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Research Article

RELATIONSHIP BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS WITH HYPERLIPIDEMIA (*MEDOROGA*)

Karunaratne HKBMS[1*], Perera KC[2]

[1]MD (Ayu) Scholar, Department of Swasthavritta, Institute of Indigenous Medicine, University of Colombo, Sri Lanka.
[2]Senior Lecturer Grade 1, Department of Swasthavritta, Institute of Indigenous Medicine, University of Colombo, Sri Lanka.

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*Corresponding Author: **Dr. Karunaratne H.K.B.M.S, MD (Ayu) Scholar,**
Department of Swasthavritta, Institute of Indigenous Medicine, University of Colombo, Rajagiriya, Sri Lanka.

ABSTRACT

Hyperlipidemia is an independent risk factor of ischemic heart disease. It leads to angina, heart attack and stroke. Socio-demographic characteristics have close relationship with hyperlipidemia. Identification of the socio-demographic characteristics are essential to prevent hyperlipidemia status of the people.

Objectives of this study were to identify the socio-demographic characteristics which are related hyperlipidemia.

Sixty patients among hyperlipidemic cases from OPD, Swasthavritta clinic, in Ayurveda Teaching Hospital, Borella were randomly selected. They were interviewed for socio-demographic characteristics by using a questionnaire. Statistical analysis were performed using percentages.

There were 95.34% female patients among hypercholesterolemic patients in current study. Majority of Hypertriglyceridemic patients were males (76.47%).

More prevalence of hyperlipidemia was observed in 51-60 years age group (46.67%), sub urban residential area (48.33%), ethnicity of Sinhala (96.67%), married (90%), education up to ordinary level (41.67%), hard working (61.67%), in middle socio-economical status (46.67%) and Buddhist (88.33%).

Men had more prevalence of high LDL levels (88.23%) than women. Majority of males were observed in high VLDL levels (76.47%) and low in HDL levels (23.52 %).

51-60 years age group, sub urban residential area, ethnicity of Sinhala, married, education up to ordinary level, hard working, middle socio-economical status and Buddhist were the major groups among patients in the present study.

High levels of hypertrigliceridemia, LDL >160mg/dl, VLDL>30mg/dl and HDL<40mg/dl were observed in males although females were high in hypercholesterolemia.

Keywords: Ischemic heart disease, Hypertrigliceridemia, Hypercholesterolemia, LDL.

INTRODUCTION

Socio-demographic means sociological and demographic characteristics. Socio-demographic characteristics are age, gender, family status (married, divorced, widowed), financial status and occupational status as well as education level. The educational levels of the participants are considered as a proxy of social status[1].

Diseases can be divided in to two main categories. They are non communicable diseases (NCD) and communicable diseases. Non communicable diseases are mostly the chronic diseases which are not transmitted from person to person. Prevalence and incidence rates of NCD are increasing in both developed and developing countries at present[2]. Therefore they are called as modern epidemics. Diabetes mellitus, hypertension, hyperlipidemia, obesity, ischemic heart disease, cancers, neurological disorders, mental disorders etc are very common non communicable diseases among the people. These diseases are common causes of death around the world.

There is a high percentage of known hyperlipidemic patients in Sri Lanka and as well as all over the world at present. Hyperlipidemia is an independent risk factor of ischemic heart disease. It can increase the risk of atherosclerosis. Then it can be leads to angina, heart attack and stroke[3].

There were 97316 hypertensive patients, 69121 of ischemic heart diseases and 28712 patients of cerebro vascular disease in Sri Lanka in 2009[4]. Socio-demographic characteristics are also having close relationship with hyperlipidemia. Therefore

identification of the socio-demographic factors which are influencing Hyperlipidemia is essential to prevent above morbidities.

The prevalence rate of cardio vascular diseases in Sri Lanka in 2012 was 29.6% respectively. It was the highest prevalence rate among NCDs in Sri Lanka then[5].

