

Original Research Article

## To Assess and Correlate the Nutrients Intake by Cardiac Patients

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### ABSTRACT

Cardiovascular disease today is one of the most leading cause of mortality in both developed and developing countries. The incidence of hypertension, heart attack and atherosclerosis has increased multi-fold. Today, life is a race in which each person tries to compete with other in terms of wealth, status, success, reputation and several such ideals through fair and unfair means. This accompanying tension and worries, the craving for the cigarette, this compelling peg, the leisurely or hectic made of travel and overweight, all drag the person towards a disease. The present study was conducted to know the prevalence of CVD between male and females and major risk factor contributing to high prevalence. Multistage stratified systematic sampling techniques were used for selecting 100 samples and an interview schedule was evolved to collect the information regarding socioeconomic profile, dietary pattern and specific information regarding this disease. In this study we found the consumption of high fat diet was revealed as the major contribution by cause of CHD. The mean BMI significant and positively correlated with Vitamin C among the male CHD patients whereas in significant and positively correlated with Vitamin C among female CHD patients. No significant differences regarding mean nutrient intake of calories, protein, calcium, vitamin A, were observed in this study.

**Key words:** Cardio Vascular Heart Disease (CHD), Basal Metabolic Rate (BMR).

### INTRODUCTION

Cardiovascular Heart Disease (CHD) is the leading cause of death worldwide. This disease is decreasing in many developed countries. However coronary disease is increasing in many developed or transitional countries like India. 80% of all deaths in the world occur due to heart disease, which covers most countries in Asia. A recent study predicted that 60% of all patients with heart disease in 2010 will be Indians. World Health Organization (WHO) has drawn attention to the fact that CHD is our modern "EPIDEMIC". The prevalence of chronic disease is showing an upward trend in most

countries and for several cause appears to be unhealthy life style and consumption pattern consisting of high fat diet with little whole grains, fruits and vegetables and smoking, mental stress and lack of physical exercise. The other major cause may be increased life expectancy resulting in a greater number of a people are living to older age and are at greater risk to chronic disease of various kinds. The WHO expert group examined data from 10 western populations, the percentage of body fat and risk factors of cardiovascular disease are higher among Asian Population. <sup>(1)</sup> The present study is an attempt to know the prevalence of cardiovascular disease between male and

female cardiac patient and to correlate the nutrient intake with socio-economic characteristics among male and female cardiac patients.

## MATERIALS AND METHODS

The study was carried out in 100 cardiac male and female patients from local hospitals from Agra city. Multistage stratified random sampling technique was used in the selection of samples. An interview schedule was evolved to collect the information regarding socio-economic profile, dietary information and specific information regarding this disease. Nutrient intake was assessed by 24 hrs food recall method. The subjects were asked to report the food items consumed along with their

raw ingredients. These were recorded in standard volumetric method and later it is converted in raw weight of foods i.e. groups and nutritive values was calculated using the food tables as per recommended by ICMR.

The Table-1 shows the distribution of cardiac patients according sex and type of CHD. Out of 100 patients, majority of them (57.00%) were male and remaining (43%) were female. Out of the patients suffered from heart attack, majority of them (68.42%) were male and remaining (31.58%) were female. Out of the patients suffered from Angina majority of them (54.29%) were male and remains (45.71%) were female. among the other type of cardiac patients 75% were female and remaining 25.00% were male.

TABLE 1: Distribution of cardiac patients according to sex and type of coronary heart disease

Sex	Type of Coronary Heart Disease						Total	
	Heart Attack		Angina		Others		No.	%
	No.	%	No.	%	No.	%		
Male	39	68.42	16	45.71	2	25.00	57	57.00
Female	18	31.58	19	54.29	6	75.00	43	43.00
Total	57	57.00	35	35.00	8	8.00	100	100.00

TABLE 2 - Distribution of cardiac patients according to type of work

Type of work	Cardiac patients						Total	
	Heart Attack		Angina		Others		No.	%
	No.	%	No.	%	No.	%		
Sedentary	35	61.40	23	65.71	7	87.50	65	65.00
Moderate	12	21.05	5	14.29	1	12.50	18	18.00
Heavy	10	17.55	7	20.00	0	0.00	17	18.00
Total	57	57.00	35	35.00	8	8.00	100	100.00

The Table-2 shows the distribution of cardiac patients according to type of work and type of CHD. Out of 100 patients, majority of them 65.0% was engaged in sedentary work, followed by 18.00% in moderate work and remaining 17.00% were engaged in heavy work.

