Correlation in prevalance of cardio vascular disease with dietary intake pattern

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■**ABSTRACT :** Cardio vascular disease is burden account near about 5 to 6 million in the Indian population. Death rate due to cardiovascular disease ranges between 60 to 70 per cent every year in India. There are many complicated risk factors which significantly propagate this disease. Present investigation has been on account to assess the correlation in the prevalence of cardiovascular disease with the specified risk factor in particular dietary intake pattern among cardiovascular disease patients in western Konkan of Maharashtra state. Five hundred cardiovascular disease male patients between 40 to 60 years in age from Sangli, Satara and Kolhapur districts were chosen by purposive random sampling method. Food intake pattern and habituated factors were assessed by two way analysis method of correlation coefficient with the prevalence of cardiovascular disease. Present investigation conclude that mostly non-vegetarians except fish eaters, consumption of milk and milk products, animal originated fats, groundnut oil and habituated factors like drinking alcohol (0.640), soft drinks (0.318) and smoking cigarette (0.592) were found strongly associated with more prevalence of cardiovascular disease.

■**KEY WORDS :** Cardiovascular disease, Risk factors, Food intake patern, Dietary intake patten, Correlation

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Cardiovascular disease afflicts Indians and other South Asian population four times more than any other race in the world. It is estimated that by 2012 India will bear 75 per cent of the worlds Cardiovascular disease burden which measures four times more than its share of the global population (Hakajima, 2000). Fourty per cent victims of heart attack in India is unpredictable. The mortality rate from cardiovascular disease has been coming down in countries like Japan by 60 per cent, and USA, Canada and Australia by 50 per cent, but in India its going up. According to WHO projections, there will be 100 per cent rise in cardiovascular disease related mortality rate by 2015 (WHO,2009). One fourth of the deaths occur people below the age of 45 years (Kannel, 1997). cardiovascular disease has been estimated due to multiple factors these are termed as risk factors *i e*. heredity, faulty dietary habits, smoking, inactive lifestyle, stress etc. (Stamper *et al.,* 1999).

Unhealthy dietary habits like excessive intake of fried foods, fast foods, synthetic drinks, coffee/ tea , non vegetarian and spicy foods, ready to eat, ready to serve foods etc. increase the risk of cardiovascular disease ame young males which owing more prevalence in the later stage of life.

New drugs and advance technology which used aggressively, artery damage are made available only for temporarily relief. Therefore, many researchers and doctors squarely have shift to prevention and promotion of modifiable risk factors. By keeping this in view the present research study has been undertaken to examine the reality between specified risk factors specially dietary intake pattern with the prevalence of cardiovascular disease for in the population of Western Konkan of Maharashtra state, where the prone of cardiovascular disease is in an alarming situation.

■ RESEARCH METHODS
Study area:
The patients registered in the civil hospitals of Sangli,

Satara and Kolhapur districts of western Konkan of Maharashtra were selected by purposive random sampling method.

Selection of sample:

Five hundred male patients in the age group between 40 to 60 years were sufferiywith coronary heart disease, who had attended the out patient unit of the three civil hospitals over a period of 3 months were selected from the secondary data maintained by these three hospitals in western Konkan region of Maharashtra for the conduct of this study.

Collection of data:

The data related to the study was collected through self structured questionnaire. Specified risk factors were framed and tabulated in the questionnaire. The questions regarding specified risk factors especially their food intake pattern and habituated factors in relation with eating, drinking and smoking were asked during the personal interview with the patients.

Interpretation of data:

The data related to food intake pattern and dietary habits of the patients was collected by three day recall method and observation by personal contact. Per cent adequacy level of food intake was calculated with the comparison of standard RDA level of the same age, sex and working pattern (Gopalan *et al.* 2001). Five hundred cardiovascular disease patients were classified into two categories ie. low and high risk levels. This classification was made by taking into account of their lipid profile *i.e.* level of triglyceride, total cholesterol, LDL and HDL.

Statistical analysis:

Correlation in prevalence of cardiovascular disease with their dietary intake and dietary habits was assessed by using two way analysis method of correlation coefficient given by Gomez and Gomez (1984) and Kerlinger (1983).

■ RESEARCH FINDINGS AND DISCUSSION

The data regarding correlation in the prevalence of cardiovascular disease with the food intake pattern and habituated factors is presented in Tables 1 to 5.

Type of diet of the person play a vital role in determining their cardiovascular health and nutritional status. In order to assess the relationship type of diet of the Cardiovascular disease patients with the extent of prevalence of Cardiovascular disease was assessed and tested for its statistical significance. The relevant data is reported in Table 1. It could be observed from the Table 1 that out of five independent variables studied, three variables *viz.,* ovarian diet *i.e.* eating eggs non-vegetarian diet in particular meat and poultry consumption were found to have significant

positive relationship with more prevalence of Cardiovascular disease among these patients. Among non-vegetarian intake, meat (0.481) was found strongly associated with more prevalence of Cardiovascular disease. Where as less association was observed in prevalence of Cardiovascular disease with vegetarian diet (0.029). In the non vegetarian dietary pattern, consumption of fish (0.135) was shown low risk in the prevalence of Cardiovascular disease. It indicated that, vegetarian dietary pattern had more significant for keeping healthy heart. However, fish intake was best alternative option for non-vegetarians.