Hyperlipidemia, hyperlipoproteinemia, or hyperlipidaemia (in British English) means involves abnormally elevated levels of any or all lipids and/or lipoproteins in the blood[6].

Hyperlipidemia can be described as excessive fat contents in the blood; which can refer to elevated total cholesterol, LDL, VLDL and triglycerides. When only cholesterol is elevated, its' called hypercholesterolemia. This condition is named as "high cholesterol". Low-density lipoprotein (LDL) is considered as bad cholesterol. High-density lipoprotein (HDL) is good cholesterol because it helps to remove LDL cholesterol from blood vessels. High cholesterol levels and high triglyceride levels are considered as risk factors for heart diseases. Some of the cholesterol is from diet and some are created by the body.

Types of hyperlipidemia are as follows:

Hypercholesterolemia – Serum cholesterol level increases.

Hypertriglyceridemia – Serum triglyceride level increases

Increased low density lipids (LDL) level

Increased very low density lipids (VLDL) levels

Lack of physical exercise (Awyayama), sleeping during day time (Diwa swapna), over and usual eating of Shleshma Wardhaka foods (Shleshmalahara Sewana), over and usual eating of sweet foods (Madura Anna Rasa) are the main causes for Medoroga according to Ayurveda[7].

No symptoms or manifest eruptive skin xanthomas in beneath eyes, elbows and knees and in tendons, hepatosplenomegaly, arcus senilis, abdominal pain from pancreatitis (usually at high trigliceride levels), lipemia retinalis, xanthelesma, tubo-eruptive xanthomas and palmar xanthomas are indicated as sign and symptoms of hyperlipidemia in modern. Angina, heart attack, stroke, secondary hyperparathyroidism, impaired bone regeneration and reduce mechanical strength of bones are the complications of hyperlipidemia according to the modern view[8].

Medoroga (Medo Vruddhi) is the Ayurveda term for hyperlipidemia. This disease was described mainly by Madawa Acharya in his text Madhawa Nidana[7]. Charaka Samhitha had described this condition as Athistaulya[9]. However Athistaulya is almost similar to further developed Medoroga according to the described signs and symptoms.

Circulatory channels are blocked by increased Kapha and Medas. Because of that Rasadi other Dhatus cannot be nourished. Medo Dhatu is increasing then. Patient is suffering from lack of strength due to that. Hyper functioning of Agni is resulted by increased Vata. Excessive hunger and thirst will be created in the patient due to that reason.

Mild stage of breathlessness (Kshudra Swasa), excessive thirst (Trusha), misunderstanding (Moha), drowsiness (Swapna), dyspnoea (Krathana) without a cause, weakness of upper and lower limbs (Sadana), hunger (Kshuth) and excessive sweating (Sweda), bad odour of the body(Daurgandya), short life span (Alpa Prana) and weakness in sexual intercourse (Alpa Maithuna) are the sign and symptoms of this disease according to Ayurveda[7] .

Bitter, pungent and astringent taste, foods with dry, hot, sharp, scraping qualities, whole grains (barley and whole oats), vegetables (E.g. spinach, mustard greens, cabbage, carrot and cauliflower), pulses or dried beans (E.g. lentils, mung dal, masoor dal, horse gram and chick peas), fruits (E.g. apples, pears and pineapple), honey, spices (E.g. turmeric, cumin, mustard, asafoetida, curry leaves, ginger, black pepper, clove and cinnamon) are good foods for these patients.

Those who were suffering from hyperlipidemia should avoid excessive sweet, sour, salty and oily foods including rice, wheat, pasta, breads, sweet milk products, cakes, cookies, pastries, chocolates, cheese, ice cream, yogurt, red meat, fried food , grilled food, packaged foods, processed food, restaurant fried foods (E.g. pizza, hot dog ,burger, doughnuts and French fries), leftovers and incompatible combinations of food (E.g. milk with fish, meat, curd, sour fruits)[10].

Psychological stress also a common cause for the increasing lipid levels in blood and it can be lead to various heart disorders including heart attacks[11].

