International Journal of Scientific Engineering and Applied Science (IJSEAS) – Volume-6, Issue-11, November 2020
ISSN: 2395-3470
www.ijseas.com

Prevalence study of hyperlipidemia (*Medo roga*) in Ayurveda Teaching hospital, Borella

A B Dharmarathna[1], W M S S K Kulathunga[2]

[1]M D Scholar, Institute of Indigenous Medicine, University of Colombo, Sri Lanka

(E-mail:drbuddhika.ad@gmail.com)

[2]Senior Lecturer , Institute of Indigenous Medicine, University of Colombo, Sri Lanka

Abstract

Introduction: In globally17.7 million of people died from cardiovascular diseases (CVDs) in 2015(31% of all global deaths).One of the risk factor for this situation is hyperlipidemia. .In addition to that considering all of district in Sri Lanka, highest prevalence of high blood cholesterol was 5% as well as in Colombo district which was 9%. Hyperlipidemia is a disease occurs due to high concentration of lipids in the blood such as cholesterol, triglycerides, LDL (low density lipoprotein), VLDL (very low density lipoprotein). According to Ayurveda *Medo Roga* is the term for hyperlipidemia.

Objective: To identify the prevalence of hyperlipidemia in Ayurveda Teaching hospital, Borella.

Methodology: Hundred cases of both sex and age between 30-80 years were randomly selected from Outdoor Patient Department in Ayurveda Teaching hospital, Borella, Sri Lanka. Information related to socio demographic characteristic as Age, Gender, Religion, Ethnicity, Civil status Occupation, Monthly income, Residential area and Education were gathered through questionnaire. Hyperlipidaemic cases were considered as patients who have total cholesterol level above 240mg/dl and treating with alternative medicine in out of hundred cases.Then calculated the percentage of prevalence and socio demographic characteristics. Statistical analysis were performed using SPSS 17 version.

Result: Most of them were female(70%),Buddhist(68%),Sinhala(84%), married(89%) and 51-65 years of age group(mean age was 56.7). Non employees (69%),upper middle economic group(65%), education level up to ordinary level(41%) and in urban area(64%) were majority of them. Out of all cases 22% were hyperlipidaemic.

Conclusion: The study indicated that the Prevalence study of hyperlipidemia in Ayurveda Teaching hospital, Borella was 22%.It was lower than prevalence of globally and highest

than of Sri Lanka and Colombo. There for large sample study will be important to assess the Prevalence study of hyperlipidemia because of the it is a risk factor for several diseases.

Key words: Hyperlipidemia, Medo roga, Prevalence

Introduction

In globally 17.7 million of people died from cardiovascular diseases(CVDs) in 2015(31% of all global deaths).Of these deaths as estimated 7.4 million were due to coronary artery disease and 6.7 million were due to Stroke. One of the risk factor for this situation is hyperlipidemia.[1].There is a high percentage of known hyperlipidemia patients in Sri Lanka. Hyperlipidemiais an independent risk factor of ischemic heart diseases.There were 91224 hypertensive patients,patietns of ischemic heart disease were 105343 and patients of cerebrovascular disease were 40546 in Sri Lanka 2015 (Annual Health Bulltein,Sri Lanka). Ischaemic heart disease is ranked as the first leading cause of hospitals death in 2015.Also it ranked as the major leading cause of death since 1995[2].

[3]Nearly one fourths of the adults (23.6%) were had raised total cholesterol (≥ 190 mg/dl) in noncommunicable risk factor survey in Sri lanka 2015 . Out of 331 DS areas in Sri Lanka, 80 were selected . Of the 5188 total respondents who participated in the survey.

In addition to that considering all of district in Sri Lanka,highest prevalence of high blood cholesterol in Colombo which is 9%[4]. Hyperlipidaemia is a risk factor for these disease conditions. It can increase the risk of atherosclerosis.Then it can be lead to Angina, heart attack and stroke.

