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DEMOGRAPHIC STUDY OF MALE SUBJECTS AT AN INCREASED RISK OF CORONARY HEART DISEASE

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ABSTRACT

Ninety at risk Coronary heart diseased males aged 40 -50 years, free from serious complications were selected. The major risk factors observed among the subjects were hypercholesterolemia, hypertriglyceridemia and hypertension. General information regarding age, family type and size, education, occupation, income, medical information and lifestyle aspects of all subjects was recorded. The required data was collected through personal interview technique using the specially structured schedule. It was found that majority of the subjects were between 45-50 years and were from service class. 78 percent of them did walking for 30-45 minutes and 41 percent slept more than 6 hours in a day. Obesity was found to be major risk factor accounting to 99 percent of the subjects. Sedentary lifestyle, inadequate sleep hours and stress had a strong association with increased incidence of CHD. Family history of hypertension, hypercholesterolemia, obesity and diabetes was highly prevalent among the subjects.

KEY WORDS

Hypertriglyceridemia and Hypertension.

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INTRODUCTION

Coronary Heart Disease is one of the major causes of mortality in population of both developed as well as developing countries. Cardiovascular disease now ranks as the world's top cause of death, causing one third of all deaths globally. Heart disease can no longer be seen as the problem of overworked, overweight middle-aged men in developed countries. In today's world, women and children too are at risk. The WHO has predicted that by the year 2030,

cardiovascular disease will remain the leading cause of death, affecting approximately 23.6 million people around the World. The WHO also estimated that by 2015, half of all deaths in India are likely to be caused by CHD[1]. Major risk factors for CHD are high LDL cholesterol, low HDL cholesterol, hypertension, diabetes mellitus, improper diet, sedentary lifestyle, obesity, physical inactivity, cigarette smoking etc. leading to hypercholesterolemia and hypertriglyceridemia. An observational study showed that total cholesterol (≥ 200 mg/dl) was associated with increased long-term cardiovascular mortality in Indian CHD patient[2]. The projected increase in CHD will be economically disastrous and creating adequate facilities for millions of new heart disease and stroke patients would be beyond the abilities of most developing countries. Thus, there is increasing emphasis on research to develop an understanding of the causes of chronic diseases as well as action of modulating factors as a basis for prevention, which is definite means of disease control. There have been intensive efforts to develop new and potent procedures to reduce risk factors for CHD. Two general strategies have been pursued to achieve this goal: Life style intervention including diet modification and exercise and second is pharmacologic therapy. In a longitudinal study of among 161, 808 women aged 50 to 79 years reported that 11% of women were found to be at high risk, 72% were at risk, and 4% were at optimal rise[3]. In a study aimed to assess the incidence of CHD risk factors and cardiovascular risk in 109 physical workers and 123 managers in Poland, In another study it was found that the factors that turned out to be the most common in the managers were obesity, hypertension, and elevated levels of blood glucose and LDL, whereas cigarette smoking, premature CHD in the family and a high level of fibrinogen were more common in physical workers[4]. Results showed very high cardiovascular risk in 35% of managers and 16% of physical workers.

MATERIALS AND METHODOLOGY

The criteria used for selection of the subjects were that the subjects should be male aged between 40-50 years and at risk of CHD (TG levels ≥ 160 mg/dl and/or total cholesterol levels ≥ 200mg/dl), but free from serious complications.

Development and Pre-Testing of Interview Schedule/ Questionnaire

An open ended preliminary interview schedule was drafted to elicit information pertaining to general information, family history of the heart disease, lifestyle, physical activity, onset of CHD, complications, etc. of the subjects so as to investigate their base line information for selecting samples for the further experiment.

The preliminary interview schedule was pre tested on five at risk CHD subjects so as to test the validity and suitability of the interview schedule. Thereafter, necessary modifications were incorporated. The modified questionnaire was used in the present study. These five subjects were not included in the study.

Collection of Data

Data was collected personally by interviewing the subjects and filled accordingly in the interview schedule. Demographic information consisted of general, occupational, medical, lifestyle information etc.

General information

The required data was collected through personal interview technique using the specially structured schedule. The information was collected by the interview schedule pertaining to age, qualifications, type of family, number of family members, occupation, total monthly income, etc. The subject's willingness to take part in the supplementation trial was also ascertained.

Occupational information

Respondent's occupation, working hours, mode of communication etc. was recorded.

Lifestyle information

Activity pattern of the subjects was recorded from their daily routine, and their involvement in other activities like time spent in recreational activities (watching T.V., hobbies, reading etc.). The type of job, working hours, duration of sleep and any kind of physical exercise was recorded and analyzed.

Medical information

Information related to etiology, onset of disease, common symptoms experienced, family history of disease was recorded.

Statistical analysis included percentages of the selected parameters.