Ayurvedic physicians are treating hyperlipidemic patients at present with using some selected herbal drug formulas according to the basic concepts in Ayurvedic texts and their own experiences.

Aim and objectives:

Aim and objective of this study was to identify the relationship between socio-demographic characteristics with hyperlipidemia (Medoroga).

MATERIALS AND METHODS

Study design:

Sixty patients among hyperlipidemic cases from OPD, Swasthavritta clinic, in Ayurveda Teaching Hospital, Borella were randomly selected. They were interviewed for socio-demographic characteristics by using a questionnaire. When selecting patients simple random sampling method was applied.

Exclusion criteria:

Patients with known heart diseases (E g: angina, MI, congenital heart diseases), severe hypertension (≥160/100Hgmm), severe disease conditions, pregnant women, lactating women and age below 29 and over 64 years were excluded.

Inclusion criteria:

The patients showing serum total cholesterol levels more than 200mg/dl , HDL cholesterol levels less than 40 mg/dl, serum triglyceride levels more than 150mg/dl, LDL cholesterol levels more than 160 mg/dl, VLDL cholesterol levels more than 30 mg/dl in their recent lipid profile were included for this study.

Age 29-64 years and patients of both sex were included.

Socio-demographic characteristics such as gender , age , civil status (unmarried, married, divorced, widowed), financial status -very poor (monthly income of the family is lower than Rs.5000), poor (monthly income Rs.5000-10000), lower middle (monthly income Rs.10000-15000), middle(Rs.15000-20000), upper middle (Rs.20000-25000) and rich(Rs.25000

and above), occupational status (hard working or non hard working), ethnicity, religion and as well as education level (primary, ordinary level, advanced level and degree level) of subjects were recorded by using the questionnaire.

Patients were categorized according to the lipid levels as follows;

Total cholesterol level ≤ 200mg/dl were considered as normal and >200mg/dl were considered as high.

Triglycerides level ≤150mg/dl were considered as normal and >150mg/dl were considered as high.

The LDL≤160mg/dl patients were considered as normal and >160mg/dl were considered as high.

The VLDL ≤30mg/dl were considered as normal and >30mg/dl were considered as high.

The HDL ≥40mg/dl were considered as normal and <40mg/dl HDL were considered as in risk [12].

The written consent was obtained from all selected patients.

Ethical clearance was obtained from IIM, Ethical clearance committee (ERC 14/19).

Statistical analysis were performed using percentages.

RESULTS AND DISCUSSION

Table 1: Socio demographic characteristics of respondents

Characteristics	(N=60)		Male (n=17)		Female (n=43)	
	n	%	n	%	n	%
Age (Years)						
Age 30-40	5	8.33	3	17.64	2	4.65
Age 41-50	19	31.67	4	23.52	15	34.88
Age 51-60	28	46.67	9	52.94	19	44.18
Age 61-70	8	13.33	1	5.88	7	16.27
Residential area						
Urban	22	36.67	5	29.41	17	39.53
Sub urban	29	48.33	11	64.7	18	41.86
Rural	9	15	1	5.9	8	18.6
Ethnicity						
Sinhala	58	96.67	16	94.11	42	97.67
Tamil	2	3.33	1	5.88	1	2.32
Muslims	0	0	0	0	0	0
Burger	0	0	0	0	0	0
Other	0	0	0	0	0	0
Marital status						
Married	54	90	16	94.11	38	88.37
Unmarried	1	1.67	0	0	1	2.32
Widowed	4	6.67	1	5.88	3	6.97
Divorce	1	1.67	0	0	1	2.32
Education						
Primary	11	18.33	2	11.76	9	20.93
Up to O/Level	25	41.67	10	58.82	15	34.88
Up to A/Level	23	38.33	4	23.52	19	44.18
Tertiary Level	1	1.67	1	5.88	0	0
Occupation						
Non Hard working	23	38.33	10	58.82	13	30.23
Hard Working	37	61.67	7	41.17	30	69.76
Socio economical status						
Poor	7	11.67	0	0	7	16.27
Very Poor	0	0	0	0	0	0
Lower Middle	13	21.67	5	29.41	8	18.60
Middle	28	46.67	9	52.94	19	44.18
Upper Middle	0	0	0	0	0	0
Rich	12	20	3	17.64	9	20.93
Religion						
Buddhist	53	88.33	15	88.23	38	88.37
Catholic	5	8.33	1	5.88	4	9.3
Hindu	2	3.33	1	5.88	1	2.32
Other	0	0	0	0	0	0

