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A SURVEY STUDY ON DIETARY HABITS IN HYPERLIPIDEMIA PATIENTS

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ABSTRACT

As sequel of ultramodern lifestyle erroneous diet habits lead to many diseases like hyperlipidemia, diabetes, hypertension etc. Hyperlipidemia is a silent menace and a potential risk factor for dreaded diseases like cardiovascular diseases, cerebro-vascular disease, and hypertension. Hence this survey was designed to know the dietary habits among hyperlipidemia patients so that further measures of prevention can be adopted. About 90 patients of Hyperlipidemia belonging to different age groups, gender and socio-economic status were selected based on the fulfillment of diagnostic criteria and their daily diet pattern was assessed through a systematically designed questionnaire. The present survey study reveals that maximum patients consumed *Madhura, Guru, Snigdha, Sheeta ahara*. Further majority of patients regularly consumed non-vegetarian diet, cereals like wheat, rice, milk products, bakery items and fast food which may be considered as causative actors for hyperlipidemia. Hence patients with hyperlipidemia should abstain from these causative factors.

KEYWORDS: Hyperlipidemia, Dietary habits, *Medoroga*, Survey.

INTRODUCTION

युक्ताहार विहारस्य युक्तचेष्टस्य कर्मसु।
युक्तस्वप्नावबोधस्य योगो भवति दुःखहा।। (भगवतगीता 6.17)

Importance of healthy lifestyle in promotion of health and prevention of diseases has been mentioned in ancient Indian scriptures like Bhagavadgeeta. A balanced diet, systematic physical exercises, regular sleep hours, mental calmness, and balance in thoughts and action, practice of yoga regularly keeps an individual away from infirmity and ill health. But presently man is just proceeding in the opposite direction with faulty diet and lifestyle along with ever increasing stress due to modernization. In present competitive era everyone has adapted himself, to the fast life by transforming dietary and lifestyle preferences, causing multitudes of diseases which are popularly referred as 'lifestyle diseases'. Hyperlipidaemia is one factor in metabolic syndrome is a potential risk factor for diseases like cardiovascular diseases, and hypertension. Hence this survey was designed to know the dietary habits among hyperlipidemia patients so that further measures of prevention can be adopted.

MATERIAL AND METHODS

Present study was conducted at Swasthyarakshana OPD of Swasthavritta and Yoga in Ayurvedic wing and OPD of Dept. of Cardiology, in Modern wing of Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi. About 90 patients of Hyperlipidaemia belonging to different age groups, gender and socio-economic status were selected based on the fulfillment of diagnostic criteria and their daily diet pattern was assessed through a systematically designed questionnaire.

Inclusion Criteria

Patients in the age group 20-60 years, fulfilling the following general and diagnostic criteria of Hyperlipidemia, who are willing to give a detailed history were included in the study.

(B) Diagnostic criteria

Patients were diagnosed on the basis of Lipid Profile. Any one or more of the following criteria were selected.

- S. cholesterol (201 mg/dl or more)
- S. Triglycerides (151 mg/dl or more)
- S. LDL (131 mg/dl or more)
- S. VLDL (41 mg/dl or more).

Exclusion Criteria

The patients having serious cardiac disorders like cardiac failure, and major illness like IDDM, untreated thyroid disorders, pregnant females and lactating mothers and renal insufficiency were excluded from the study.

OBSERVATIONS

Among 90 patients of hyperlipidemia this survey study shows that majority were non-vegetarians 52.2% while only 47.8% of patients were vegetarians. Further among the non-vegetarians intake of eggs and meat was more common i.e 82.9%, while only 74.4% consumed fish (Table 1).

Quality of diet: The survey reports *Madhura Rasa* dominant diet (76.7%) followed by *Amla Rasa* dominant diet (45.6%) patients. 25.6% patients were reported to have *Lavan*a rasa and 13.3 % consumed *Katu* and *Tikta Rasa* dominant diet (Table 2). Regarding the quality of diet, majority of patients i.e. 73.3% consumed *Guru* (heavy) diet, followed by 70.0% of patients regularly consuming *Snigdha* (unctuous) and *Sheeta* (cold) dominant diet (Table 3). Further, the maximum patients i.e. 76.7% had the habit of *Adhyashana* (taking food before the digestion of previous food) (Table 4).