RESULTS AND DISCUSSION

Demographic Information of the Subjects

General information of the subjects

General information of the subjects is given in the Table No.1.

Age

The selected 90 at risk CHD males were in the age group of 40-50 yrs. It was observed that 42 percent of the subjects were in the age group 40-45 yrs, while rest of the subjects i.e. 58 percent was in the age group 45-50 yrs. In another study also it was seen that age is a significant predictor of cholesterol levels and it was also seen that across life span BMI, cholesterol and glucose levels increased with age[5].

Religion

It was observed in the present study that majority of the subjects were Hindu 60 and 40 percent were Sikh. However, religion did not have any role in the incidence of CHD[6].

Educational qualifications

The present study revealed that percentage of the subjects studied up to matric, higher secondary, graduate, and post graduate were 40, 28, 18 and 14 percent respectively. According to new international data, highly educated men and women in US have a lower BMI than their less educated counterparts. Conversely highly educated men and women in poor countries, where malnutrition is prevalent, tend to have higher BMI than less educated people[7]. India has the literacy rate of 65.38 of which 75.96 and 54.28 percent males and females respectively were literate.

Family type and size

Majority of the subjects i.e. 79 per cent respectively belonged to nuclear families. Further it was observed that 12, 82 and 8 percent of the subjects were in category of 2-4, 4-6 members and >6 respectively.

Marital Status

It was found that in the present study i.e. 100 per cent of the subjects were married.

Monthly income

As depicted in Table No.1, it was observed that 8 subjects i.e. 9 percent had monthly income of Rs.10, 000 – 20,000/-. Further it was also observed that 9 percent of subjects had monthly income between Rs.20, 000-30,000, whereas 74 subjects (82 percent) had monthly income above 30,000/-.

The data also revealed that majority of the subjects i.e. 63 percent had per capita monthly income and more than >8000/-.In another study it was seen that higher socio- economic groups had a higher prevalence of CHD than lower socio-economic group[8].

Family liability

Of the total subjects 20 percent subjects had dependable elders in their family and 30 percent subjects of E_1, E_2 and C group had a liability of education of children. Further it was observed that 18 percent of subjects had liability of loans and 20 percent of subjects had liability of marriage of kids. From the above findings it was indicated that majority of the subjects belonged to middle socioeconomic group. Also in a study it was found that mental tension had strong association with increased incidence of CHD[9].

Occupation related information

Subjects' occupation

It was seen in Table No.2 that the majority of the subjects i.e. 80 per cent in were involved in service as their occupation whereas rest of the subjects were in business.

Nature of work

It was observed that 59 subjects i.e. 66 percent were involved in desk work, whereas 8 percent were involved in touring job. Furthermore 8 percent were engaged in heavy work and only 17 subjects i.e. 19 percent were into field work. It was further seen that 87 percent of the subjects used to bring their office work sometimes and only 6 percent subjects used to bring their office work very often at home. It was also observed that majority of the subjects i.e. 62 percent used to commute by scooter and 27 percent by car to their work place. However, only a small

percentage of the subjects i.e. 11 percent used bicycle to commute. Similar findings were seen in another study where it was concluded that major job responsibility of the subjects was deskwork and the lack of exercise in their daily routine which contributed to increased incidence of CHD[10].

Decision maker at office

The present study indicated that 91percent subjects used to follow decisions of their seniors at their work place. Furthermore it was seen that, majority of the subjects i.e. 74 had working hours i.e. <8 hours whereas 22 percent of the subjects used to work for >8 hrs. Thus, it was concluded that the subjects lead a stressful life and psycho-social stress is an important risk factor in causation of heart attack. Also stress leads to release of a hormone adrenaline which causes the heart to beat faster, the blood pressure to go up, the muscle to become tense and the arteries to go in spasm leading to CHD. Another study reported that the incidence of the disease is higher in the high-income groups than in the low income group, in Delhi. She further reported that the percentage of CVD prevalence was also higher in professional and managerial class[11].

Family related information of the subjects (Table No.3) Cordial home environment and satisfying relationships with the family members is an important predictor of an individual's health and hostility.

Decision maker at home

It was seen in the present study that major decisions pertaining to the household affairs were majorly made by wives, in 56 percent of families. However, 12 percent of the families had parents as the decision makers.

Relationship with the family

It was inferred from the data collected in the present study that 60 (67 percent) subjects shared good relations with immediate family members, while rest had normal relationships.

Outings with the family

The information recorded revealed that majority of subjects i.e. 60 percent of the subjects rarely goes for outings with their family members.

Participation in household activities

Sharing responsibilities, duties and spare time with the family helps to strengthen family bonds and reduce mental tension. Results collected from the present study revealed that 58 percent of the subjects never participated in household activities whereas 16 percent often participated.

