001.	The Result is Significant at *p*<0. 05

Table 2: Statistical Comparison Of 2 Proportions – Of Total < 45 Years old patients with Cholesterol Derangements, Males with Cholesterol Derangements and Females with Cholesterol Derangements)

CONCLUSION

It is clearly found out that a significant proportion of young adults (less than 45 years old) had cholesterol derangements in this study population.

Also, it is clearly found out that a significant proportion of Males who were less than 45 years old had cholesterol derangements than females in this study population.

DISCUSSION

Myocardial Infarction is rare in the young, but now a days, it is seen among young patients also, and this is especially true in India more than the Western Countries [9].

Santosh Kumar Sinha et al., in the AMIYA study clearly mention that in the last few decades the occurrence of CAD and AMI is increasing in India from 1.1% to 7.5% in the urban and 2.1% to 3.7% in the rural population and is more among younger population, and Lipid derangements like Hypertriglyceridemia, low high-density lipoprotein cholesterol (HDL-C), metabolic syndrome, high lipoprotein-a, are all additional risk factors for CAD [10].

In the study published in Indian Heart Journal in 2020, the authors Pradeep P et al., say that of all the cardiac risk factors, dyslipidemia accounts for 51.2% which is significantly more than Smoking (29.3%) and Obesity (34.1%) [11].

In the study done by Marie Eriksson et al., and published in European Heart Journal, the researchers conclude that an intense lipid-lowering drug treatment contributes to a great reduction in morbidity and mortality associated with CVDs. This study emphasized the importance of surveillance of Cardio Vascular risk factors in the population and concluded that early intervention is the most effective way to combat CVD [12].

In another study, published in JACC in 2019, Srikanth Yandrapalli et al., have concluded that the modifiable atherosclerotic risk factors were more prevalent in younger population and those who had preventive measures are more likely to be benefitted and the researchers say that if there is proper planning and implementation of preventive strategies in these select populations, the burden of CHD will be greatly reduced [13].

Not only the above studies many more studies done in the past have concorded the clear-cut association of hypercholesterolemia/dyslipidiemia as causal factor for young age CVDs and most studies emphasize the role of secondary prevention amongst the selected high-risk population [14-19].

Also, our study results suggest that there is higher prevalence of hypercholesterolemia amongst young males than females. Yuan Lu et al, in his study published in JAMA in 2022 also says that there must be sex-specific strategies in risk factor modification and prevention [20].
In a community-based study amongst adolescents and young adults, it is concluded that high Cardio Vascular Health in ages 18 to 30 years there is very low rates of occurrence of premature CVDs and there is reduced mortality over >30 years of follow-up [21].

Therefore, Cardiovascular Health must be prioritized and it is important to educate everyone regarding the same and it is essential to take active steps in identifying lipid derangements in young adults and aim at early and effective treatment of the same, thus trying to decrease the burden of CHD.

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