Hyperlipidemia is a disease occurs due to high concentration of lipids [5] and /or lipoproteins in the blood such as cholesterol, triglycerides, LDL (low density lipoprotein),VLDL (very low density lipoprotein).Hyperlipidemia is also classified according to which types of lipids are elevated, that is,hypercholestremia, or elevated levels of lipoproteins may also be classified as a form of hyperlipidemia. Cholesterol is a type of lipid and liver produces it naturally. It's vital for the formation of cell membranes, certain hormones, and vitamin D. So it can't travel through blood on its own. To help transport cholesterol, liver produces lipoproteins, which is made from fat and protein. The two major forms of lipoprotein are low-density lipoprotein (LDL) and high-density lipoprotein (HDL).Low-density lipoprotein (LDL) is often called "bad cholesterol. If levels of LDL cholesterol are too high, it can build up on the walls of arteries, known as cholesterol plaque. This plaque can narrow arteries, limit blood flow, and raise risk of blood clots. If a blood clot blocks an artery in heart or brain, it can cause a heart attack or stroke. High-density lipoprotein (HDL) is called "good cholesterol." It helps return LDL cholesterol to liver to be removed from body. This helps prevent formation of cholesterol plaque. Triglycerides are another type of lipid. While body uses cholesterol to build cells and certain hormones, it uses triglycerides as a source of energy which were stores in fat cells. Lipoproteins also uses to circulate triglycerides through

bloodstream. If regularly eat more calories than body can use, triglyceride levels can get high. This may raise risk of heart disease and stroke [6]

Hyperlipidemias may basically be classified as either familial (also called primary) caused by specific genetic abnormalities, or acquired (also called secondary) when resulting from another underlying disorder that leads to alterations in plasma lipid and lipoprotein metabolism. Familial hypercholesterolemia is an inherited condition that causes high levels of LDL (low density lipoprotein) cholesterol levels beginning at birth, has a 1 in 2 (50 percent) chance to pass on that altered gene to each of his or her children and heart attacks at an early age.

The altered gene(gene mutation) that causes familial hypercholesterolemia is located on chromosome number 19. It contains the information for a protein called LDL receptor that is responsible to clear up LDL from the blood stream. Individuals who are inherits the gene mutation from both parents called homozygotes, have a much more severe form of hypercholesterolemia than heterozygotes [7].

According to Ayurveda, MedoRoga (MedoVruddhi) is the term for hyperlipidemia. This is mainly described by Madhavacharya in his text Madhava Nidhana, addition to that Charakaacharya had described as athisthtaulya in his text book CharakaSanhitha .They are mentioned same theory according to signs and symptoms of hyperlipidemia. Causes were described in Madawaacharya as follows:

Absence of physical activity, sleeping during day, and intake of foods which increase kapha.[8] According to Charaka acharya described as over saturation, intake of heavy, sweet, cold and fatty diet, indulgence in day sleeping and exhilaration, lack of mental worke, family history and genetic defect[9].

In modern medicine Advancing age, Cigarette smoking family history of atherosclerotic cardiovascular disease and hyperlipidemia, Obesity are the risk factors and causes are described as hypothyroidism, Nephritis, Dysgammaglobulinemia, Excessive intake of alcohol, Progestin or anabolic steroid treatment, Cholostatic diseases, Treatment of HIV Infection, Chronic renal failure, Type 2 Diabetes Mellitus, Cushing's syndrome obstructive jaundice, Anorexia nervosa, Excessive alcohol intake, Antihypertensive medication, Corticosteroid therapy, Oral contraceptives, pregnancy,[10] and Psychological stress[11].

Pathogenesis was according to Madhavacharya, increase of kapha make the end product of digestion to become sweet which in turn causes increase of medus(fat).This obstructs the nutrient channels of the remaining tissues depriving them of nutrients. So only fat accumulates in large quantities in the body making the person incapable of all activities. Signs and symptoms of Medoroga were described as difficulty in breathing even on slight excretion, thirst,delusion,sleep,sudden catching of breath,exhaustion,excessive hunger, bad smell of the body,poor physical and sexual capacity.[9] According to Madhavacharya has described as the channels of vata become obstructed by the increased of fat inside the abdomen,because he had mentioned that abdomen and bones are the main depots of fat. Vata then begins to act inside the abdomen, increase the digestive activity, making for voracious hunger and craving for large quantity of food. Agni (Gastric fire) and vata together are very harmful and destroy the body just as the forest fire destroys the forest.[8]

In modern view Hyperlipidemia normally causes no symptoms so it can be unnoticed for several years, but in some cases xanthomata (deposits of yellowish material containing cholesterol in the palms,elbows and the knees),xanthelasmapalpebrarum (yellowish patches under the skin around the eyelids),arcussenilis (gray or white discoloring of the eye's cornea.[12].Complications of hyperlipidemia (According to modern view) Angina, Heart Attack, Stroke, Secondary hyperparathyroidism Impairs bone regeneration and reduce strength of bones.

According to Madhawacharya,"A person is called severely obese when because of excessive increase of fatty and other tissues in the buttock,abdomen, and breast become pendulous and vigor is not in proportion to his body bulk" described as complications[8].