Cereals and pulses: Among the cereals majority i.e. 87.8% patients consumed wheat and rice as staple diet. Among pulses 67.8% patients had Bengal gram, followed by 7.8% each of patients with regular intake of Green gram, Black gram and Horse gram respectively (Table 5).

Vegetables and fruits: Maximum patients i.e 90.1% regularly consumed green leafy vegetables, followed by 72.2%, 56.7%, 7.8% consuming roots and tubours, stems and other seasonal vegetables regularly (Table 6). About 57.8% patients regularly consumed bananas while 56.7% patients consumed apples. This was followed by 54.4%, 21.1% of patients consuming mango, grapes and 22.2% patient had other seasonal fruits (Table 7).

Fats and oils: Maximum patients i. e 70.0% regularly consumed milk followed by 64.4% patients regularly consuming paneer. About 61.1%, 50.0% and 46.7% patients regularly consumed ghee, cheese and curd respectively (Table 8). About 67.8% patients consumed sunflower oil, followed by 66.7%, 23.3%, 22.2% and 21.1% patients consumed mustard oil, others oil ground nut oil and coconut oil respectively (Table 9).

Bakery and fast foods: Survey reports about 34.4% patients regularly consumed baked items or fast foods. 33.3 % patients regularly consumed nuts and 31.1% patients regularly consumed frozen desserts like ice-cream etc. (Table 10).

Table 1: Distribution According To Various Nonvegeterian Diet.

Dominant Non-vegetarian food	Total	%
Meat	39	82.9
Fish	35	74.4
Egg	39	82.9

Table 2: Distribution According To *Rasa* Intake.

Dominant Rasa	Total	%
Madhura	69	76.7
Amla	41	45.6
Lavana	23	25.6
Katu	12	13.3
Tikta	12	13.3

Table 3: Distribution According To *Guna* Intake.

Dominant *Guna*	Total	%
Guru	66	73.3
Snigdha	63	70.0
Sheeta	63	70.0

Table 4: Distribution According To Eating Habit

Adhyashana	Total	%
Present	69	76.7
Absent	21	23.3

Table 5: Distribution of According To Intake of Staple Diet

Staple diet	Total	%
Rice	79	87.8
Wheat	79	87.8
Bengal gram	61	67.8
Black gram	7	7.8
Green gram	7	7.8
Horse gram	7	7.8

Table 6: Distribution According To Intake of Vegetables.

Vegetables	Total	%
Green vegetable	55	90.1
Root	65	72.2
Stem	51	56.7
Others seasonal vegetables	60	7.8

Table 7: Distribution According To Intake of Fruits.

Fruits	Total	%
Banana	52	57.8
Grapes	19	21.1
Apple	51	56.7
Mango	49	54.4
Others	20	22.2

Table 8: Distribution According To Intake of Dairy Products

Dairy products	Total	%
Milk	63	70.0
Ghee	55	61.1
Curd	42	46.7
Buttermilk	48	53.3
Cheese	45	50.0
Paneer	58	64.4
Others	27	30.0

Table 9: Distribution According To Intake of Dietary Oil And Fat.

Oils	Total	%
Ground Nut Oil	20	22.2
Coconut Oil	19	21.1
Sunflower Oil	61	67.8
Mustard Oil	60	66.7
Others Oil	21	23.3

Table 10: Distribution According To Intake of Frozen Desert, Bakery Product And Nuts