Out of the patients suffered from heart attack, majority of them (61.40%) were engaged in sedentary work, followed by 21.05% in moderate work and remaining 17.55% were engaged in heavy work. Among the Angina patients, maximum (65.71%) were engaged in sedentary work, followed by 20.00% in heavy work and minimum(14.29) were engaged in moderate work. among the other type of cardiac patients maximum 87.50% were engaged in

sedentary work and remaining 12.50% were engaged in moderate work.

TABLE 3 - Distribution of patients according to body mass index and type of coronary heart disease

Body mass index	Cardiac patients	
	No.	%
Below 20	21	21.00
20-25	50	50.00
25-30	21	21.00
30-35	8	8.00
Total	100	100.00
Mean	22.99	
SD	4.44	

The Table-3 shows the distribution of cardiac patients according to body mass index and type of CHD. Out of 100 patients, majority of them (50.00%) were having body mass index 20-25, followed by 21.00% having body mass index below 20 and minimum (8%) were having body mass 30-35.the mean  $\pm$ SD of body mass index of

the cardiac patients was found to be 22.94±4.44. (2-4)

TABLE 4 -Distribution of cardiac patients according to blood pressure

Blood pressure	Cardiac patients	
	No.	%
Low	13	13.00
Normal	31	31.00
High	56	56.00
Total	100	100.00

The Table-4 shows the distribution of cardiac patients according to body mass index and type of CHD. Out of 100 patients, majority of them (56.00%) were having high blood pressure 20-25, followed by 31.00% having normal blood pressure and minimum (13.00%) were having low blood pressure. (5,6)

The Table-5 shows mean level of serum cholesterol in male was slightly more

as compared to female cardiac patients. Statistically, no significant difference regarding mean serum cholesterol was observed between male and female cardiac patients  $t=0.224$ ,  $p>0.05$ . Table is also showing mean HDL level of male cardiac patients, which was very slightly more as compared to female cardiac respondents. Statistically no significant difference regarding mean HDL level was observed between male and female cardiac respondents ( $t=0.329$ ,  $p>0.05$ ). The LDL level of male CHD patients was more than female cardiac patients. Statistically, no significant differences regarding mean LDL were observed between male and female cardiac patients. (7,8)

TABLE 5 -Distribution of CHD patients according to lipid profile and sex

Lipid Profile	Sex of Patients				Statistical Values	
	Male (n=57)		Female (n=43)		t	r
	Mean	SD	Mean	SD		
Serum Cholesterol	212.55	39.33	211.05	21.38	0.224	>0.05
HDL	32.91	5.66	32.48	7.42	0.329	>0.05
LDL	202.03	45.98	198.71	26.77	0.419	>0.05

TABLE 6 - Mean intake of various nutrient intake among cardiac patients according to sex.