Wholesome and Un Wholesome diet as well as behaviors were described by Charakaacharya as in diet bitter, pungent, astringent taste, prasayika(an inferior cereal), Priyangu, syamaka, yavaka, yava(barley)jurna,kodrava,greengram,kulatha,makustha,adhaki along with patola and amalakifruits.Also gradually increase vigils,sexual intercourse,physical exercise and mental work are beneficial for hyperlipidemia. Oversaturation of heavy,sweet,cold and fatty diet, daysleeping, exhilaration, lake of mental work are causative factors for the hyperlipidemia.[9]

Almonds,Soluble fiber (e.g., from oats, barley, psyllium, okra, eggplant) ,Soy protein(e.g., soy milk, soy meat analogues) sources of plant protein and fiber in the form of dried legumes, fruit and vegetables,fish oil, oat bran, vegetarian diet without dairy foods, eggs, or meat; if egg products are used, they should be egg substitutes or egg whites; if meat or dairy products are consumed, amounts should be restricted. Decreased intake of saturated and trans fats, increased intake of poly and monounsaturated fats,Aerobic regular exercise.[13]

As well as under mental stress, the brain produces the hormones cortisol and adrenaline. The release of these hormones sends signals that increase blood flow to the brain and eventually produces more energy for the body. Specifically, the release of cortisol raises blood-sugar levels for the body's use as energy, as it locks away fat so it's not used during this state as energy. Therefore, as cortisol is released, it raises the body's blood-glucose level, which in turn creates more triglyceride production. Higher triglycerides create higher cholesterol levels. Keeping stress response under control is a great way to manage cholesterol levels for the long term.[14]

Objectives

To identify the prevalence of hyperlipidemia in Ayurveda Teaching hospital, Borella.

Methodology

Hundred cases of both sex and age between 20-80 years were randomly selected from Outdoor Patient Department in Ayurveda Teaching hospital, Borella, Sri Lanka. Information related to socio demographic characteristic as Age, Gender, Religion, Ethnicity, Civil status

Occupation, Monthly income, Residential area and Education were gathered through questionnaire. Pregnant women and those who were mentally or physically unfit to undergo the study were excluded(psychiatric disorders, paralysis, and cancer…). Hyperlipidaemic cases were considered as patients who have total cholesterol level above 240mg/dl and treating with alternative medicine in out of hundred cases.Then calculated the percentage of prevalence and socio demographic characteristics. Statistical analysis were performed using SPSS 17 version. The data are expressed as the 95% confidence intervals (95% CI).

Result

The Socio-demographic profile of the study subjects, including age,Religeon,Ethnicity ,Gender, Residential area,civil status, education, occupation and economical status, and its association with study setting are shown in Figure 2, Table 1.Most of them were female(70%),Buddhist(68%),Sinhala(84%), married(89%), 51-65 years of age group(40%), Non employees (69%),upper middle economic group(65%), education level up to ordinary level(41%) and in urban area(64%) were majority of them. Mean age was 56.7±15.21 of the study subjects.Out of all cases 22% were hyperlipidaemic was shown in Figure 1.As well as Diabetes mellitus(23%), Hypertension27%)and other non communicable diseases(37%) in the study group. As regards the association of socio-demographic factors with hyperlipidaemia in the study setting, significant was found for ethnicity alone.

Table 1: Distribution of socio-demographic profile of study subjects according to study setting.

Socio-demographic factors	Number	Percentage	X^2	P value
Age			2,570[a]	0.463
20-35	14	14%		
36-50	26	26%		
51-65	40	40%		
66-80	20	20%		
Religiom			3.021[a]	0.388
Buddhst	68	68%		
Catholic	19	19%		
Hindu	08	08%		
Islam	05	05%		
Ethnicity			6.575[a]	0.037
Sinhala	84	84%		
Tamil	07	07%		
Muslim	09	09%		
Occupation			0.409[a]	0.415
Yes	31	31%		
No	69	69%		
Residential area			4.560[a]	0.102
Urban	64	64%		
Sub urban	25	25%		
Rural	11	11%		
Gender			1.876[a]	0.171
Male	30	30%		
Female	70	70%		
Marital status			0.105[a]	0.746
Yes	89	89%		
No	11	11%		
Education				
Primary	15	15%	6.284[a]	0.099
Up to O/l	41	41%		
Up to A/L	37	37%		
Tertiary	07	07%		
Economical status			1.614[a]	0.656
Poor	12	12%		
Very poor	11	11%		
Lower middle	65	65%		
Upper middle	12	12%		

