

# Study of Serum HDL in Prepubertal and Postmenopausal Women

Dr. Akshay Berad<sup>1</sup>, Dr. Indira Kurane<sup>2\*</sup>

<sup>1</sup>Associate Professor, Dept. of Physiology, RIMS, Adilabad, Telangana, India

<sup>2</sup>Associate Professor, Dept. of Physiology, DY Patil medical college Kolhapur, Maharashtra, India

\*Corresponding author: Dr. Indira Kurane

| Received: 01.01.2019 | Accepted: 08.01.2019 | Published: 19.01.2019

DOI: [10.21276/sijap.2019.2.1.5](https://doi.org/10.21276/sijap.2019.2.1.5)

## Abstract

According to WHO estimates, 16.7 million people around the globe die of cardiovascular disease each year. Economic transition, urbanization, industrialization and globalization bring about life style changes that promote heart disease. High blood pressure, high cholesterol and obesity are likely to become more prevalent in developing countries. Increased energy intake and sedentary lifestyle are also responsible for heart disease. The presence of one or more cardiovascular risk factors like high levels of TC, LDL, TG, glucose, insulin, BMI and a decreased HDL have been found to increase the progression of prehypertension to hypertension. Prehypertension increases the risk of MI and CAD. The present study was undertaken to know serum HDL changes in prepubertal and postmenopausal women. Life style patterns like diet, physical activity were included in study. Total 60 Subjects of age group 8-10Years (prepubertal), 46-55years (postmenopausal) female volunteered for our study. During the study period, BMI, HDL, dietary intake and physical activity and parameters were recorded in all the subjects. HDL is gradually decreased from pre pubertal to post menopausal women. We concluded the presence of Cardio protective HDL is normally higher in prepubertal females. Lower levels of HDL increases CVD risk. This can be attributed mainly to sedentary life style, stress and dietary habits this is seen in post menopausal women.

**Keywords:** Prepubertal, Postmenopausal, HDL.

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## INTRODUCTION

According to WHO estimates, 16.7 million people around the globe die of cardiovascular disease each year [1]. As the total CVD deaths annually, about 8.6 million are of women [2] Heart attack and stroke deaths are responsible for twice as many deaths in women as all cancers combined. Economic transition, urbanization, industrialization and globalization bring about life style changes that promote heart disease. High blood pressure, high cholesterol and obesity are likely to become more prevalent in developing countries. High blood cholesterol is estimated to cause about 4.4million deaths this amounts to 18%of strokes and 56%of global CHD [3]. The WHO predicts that unless action is taken by 2020 there will be 5 million deaths attributable to overweight and obesity ,compared to 3 million now [4]. Increased energy intake and sedentary lifestyle are also responsible for heart disease. 60-85%of the world population from both developed and developing countries are not physically active enough to gain health benefits. Every year more than 2million deaths are attributable to physical inactivity worldwide [5]. With the increase in life expectation to 64 years in females in india, number of women living in India is increasing .so the risk of CAD is more in postmenopausal women [6]. The presence of one or

more cardiovascular risk factors like high levels of TC, LDL, TG, glucose, insulin, BMI and a decreased HDL have been found to increase the progression of prehypertension to hypertension. Prehypertension increases the risk of MI and CAD [7]. Postmenopausal age, unhealthy life style-high energy intake, physical inactivity, raised BMI, all these factors increase the prevalence of CAD in women. In present study 2 groups of women: Prepubertal and Postmenopausal women were selected and evaluated for BMI, diet, physical activity and high density lipoprotein [HDL].

## MATERIALS AND METHODS

The present study was undertaken to know serum HDL changes in prepubertal and postmenopausal women. Life style patterns like diet, physical activity also alters the lipid profile so these parameters were included in study. Healthy subjects of medical college with no evidence of metabolic or endocrinal abnormalities, hypertension or coronary heart disease were selected randomly for pre pubertal post menopausal age group consisting of30 subjects in each group. Total 60 Subjects of age group 8-10Years (prepubertal), 46-55years (postmenopausal) female volunteered for our study. During the study period, anthropometric, serum HDL, dietary intake and

physical activity and parameters were recorded in all the subjects.

### Measurement of biochemical parameter

Venous blood samples (5 ml) were collected from 60 subjects after an overnight fast for determination serum HDL. The serum was separated within 2 hours of blood collection using a centrifuge at 1000 rpm for about 20 minutes at room temperature. Estimation of (High density lipoprotein) HDL was carried out using enzymatic method BMI was calculated (measured as weight in kilograms divided by square of height in meters). Individual diet history was

taken and Calorie intake was calculated depending upon calorific value of some routinely taken cooked preparation. Daily Physical activity history was taken and level of activity was noted. Daily physical activity (minutes/ day). BMI, Calorie intake, physical activity was compared in 2 groups. The data collected in this study was analyzed statistically by computing the descriptive statistics viz mean, standard deviation, comparison is analyzed by using ANOVA. The 'P' value  $\leq 0.05$  was considered as statistically significant.

## RESULTS

**Table-1: Shows the mean, standard deviation, for age difference in 2 age groups**

Age	Pre –pubertal age group [8-10 years]	Post- menopausal age group [47-60 years]
Mean	8.43	53.64
SD	0.76	2.24

**Table-2: Shows the mean, standard deviation, BMI**

BMI	Pre –pubertal age group [8-10 years]	Post- menopausal age group [47-60 years]
Mean	16.28	26.87
SD	1.49	2.94

**Table-3: Shows the mean, standard deviation, P value for HDL**

HDL	Pre pubertal age group 8-10years	Post menopausal age group 46-55	P value
Mean	64.83333333	43.13333333	0.02437296 Significant
SD	3.163595001	6.49526795	

Table-2 shows Post menopausal women were overweight where as Pre pubertal girls were underweight.

In both groups from prepubertal to post menopausal women BMI is gradually increased. HDL is gradually decreased from pre pubertal to post menopausal women (Table-3).

## DISCUSSION

In the present study there was a significant difference in BMI, Estrogen has a beneficial effect on lipid metabolism. Estrogen reduces the degradation of HDL by inhibiting the enzymatic action of lipoprotein lipase. So in the presence of estrogen there will be more amount of HDL in the prepubertal and reproductive women. Ovaries are the only source for estrogen in the women and these ovaries become inactivated and the source of estrogen is reduced in the postmenopausal women. So the postmenopausal women have more degradation of HDL when compare to prepubertal and reproductive women so the HDL levels are decreased in the post menopausal women. We found that prepubertal women had a higher HDL levels compared to post menopausal women. Reproductive women had more physical activity and postmenopausal women had less physical activity. Goswami K and Bandyopadhyay A showed that HDL cholesterol was significantly

decreased in post menopausal women and significant rise in TC and LDL –cholesterol [8]. Our study group being otherwise normal subjects. Assessing the presence of major CVD risk factors in women of particular importance, since it would allow us to promptly identify persons at high risk for development of clinical CVD later in life. We concluded the presence of Cardio protective HDL is normally higher in prepubertal females. Lower levels of HDL increases CVD risk. This can be attributed mainly to sedentary life style, stress and dietary habits this is seen in post menopausal women.

## CONCLUSION

Present study aims to study HDL, BMI, in prepubertal, post menopausal women. We concluded the presence of Cardio protective HDL is normally higher in prepubertal females. Specific evaluation, treatment and prevention strategies must be implemented to reduce the CVD burden and promote health in post menopausal women.

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