Nutrient Intake	Unit	Sex of cardiac patients				Statistical values	
		Male (n=57)		Female (n=43)		t	p
		Mean	SD	Mean	SD		
Calories	Kcal	1486.37	119.48	1509.14	123.73	0.929	>0.05
Protein	Gm	32.18	2.29	32.29	2.15	0.244	>0.05
Calcium	Mg	595.34	58.44	584.69	46.23	0.985	>0.05
Vitamin A	µg	1637.68	143.66	1672.61	138.66	1.222	>0.05
Vitamin B <sub>1</sub>	Mg	1.10	0.09	1.13	0.07	1.811	>0.05
Vitamin C	Mg	29.92	16.01	25.06	8.31	1.815	>0.05
Iron	Mg	26.76	2.48	25.94	2.89	1.524	>0.05
Fat	Gm	30.73	2.00	30.79	1.82	0.154	>0.05
Riboflavin	Mg	0.64	0.11	0.60	0.04	2.274	<0.05
Niacin	Mg	13.62	1.48	13.29	1.45	1.114	>0.05
Carbohydrate	Gm	229.35	6.41	226.42	11.65	1.604	>0.05
Fibre	Gm	6.60	0.96	6.50	0.98	0.520	>0.05
Sodium <sup>1</sup>	Mg	80.03	7.50	82.33	7.57	1.512	>0.05

TABLE 7- Correlation between the body Mass Index with various nutrient intakes among cardiac patients.

Parameter	UNIT	Statistical values				
		MEAN	SD	r	t	P
Body mass index		22.99	4.44			
Calories	Kcal	1496.16	121.85	+0.165	1.656	>0.05
Protein	gm	32.23	2.23	+0.113	1.126	>0.05
Calcium	mg	590.76	53.79	+0.103	1.025	>0.05
Vitamin A	µg	1652.70	142.58	+0.140	1.400	>0.05
Vitamin B <sub>1</sub>	mg	1.11	0.08	+0.020	0.198	>0.05
Vitamin C	mg	27.83	13.41	+0.097	0.965	>0.05
Iron	mg	26.41	2.69	+0.145	1.451	>0.05
Fat	gm	30.76	1.92	+0.037	0.367	>0.05
Riboflavin	mg	0.62	0.09	+0.018	0.178	>0.05
Niacin	mg	13.48	1.48	+0.124	1.237	>0.05
Carbohydrate	gm	228.09	9.16	-0.159	1.594	>0.05
Fiber	gm	6.56	0.97	-0.057	0.565	>0.05
Sodium	mg	81.02	7.61	-0.209	2.116	<0.05

The Table-6 shows the mean intake of various nutrients among cardiac patients according to sex. Mean nutrient intake of calcium, vitamin C, iron, riboflavin, niacin, carbohydrate and fiber were found more in male cardiac patients. While the mean nutrient intake of calories, protein, vitamin A, vitamin B<sub>1</sub>, fat and sodium were found to be more among females as compared to male cardiac patients. Statistically, significant difference regarding mean intake of riboflavin was found between male and female cardiac patients ( $p < 0.05$ ). However, no significant differences regarding mean nutrient intake of calories, protein, calcium, vitamin A, vitamin B<sub>1</sub>, vitamin C iron, fat, niacin, carbohydrate, fibre, and sodium were observed between male and female cardiac patients even at 5% level of significance. <sup>(9)</sup>

Above table shows the correlation between body mass indexes with various nutrient intakes among cardiac patients. Significant and negative correlations were found between body mass index with nutrient intake of sodium among the cardiac patients ( $p < 0.05$ ) i.e. as the body mass index increases, sodium intake decreases and *vice versa*. Positive and insignificant correlations were observed between body mass index with nutrient intake of calories, protein, calcium, vitamin A, and vitamin B<sub>1</sub>, vitamin C, iron, fat, riboflavin and niacin among the cardiac patients ( $p > 0.05$ ). However, negative and insignificant correlations were observed between body mass index with nutrient intake of carbohydrates, and fiber among the cardiac patients even at 5% level of significance. <sup>(10)</sup>

## CONCLUSION

From the study it was concluded that dietary intake by both males and females were highly significant but contrary the results like age, BMI, lipid profile etc. in both cardiac patient showed insignificant. Obesity, diabetes, high blood pressure etc. were revealed as among the major risk factor contributing to CHD in both sexes. Therefore males and females should take food, high in complex carbohydrates, diet

rich in fruits, vegetables and grain products that contain some types of dietary fiber, particularly soluble fiber that may reduce the risk of heart disease.

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