Lifestyle related information

Physical exercise

As seen in Table No.4, data revealed that majority of the subject i.e. 60 percent of subjects performed physical exercise for 30-45 minutes. Walking was the most common physical exercise adopted by 78 percent of subject. Physical activity is one of the main risk factors which increased individual risks to cardiovascular diseases and 30 minutes of daily exercise was necessary for basic level of fitness. It was reported that 120 to 150 minutes per week of moderate-intensity activity could reduce the risk of development of metabolic syndrome and its individual components (e.g., abdominal adiposity, High BP, low HDL cholesterol, high triglycerides, or high glucose)[12].

Relaxation techniques

It was observed in the present study that watching television was the major mode of relaxation adopted by 42 percent of the subjects, while reading newspapers was one of the most popular ways of relaxation among 12 percent of the subjects. Very few subjects used to read magazines i.e. 6 percent. It was observed that 12 percent of subjects of all performed yoga or meditation as a mode of relaxation. In a research conducted by Temple University on elderly women reported that a nine week yoga programme helped to improve walking speed among subjects[1].

Sleep hours

It was observed that 41 percent of subjects used to sleep for>6 hours, whereas 23 percent of the subjects used to sleep for < 6 hours. Further, only 7 percent subjects used to sleep for >8 hours. Many studies conducted earlier had proven that the brain without adequate sleep and rest cannot maintain biochemical balances needed for effective functioning of heart as well as other organs of the body. Also it was found

out that inadequate sleep hours increased incidence of CHD[13].

Dining out frequency

The data revealed that majority of the subjects i.e. 34 percent of participants used to dine out occasionally, whereas 27 percent subjects used to go once a month for dining out respectively. Thus it could be concluded that the majority of the subjects of all were fond of dining out as they felt relaxed after eating food outside. Each dietary factor has multiple influences; e.g., preferences for portion size were associated with BMI, socioeconomic status, eating in fast food restaurants, and television watching. Portion sizes are larger at fast food restaurants than at home or at other restaurants[14].

Medical history of the Subjects (Table No.5)

Family history

Majority of the subjects i.e. 60 percent were having positive family history of any kind of disease which had a direct relationship with the occurrence of CHD. It was observed that there was no family history among 40 percent of the subjects. Further, the data revealed that the family history among the subjects were hypercholesterolemia, hypertension and diabetes in the value being 8, 11 and 8respectively in all the subjects. However, family history of heart attack was observed in few subjects i.e. 6 percent. In a study conducted it was concluded that family history of hypertension, hypercholesterolemia, and hypertriglyceridemia was prevalent among CHD patients[13]. Parental history of premature CHD is associated with increased burden of atherosclerosis in the coronary arteries and the abdominal aorta. It was also found that family history of early-onset sudden cardiac death in a first-degree relative is associated with a >2-foldhigher risk for sudden cardiac death in offspring on the basis of available case-control studies[14].

Risk factors, duration of disease and intake of medicines

It was observed in the present study that 63 percent of the subjects were hypercholesterolemic, which could be a major risk factor for CHD. It was also seen that heart attack, hypertension, diabetes and obesity were also prevalent among the subjects. The data revealed that 17percent of subjects had disease duration of more than one year, whereas 61percent subjects had 6-12 months of disease duration. Further it was observed that 70 percent of subjects were taking medicines for elevated serum cholesterol levels as described by a physician. The other reason for taking medicines was hypertension in 18 percent subjects followed by diabetes in 14 percent subjects. Also in another study it was concluded that smoking, hypertension and diabetes were the common risk factors among patients with CHD[15].

Table No.1: General Information of the Subjects (N=90)

S.No	Variables	Total (N=90)
1	**Age (years)**	
	40-45	38 (42)
	45-50	52 (58)
2	**Religion**	
	Hindu	54 (60)
	Sikh	36 (40)
3	**Education**	
	Matric	36 (40)
	Higher Secondary	25 (28)
	Graduation	16 (18)
	Post Graduation	13 (14)
4	**Family Type**	
	Nuclear	71(79)
	Joint	19 (21)
5	**Family size**	
	2-4	11 (12)
	4-6	74 (82)
	>6	7 (8)
6	**Marital Status**	
	Married	90 (100)
	Unmarried	----
7	**Total monthly income (Rs.)**	
	10,000-20,000	8(9)
	20,000-30,000	8(9)
	>30,000	74 (82)
8	**Per Capita income (Rs.)**	
	<4000	6 (7)
	4000-8000	18 (20)
	>8000	66 (63)
9	***Family Liabilities**	
	Loans	16 (18)
	Any dependable elder	19 (20)
	Marriage of kids	18 (20)
	Education of Children	28 (30)
	None	10 (11)

Figures in parenthesis indicate percentages
*Multiple responses

Table No.2: Occupational Related Information (N=90)