Figure 1

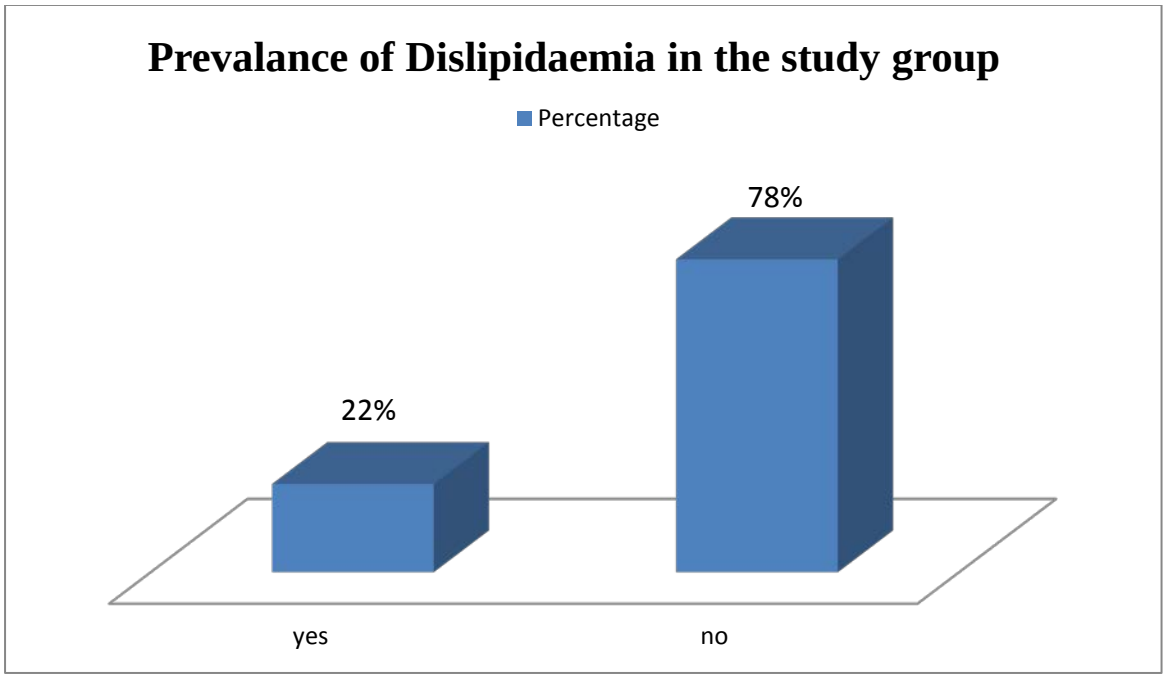
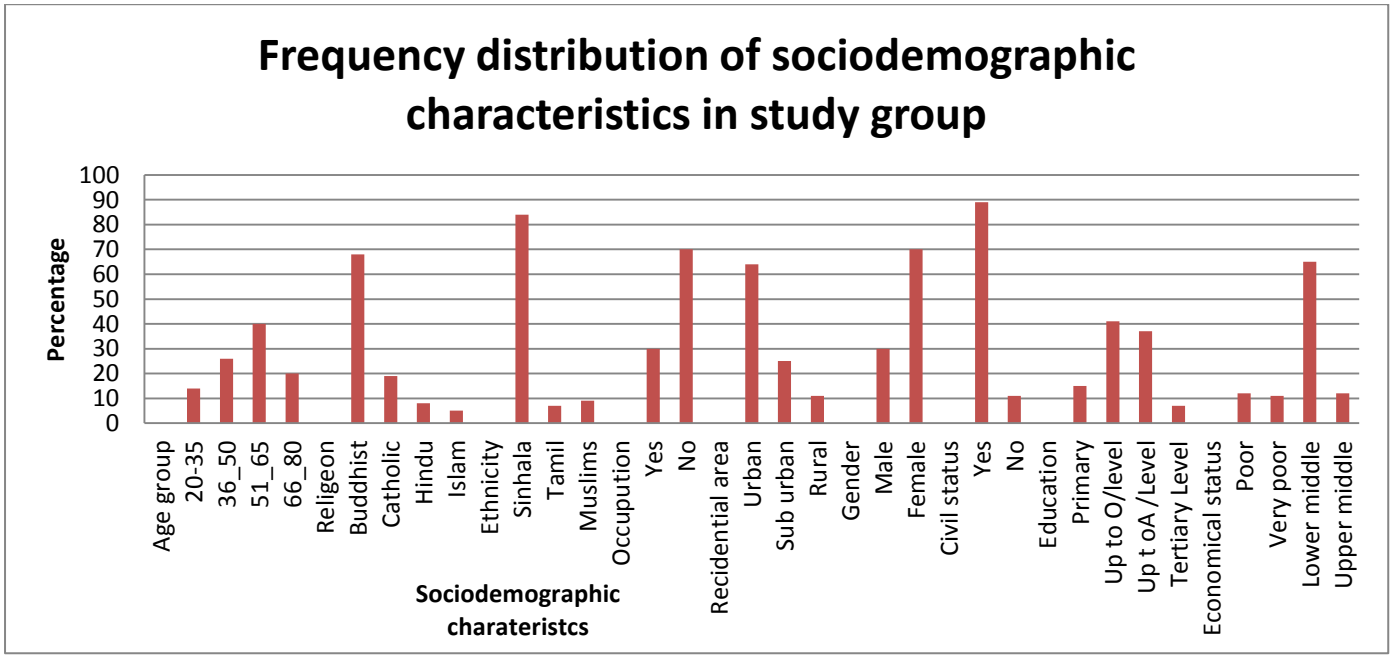


