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ANTHROPOMETRIC INDICES OF DYSLIPIDEMIC SUBJECTS

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Abstract
Cardiovascular diseases (CVD) are the most prevalent cause of death and disability in both developed as well as developing countries. South Asians around the globe have the highest rates of CVD. Dyslipidemia has been found to be one of the most important contributing factors of CVD. The present study was designed to investigate the ***Anthropometric indices of the dyslipidemic subjects.*** *The study was conducted among sixty dyslipidemic subjects in the age group of 30-60 years. The subjects were selected by purposive sampling method from Kanimangalam, Thrissur District in Kerala. Socio economic status and life style habits of the subjects were collected through interview method. Basic anthropometric measurements like height, weight, body mass index, waist hip ratio and body fat percentage were assessed in all the subjects. The study was found that majority of the dyslipidemic subjects were followed unhealthy life style and suffering over nutrition.*

Key Words: Dyslipidemia, Body Mass Index, Waist Hip Ratio, Body Fat Percentage.

Introduction

Cardiovascular disease (CVD) is the leading cause of death worldwide. Dyslipidemia has been closely linked to the pathophysiology of CVD and is a key independent modifiable risk factor for cardiovascular disease. 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 (Reddy *et al*., 2006). Soysal *et al.* (2005) revealed the increased prevalence of dyslipidemia to be more prevalent in 31-40 year males. It is estimated that by 2020, CVD will be the largest cause of disability and death in India, with 2.6 million Indians predicted to die due to CVD (Goenka *et al.*, 2009).

Anthropometric indices are one of the lifestyle factors that significantly influence dyslipidemia. Body Mass Index (BMI) is notable to identify fat from muscle mass and also fat accumulation (Schneider et al., 2007). Chehrei et al (2007) reported that World Health Organization recommended waist Circumferance (WC) or Waist Hip Ratio (WHR) to measure abdominal fat distribution. There are some studies supporting WHR in comparison with BMI and WC to predict CVD. Since WHR is the most common used index for distribution of central adipose tissue, its application can be beneficial in measuring those with overweight who may be at the risk of coronary artery disease (Cuestas et al., 2007). Obesity typically elevates Very Low Density Lipoprotein (VLDL) and Low Density Lipoprotein (LDL) fractions, increases Triglyceride (TG) levels, lowers High density Lipoprotein (HDL) cholesterol, increases blood pressure, and promotes insulin resistance. Weight loss typically lowers LDLs, TGs, and total cholesterol. HDLs may increase, decrease, or remain the same.

Regular aerobic exercise is an essential lifestyle component for improving/controlling blood lipids. The total amount of physical activity seems to be more important than the intensity to induce beneficial effects on lipoproteins. The greater the exercise volume (and caloric expenditure), the more likely an exerciser will achieve a significant increase in HDL cholesterol. Lower TGs are typically observed with both acute exercise and sustained aerobic exercise training (Durstine et al., 2002). National Cholesterol Education Program III (2001) recommends nutritional intervention, increased exercise/physical activity, and weight loss for many individuals with dyslipidemia.

Keeping all these facts in mind, the investigator conducted the present study "**Anthropometric Indices of Dyslipidemic subjects**" with the following **Objectives,**

- To assess the socio economic status of the dyslipidemic subjects.
- To ascertain the Life style habits of the selected subjects.
- To determine the Anthropometric measurements of the dyslipidemic subjects.

Methodology

Prevalence of coronary risk factors is significantly higher in Kerala than rest of India (Zacharia, 2013). So the study was conducted in Kanimangalam an urban area of Thrissur District in Kerala. Sixty Dyslipidemic subjects in between the age group of 30-60 years were selected purposively for the study. The principal criterion for selection was a total serum cholesterol level range between 200-280 mg/dl. Data pertaining to the present study was collected by interview method. For this an interview schedule was formulated to elicit information from all the subjects on their socio economic status (Modified Kuppusway's Socioeconomic Status Scale, 2014), personal characteristics and life style pattern. General health status of the Dyslipidemic subjects was assessed by the anthropometric measurements with respect to their height, weight, Body Mass

Index/BMI (WHO, 2004), waist hip ratio (Katsilambros, 2011) and Body fat percentage (BF%) (Kowtaluk , 2005) with the help of a HBF – 306 model Omron- body fat monitor. The measurements were calculated and compared with reference standards. All the information were statistically analyzed.