Items	Total	%
Frozen deserts	28	31.1
Baked/ fast food.	31	34.4
Nuts	30	33.3

DISCUSSION

Hyperlipidemia can be correlated to *Medoroga in Ayurveda*, a disorder dominated by *Medodhatu* due to its abnormal accumulation. It is caused by initial vitiated *Kapha dosha* and vitiation of *Pitta* and *Vata* at later stage in the pathogenesis. The vitiated *Doshas* afflict *Medovaha Srotas* and *Medodhatu* resulting in abnormal accumulation of *Abaddha Apachita Meda*. The study reveals that majority of patients consumed mixed diet, non-vegetarian diet predominantly containing eggs, meat and fish. The research has established excessive consumption of red meat and processed meat with an increased risk of obesity,[1] type 2 diabetes[2], gestational diabetes, CVD, etc.[3] According to *Ayurveda* also *Mamsa* is

considered as the best for *Brimhana*.[4] *Aja Mamsa* (goat's meat) is *Madhura*, *Sheeta Virya*, *Guru* and *Brimhana*, *Varaha Mamsa* (pork) is *Snigdha*, *Guru*, *Brimhana* in nature.[5] It is also known to contain *Vasa* which being qualitatively similar to *Meda* results in *MedoVriddhi*. In study done at Oxford also revealed both meat and egg consumption were positively associated with total-cholesterol concentration in both men and women.[6]

Regarding the influence of *Rasa and Guna* in diet the present study shows that majority consumed *Madhura Rasa* dominant diet, followed by *Amla Rasa* dominant diet. *Madhura Rasa* is *Snigdha*, *Sheeta* and *Guru* in nature and is known to increase *Kapha Dosha* and all the *Dhatus* including *Meda*. The excessive use results in vitiation of *Kapha Dosha* producing *Sthaulya*, *Alasya*, *Gaurava* and *Medoroga*. *Atankadarpana* commentary on *Madhavanidana* also states same thing i.e *Madhurannarasa Snehatmedah Pravardayet*. This also coincides with *Sushruta*, *Charaka* and *Dalhana's* commentary regarding the convertibility of sweet tasting substances in fat leading to conditions as *Sthaulya* (adiposity/corpulence/obesity).[7] Over-indulgence in *Madhurarasa* predominant *Aaharadravya* like *Dugdhavikruti* (Paneer, chesse, butteretc.), Milk shake, potato, rice, chocolates, sabudana, fruit salad, ice cream, sweets etc. result in the production of *Sleshma*. Instead of *Madhura Rasa Dravya* potential to be the source of *Bala* or *Karmasadhanashakti*, leads to *Brihmana* when consumed in excess quantity, they get converted to *Sneha* (unctuousness) and *Medas*. Excess *Madhura Rasa* causes vitiation of *Kapha* and formation of *Ama* due to *Dhatvagni Mandata*, this also results in *Niruddha* or blocking and *Avarana* of *Dhatumargas* (the channels of distribution of nutrients) leading to *Vata Prakopa*.

In this study *Guru, Snigdha* and *sheeta Guna* dominant diet was consumed by majority of patients. *Kapha* and *Meda* are both Guru and *Snigdha* in nature due to similarity of attributes they result in a direct increase in *Kapha Dosha* and *MedoDhatu*. *Medas* is body tissue predominant in *Prithvi* and *Aap*(jal/ water) mahabhuta, even Guru (heavy), *Sheeta* (cold), *Snigdha* (unctuous) food are dominant in these Mahabhutas. Therefore excess consumption of food rich in above said *Guna* result in excessive nourishment of *Medas*, further leading to *Medo Roga* or hyperlipidemia.

Regarding the Dietary Habit, majority of patients indulged in *Adhyashana* which eventually causes *Agni Dushti*[8], *Amadosha* and critical diseases[9] is the key to the pathogenesis of hyperlipidaemia. The meals taken without proper digestion of previous meal is called *Adhyashana*. As per modern also the food taken before complete catabolism of

previous food leads to high blood sugar, which ultimately causes fat accumulation and impair lipid metabolism.