Table 2: Overall and gender specific prevalence of types of hyperlipidemia

Characteristics	(N=60)		Male (n = 17)		Female (n = 43)	
	n	%	n	%	n	%
Hypercholesterolemia	55	91.67	14	82.35	41	95.34
Hypertrigliceridemia	29	48.33	13	76.47	23	53.48
LDL >160mg/dl	34	56.67	15	88.23	19	44.18
VLDL>30mg/dl	28	46.67	13	76.47	15	34.88
HDL<40mg/dl	10	16.67	4	23.52	6	13.95

More prevalence of hyperlipidemia was observed in 51-60 age group (46.67%), sub urban residential area (48.33%), ethnicity of Sinhala (96.67%), married (90%), education up to ordinary level (41.67%), hard working (61.67%), in middle socio-economical status (46.67%) and Buddhist (88.33%).

High levels of hypertrigliceridemia, LDL level >160mg/dl, VLDL level >30mg/dl and HDL level <40mg/dl were observed in males although females were high in hypercholesterolemia (95.34%).

Men had more prevalence of high LDL levels (88.23%) than women. Majority of males (76.47%) were observed in high VLDL levels and low in HDL levels (23.52%).

DISCUSSION

In the present study hypercholesterolemic females were high in proportion (95.34%).This result is same as the previous study of socio demographic factors associated with multiple cardiovascular risk factors among Malasian adults [Ghazali 2015][13] .

Majority of male respondents had hypertriglyceridemia (76.47%) in present study. Previous study among Malasian adults also observed this result [Ghazali 2015][13] .

In our study 51-60 years age group (46.67%) respondents were high. It is different from the results (18-40 years) of the previous study of socio demographic risk factors of cardiovascular disease in rural Lucknow [Mahmood 2012][14].

Hard working was observed in (61.67%) of respondents in the present study. Physical activity was uncommon in a Kerala study [Thankappan 2010][15]. Sedentary physical activity was observed in 37% of participants in Lucknow study [Mahmood 2012][14].

Previous study among Malaysian adults mentioned married people were high among risk people of cardiovascular disease (CVD) and males were more prevalence to have CVD than females [Ghazali 2015][13]. Current study also observed the same result. Majority of the cases were observed in secondary school level (ordinary level) in both studies.

Lower education and low income were associated with higher levels of triglycerides according to previous study in Australian adults [Kavanagh 2010][16]. Middle socio-economical status (46.67%) was the highest among socio economical stages in present study.

Females had high prevalence of low HDL levels in the study of Australian adults [Kavanagh 2010] [16]. In contrast our study was observed the higher prevalence of males.

The current study indicates that the majority of respondent were from sub urban residential area (48.33%). Expected clustering risk factors was observed with urban residence in the study of Malaysian adults population respectively [Lim 2000][17].

The current study indicates that the majority of respondent were Buddhist (88.33%).

CONCLUSION

51-60 years age group (46.67%), sub urban residential area (48.33%), ethnicity of Sinhala (96.67%), married (90%), education up to ordinary level (41.67%), hard working (61.67%), middle socio-economical status (46.67%) and Buddhist (88.33%) were the major groups among patients in the present study.

High levels of hypertrigliceridemia , LDL level >160mg/dl , VLDL level >30mg/dl and HDL level <40mg/dl were observed in males although females were high in hypercholesterolemia.

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