S.No	Variables	Total (N=90)
1	**Respondents Occupation**	
	Business	18 (20)
	Service	72 (80)
2	**Nature of work**	
	Field	17 (19)
	Desk	59 (66)
	Heavy	7 (8)
	Touring	7 (8)
3	**Working hrs.**	
	>6	3 (33)
	<8	67 (74)
	>8	20 (22)
4	**Mode of Communication**	
	Scooter	56 (62)
	Car	24 (27)
	Bicycle	10 (11)
5	**Carrying Office work at home**	
	Sometimes	78 (87)
	Often	5 (6)
	No	7 (8)
6	**Decision maker**	
	Yourself	8 (9)
	Your Senior	82 (91)

Figures in parenthesis indicate percentages

Table No.3: Family related information of the subjects (N=90)

S.No	Variables	Total (N=90)
1	**Decision maker at home**	
	Self	29 (32)
	Wife	50 (56)
	Parents	11(12)
2	**Relation with family**	
	Good	60 (67)
	Normal	30 (33)
3	**Outing with family members**	
	Sometimes	18 (20)
	Rarely	54 (60)
	Never	18 (20)
4	**Involvement in household activities**	
	Often	14 (16)
	Sometimes	24 (27)
	Never	52 (58)

Figures in parenthesis indicate percentages

Table No.4: Life Style Related Information (N=90)

S.No	Variables	Total (N=90)
1	**Types of Physical Activity**	
	Walking	70 (78)
	Jogging	5 (6)
	Gymnasium	
	Exercise	15 (17)
2	**Duration/time(mins)**	
	<30	9 (10)
	30	19 (21)
	30-45	55 (60)
	45-60	7 (8)
3	**Frequency**	
	Daily	44 (49)
	Alternate days	28 (31)
	Weekly	12 (13)
	Occasionally	6 (7)
4	***Relaxation technique**	
	Listening to Music	15 (17)
	Watching T.V.	38 (42)
	Reading :Magazine	5 (6)
	Newspaper	11 (12)
	Books	5 (6)
	Meditation/Yoga	11 (12)
	Any other	5 (6)
5	**Time spent on Relaxation /day (mins)**	
	30-45	60 (67)
	45-60	19 (21)
	60-75	7 (80)
	>75	4 (4)
6	**Frequency of Relaxation**	
	Daily	57 (63)
	Alternate days	24 (27)
	Weekly	9 (10)
7	**Sleep Hours**	
	<6	21 (23)
	>6	37 (41)
	<8	26 (29)
	>8	6 (7)
8	**Frequency of dining out**	
	Once a week	12 (13)
	Fortnightly	23 (26)
	Monthly	23(27)
	Occasionally	30 (34)

Figures in parenthesis indicate percentages, *Multiple responses

Table No.5: Medical History of the Subjects (N=90)

S.No	Variables	Total (N=90)
1	**Family history**	
	No	36 (40)
	Yes	54 (60)
2	***Type of Family history**	
	Diabetes	7 (8)
	Heart attack	5 (6)
	Hypertension	10 (11)
	Obesity	3 (3)
	Hypercholesterolemia	7 (8)
	Depression	3 (3)
3	***Risk Factors of Subjects**	
	Diabetes	15 (17)
	Hypertension	15 (17)
	Obesity	89 (99)
	Depression	9 (10)
	Hypercholesterolemia	57 (63)
4	**Duration of disease**	
	<6 months	11 (12)
	6-12 months	55 (61)
	>1 year	15 (17)
5	**Taking Medicine**	
	Yes	63 (70)
	No	27 (30)
6	***Reason for taking Medicine**	
	Diabetes	13 (14)
	Hypertension	16 (18)
	Hypercholesterolemia	33 (37)
7	**Do you go for Medical Check Up**	
	Yes	84 (93)
	No	6 (7)
8	***Frequency**	
	Fortnightly	9 (10)
	Once a Month	40 (44)
	Six Monthly	29 (32)
	Once a Year	7 (8)
9	**Intake of vitamin mineral supplement**	
	Yes	25 (28)
	No	65 (72)

Figures in parenthesis indicate percentages

*Multiple responses

CONCLUSION

Sedentary lifestyle, inadequate sleep hours and stress had a strong association with increased incidence of CHD. Family history of hypertension, hypercholesterolemia, obesity and diabetes was highly prevalent among the subjects. Thus therapeutic lifestyle change is recommended which along with dietary modifications, includes regular exercise for 30 minutes a day for basic level of fitness. As physical activity reduces total cholesterol, triglycerides and fibrogen in the blood, increases HDL-C and lowers systolic and diastolic BP. Regular health checkups, for identification and estimation of the risk factors especially after the age of 40 years should be done regularly. It is advisable to maintain ideal body weight and follow healthy active lifestyle.

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CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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