Regarding Dietary components, the present study reveals that majority of patients consumed wheat and rice regularly among **cereals**. *Godhuma* or wheat is *Madhura*, *Sheeta*, *Brimhana*, *Snigdha*, *Guru* in nature.[10] *Rice* (Shali) has *Sheeta Virya*, *Madhura Vipaka*, and is *Snigdha* and *Brimhana* in nature.[11] Thus they enhance *Kapha Dosha* and *Meda Dhatu* by *Guna Samanya* principle. Wheat and rice are both main sources of carbohydrates, high in glycaemic index. The glycemic index (GI) ranks foods based on rise in blood glucose further lead to increase of fat. A high glycemic load (GL) means increased consumption of articles with high GI results in Medoroga.[12] Dietary GL is more strongly associated with higher fasting triglycerides and lower HDL-C levels compared with GI.[13] Also several studies suggest that a high dietary glycemic load from refined carbohydrates enhance the risk of CHD.[14] Among **pulses** maximum patients consumed Bengal gram, followed by Green gram, Black gram and horse gram respectively. Among **vegetables** majority regularly consumed green leafy vegetables, followed by roots and tuber specially potatoes. Among **fruits** maximum patients regularly consumed bananas and apples. Ripe Banana is *Madhura*, *Sheeta*, *Snigdha* and *Guru* in nature causing a direct increase in *Kapha Dosha* and *Medo Dhatu* due to similarity in property.

Intake of dairy product and oil

Among **dairy products** majority of patients regularly consumed milk, followed by intake of paneer, ghee, buttermilk, cheese and curd respectively. This study shows high intake of dairy products increase high fat or lipid accumulation. Milk fat has often been associated with CHD, due to high cholesterol content and fatty acids. But still milk fat in causation of CHD only due to the fatty acid composition and cholesterol content. On an average 2.8 and 1.9 mg/g cholesterol is present in cow and buffalo milk. About 10-14% of dietary cholesterol i.e only 20-40 mg cholesterol will be absorbed from 50 gm of dietary milk fat in human beings. About 1-4 gm cholesterol is synthesized by the body which is much higher than the amounts absorbed from the diet. About 24-28% Palmitic acid, 13-14 % myristic acid and 11-12 % stearic acid are chief saturated fatty acids in milk. Oleic acid (23-28%) is the major unsaturated fatty acid present in Milk, it has high proportion of short and medium chain saturated fatty acids, that do not increase serum cholesterol levels, nor does stearic acid. Only palmitic acid has some effect. An extra consumption of energy, leads to excessive weight,

which is one of the major causes of changed cholesterol metabolism and atherosclerosis. Certainly diet containing required quantities of calorie and vital nutrients, is preventive against high mortality from atherosclerosis.[15]

Maximum patients consumed sunflower oil, followed by mustard oil, ground nut oil and coconut oil. Soybean and sunflower oils are rich in polyunsaturated fat, hence can be considered that patients consumed healthier oil, while very less patients consumed coconut, palm oil that are high in saturated fats. High consumption of saturated fats causes increase LDL concentration[16] and other risk markers of coronary heart disease.[17] About 34.4% patients regularly consumed baked items or fast foods. 31.1% patients regularly consumed frozen desserts like ice-cream etc. Fast foods like deep fried foods and commercial bakery products are rich in carbohydrates and trans fats. Excess consumption of carbohydrates and trans fats results in increased levels of triglycerides in the blood, low HDL, and may shift the LDL particle distribution pattern into unhealthy atherogenic. Numerous studies[18] show relation between intake of large quantities of trans fat and coronary heart disease and possibly some other diseases.

CONCLUSION

Hyperlipidemia is the most important risk factor for atherosclerosis, which is the major cause of cardiovascular diseases. Asians around the globe have the highest rates of Coronary Artery Disease (CAD). In prevention and management of Hyperlipidemia dietary modifications are highly essential. The present survey study reveals that maximum patients consumed *Madhura, Guru, Snigdha, Sheeta ahara*. Further majority of patients regularly consumed non-vegetarian diet, cereals like wheat, rice, milk products, bakery items and fast food which may be considered as causative actors for hyperlipidemia. Hence patients with hyperlipidemia should abstain from these causative factors.

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