Results and Discussion

1. Socio Economic Background

To analyze the personal characteristics of the subjects, details regarding age, gender, religion, and type of family were examined. Dyslipidaemia showed an increasing trend with age in both male and female subjects. The crude prevalence of Dyslipidaemia differs between the age groups and it was higher in men than in women. From the study it was found that 51.7 per cent of subjects belonged to Christian community and 48.3 per cent of the subjects belonged to Hindu community. The present study showed that majority (86.7%) of the respondents was belonged to nuclear family system.

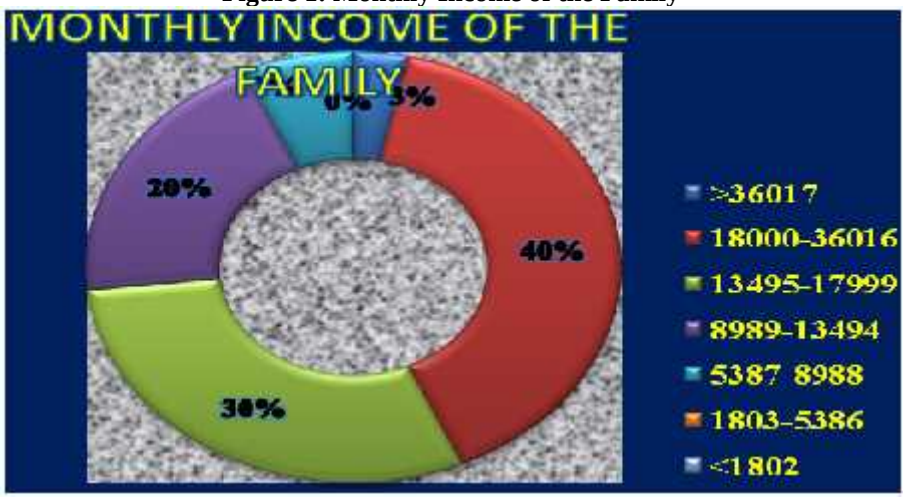
Table 1: General Characteristic of the Subjects

Sex	Age (years)			Total
	30-39	40-49	50-60	
Male	12	14	7	**33 (55)**
Female	5	8	14	**27 (45)**
Total	**17 (28.33)**	**22 (36.67)**	**21 (35)**	**60 (100)**

No. in parenthesis indicates percentage

The literacy status of the respondents revealed that, 6.7 per cent of the more educated respondents had professional qualifications, 8.3 per cent were graduates or post graduate and majority (31.7%) had received high school certificates. Occupation status of the respondents shown that 40.1 per cent were unemployed, 30 per cent had white collar job such as professionals (8.3%), semi professionals (21.7) etc. and 15.2 per cent had blue collar jobs labeled as skilled (10.2%) and semi skilled (5%) workers. On the basis of monthly income 40 per cent of the families were earning from 18000-36016 Rs whereas 30 per cent of them were able to earn 13495-17999 Rs/per month.

Figure 1: Monthly Income of the Family



2. Life Style Pattern of the Subjects

Lifestyle modifications are the first line therapy for dyslipidemia and it also has a critical role in the management of patients with lipid abnormalities as emphasized by the National Cholesterol Education Panel (NCEP, 2002). The present study observed that 60 per cent of the subjects had the sleeping time of 4-6 hours in a day and 66.7% of them were not interested in doing any exercise. Most of the subjects liked to spend their leisure times for reading and some of them liked to get occupied in other activities such as watching TV, cooking, stitching etc. during their free times.