Figure 2



Discussion

Hyperlipidemia may promote vascular endothelial injury, increasing the risk of cardio-cerebrovascular diseases in patients.[15]

The incidence of hyperlipidemia increased with age, high BMI, and less healthy living habits and dietary preferences [16]. The prevalence of dyslipidemia was high among male industrial workers in India with education ,un healthy diet, habits of tobacco [17]

The study indicated that the Prevalence study of hyperlipidemia in Ayurveda Teaching hospital, Borella was 22%.In addition to that considering all of district in Sri Lanka, highest prevalence of high blood cholesterol was 5% as well as in Colombo district which was 9%. It was lower than prevalence of globally and highest than of Sri Lanka and Colombo. Nearly one fourths of the adults (23.6%) were had raised total cholesterol (≥ 190 mg/dl) in noncommunicable risk factor survey in Sri lanka 2015 . Out of 331 DS areas in Sri Lanka, 80 were selected . Of the 5188 total respondents who participated in the survey. Prevalence study of hyperlipidemia in Ayurveda Teaching hospital, Borella was slightly below than prevalence (23.6%) of noncommunicable risk factor survey in Sri lanka 2015 .

Conclusion

The study indicated that the Prevalence study of hyperlipidemia in Ayurveda Teaching hospital, Borella was 22%. It was lower than prevalence of globally and highest than of Sri Lanka and Colombo. There for it is essential to focus urgent lifestyle intervention strategies to prevent and manage this important cardiovascular risk factor.

References

1)http://www.who.int/mediacentre/factsheets/fs317/en/

2)http://www.health.gov.lk/moh_final/english/public/elfinder/files/publications/AHB/2017/AHB%202015.pdf

3) http://www.who.int/ncds/surveillance/steps/STEPS-report-2015-Sri-Lanka.pdf

4) http://www.statistics.gov.lk/social/DHS_2016a/Chapter16.pdf

5)Englishoxfordlivingdictionarieshttps://en.oxforddictionaries.com/definition/us/hyperlipidemia

6) https://www.healthline.com/health/high-cholesterol

7) National Human Genome Research Institute https://www.genome.gov/25520184/learning-about-familial-hypercholesterolemia/#al-3

.8) Singhal,G.D.et al,(2008), Madhawa.Nidhana./MedaRogaNidana/Chapter 34/Chaukhamba Sanskrit pratishan,Delhi

.9) Sharma P.V.(2014),CharakaSanhitha Volume 1,Chaukhamba OrientaliaVaranasi,Ch.Sa./Su/21/3-9,20-34 shloka

10)American Association of Endocrinologist.inc[US]https://www.aace.com/files/lipid-guidelines.pdf

11) https://www.ncbi.nlm.nih.gov/pubmed/18406806

12) https://www.availclinical.com/clinical-trials/high-cholesterol/signs-symptoms/

13) https://www.aafp.org/afp/2010/0501/p1097.html

14) https://www.everydayhealth.com/high-cholesterol/living-with/experts-how-does-stress-contribute-to-cholesterol/

15) Dabei Fan et al(2018),Effect of hyperlipidemia on the incidence of cardio-cerebrovascular events in patients with type 2 diabetes

https://lipidworld.biomedcentral.com/articles/10.1186/s12944-018-0676-x

16)Bingjun Deng,et al,(2012), Prevalence and Determinants of Hyperlipidemia in Moderate Altitude Areas of the Yunnan-Kweichow Plateau in Southwestern China

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3308708/

17) Pratibha Suresh Wankhade et al(2018), Prevalence and risk factors of dyslipidemia among male industrial workers in India

file:///C:/Users/New/Downloads/2473-10508-1-PB.pdf