3. Anthropometric Measurements of the Subjects

3.1 Height and Weight of the Subjects

In this study it was found that the average weight of male subject was 76 kg and their height was 168 cm. From the current study it was found that the average height of female subject is 155 cm and the weight was 64 kg.

3.2 Body Mass Index of the Subjects

From table 2 it was cleared that 23.33 per cent of them had normal BMI. Forty three per cent of them were pre obese and 33.34 per cent were suffering obesity. Brown *et al.* (2000) also declared the same, that most of the Dyslipidemic subjects (59.8%) had BMI in the range of 25.00-29.00.

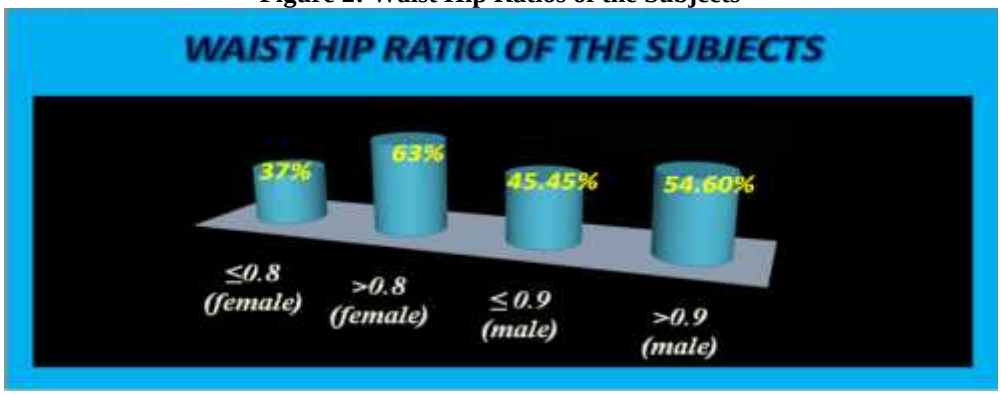
Table 2: Classification of the Subjects according to Body Mass Index

S. No	Criteria	Level	No. of Subjects	Percent
1	**Underweight**	**<18.50**		
	Severe thinness	<16.00	0	0
	Moderate thinness	16.00-16.99		
	Mild thinness	17.00-18.49		
2	**Normal range**	**18.50-24.99**	14	23.33
3	**Over weight**	**≥25.00**		
	Pre – obese	25.00-29.99	26	43.33
	Obese	≥30.00	20	33.34
	Total		**60**	**100**

3.3 Waist Hip Ratio of the Subjects

The results of waist hip ratio revealed that, 54.6 per cent of the total male subject's (>0.9cm) and 63% of the total female subjects (>0.8cm) were suffering from abdominal fat accumulation (figure 3).

Figure 2: Waist Hip Ratios of the Subjects



3.4 Body Fat Percentage (BF %) of the Subjects

According to Kim (2013) high body fat percentage is associated with high cardio metabolic risks regardless of abdominal obesity in normal weigh adult women. From table 3 it was clear that only 11.67 per cent of them were had normal body fat percentage. Fifty eight per cent of the subjects were fall in the category of latent obesity and 30 per cent of them were obese.

Table 3: Body Fat Percentage (BF %) of the Subjects

Body fat per cent				
Criteria	**Male**	**Female**	**Total No. of subjects**	**Percent**
	No. of subjects	**No. of subjects**		
Normal	4	3	7	11.67
Latent obesity	19	16	35	58.33
Obesity	10	8	18	30
Total	**33**	**27**	**60**	**100**

Conclusion

The present investigation can concluded that dyslipidemia is higher in males, significantly increases with age Life style habits and Anthropometric indices among the dyslipidemic subjects was poor, with high rate of nutritional risks. So combination of enhanced physical activity and dietary modifications would help in the management of dyslipidemia and prevention of Cardio vascular diseases (CVD).

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