Table 1: Correlation with prevalence of CVD and dietary pattern		
Variable No.	Type of diet	Coefficient of correlation (r)
X_1	Vegetarian	0.029
X_2	Ovarian	0.372**
	Non vegetarian	
X_3	Meat	0.481**
X_4	Fish	0.135
X_5	Poultry	0.322**

** indicate significance of value at P= 0.01

The study was made an attempt to find the relationship between prevalence of cardiovascular disease with the major food consumptions of the patient. It was seen clear from Table 2 that, intake of refined cereals or processed cereals *i.e.* use of sieved floor, maida, semolina, sago etc. showed more significant contribution to the high risk in the prevalence of cardiovascular disease. Where as the vegetables consumption like roots and tubers noted a positive relation with risk of cardiovascular disease. Among these 9 tested variables, seven variables *viz.,* consumption of citrus fruits (0.066), whole legumes (0.085), leafy vegetables (0.093), other vegetables (0.129), non -citrus fruits (0.133), processed pulses (0.180) and non refined cereals (0.184) was found non-significant association in the prevalence of cardiovascular disease.

Table 2 : Relationship between prevalence of CVD with the major food consumption		
Variable No.	Dietary intake	Coefficient of correlation (r)
X_1	Refined cereals	0.391**
X_2	Non refined cereals	0.184
X_3	Whole legume	0.085
X_4	Processed pulses	0.180
X_5	Leafy vegetables	0.093
X_6	Other vegetables	0.129
X_7	Roots and tubers	0.240*
X_8	Citrus fruits	0.066
X_9	Non citrus fruits	0.133

* and ** indicate significance of value at P= 0.05 and 0.01, respectively

The data regarding correlation between prevalence of cardiovascular disease with the consumption of milk and milk products was presented in Table 3. It gives an immense idea that, consumption of diluted milk, curd and butter milk without cream found a positive relation in low level prevalence of cardiovascular disease. Whereas eating of undiluted milk, creamy curd, cheese, paneer and khoa observed increasing the prevalence of cardiovascular disease. Among these milk products intake of khoa (0.444) shows more significant correlation with high risk in the prevalence of cardiovascular disease.

Table 3 : Correlation between prevalence of CVD with the consumption of milk and milk products

Variable No.	Milk and milk products	Coefficient of correlation (r)
X_1	Diluted milk	0.163
X_2	Undiluted milk	0.256*
X_3	Curd without cream	0.149
X_4	Creamy curd	0.260*
X_5	Butter milk without cream	0.076
X_6	Cheese	0.262*
X_7	Paneer	0.259*
X_8	Khoa	0.444**

* and ** indicate significance of value at P=0.05 and 0.01, respectively

Consumption of oilseeds, oil and fat shown a significant impact in the increasing risk of cardiovascular disease. Hence, the data was analyzed to confirm the relation between type of oil seeds, oils and fat consumption with prevalence of cardiovascular disease. The data presented in Table 4 highlights that, the patients who consumed dalda (0.598), groundnut (0.383) and ghee (0.309) shown significantly more prevalence with cardiovascular disease. Intake of palm oil, safflower, soybean and sunflower oil were also associated with prevalence of cardiovascular disease. Among these, the patients who were taking soyabean oil were found less correlated with prevalence of cardiovascular disease.

Table 4 : Association in type of oil seeds, oil and fat consumption with prevalence of CVD

Variable No.	Oils and fats	Coefficient of correlation (r)
X_1	Groundnut	0.383**
X_2	Palm	0.291*
X_3	Safflower	0.248*
X_4	Soyabean	0.209*
X_5	Sunflower	0.275*
X_6	Blended oil	0.141
X_7	Ghee	0.309**
X_8	Dalda	0.598**

* and ** indicate significance of value at P= 0.05 and 0.01, respectively

However, the patients who used blended oil were noticed non-significant relations with prevalence of cardiovascular disease. Hence, blended oil with more than two cooking oil blends was found beneficial for reducing the risk of cardiovascular disease.

Prevalence of cardiovascular disease was strongly contributed due to wrong habits of food intake drinking and smoking. Five important variables *viz.,* habituated factors like excessive intake of tea, coffee, soft drink, alcohol and smoking were tested in their association with prevalence of cardiovascular disease among these patients. The relevant data is reported in Table 5. It reveals that, the patients who were habituated with soft drink, alcohol and cigarette smoking were more suffered more with cardiovascular disease. Among these variables, alcohol consumption (0.640) was strongly associated with more prevalence of cardiovascular disease. Intake of coffee showed lightly correlation with cardiovascular disease where as, the patients who consumed tea were not found related with prevalence of cardiovascular disease.

Table 5 : Association of habituated factors with prevalence of CVD

Variable No.	Habituated factors	Coefficient of correlation (r)
X_1	Tea	0.178
X_2	Coffee	0.277*
X_3	Softdrink	0.318**
X_4	Alcohol	0.640**
X_5	Cigaratte	0.592**

* +and ** indicate significance of value at P= 0.05 and 0.01, respectively

Conclusion :

From the above findings it was concluded that, the patients who were non-vegertarian except fish eaters, consumed more roots and tubers, undiluted milk, creamy curd, cheese, paneer, palm oil, safflower oil and coffee were prevalent with cardiovascular disease. Where as the patients who strongly correlated with more prevalence of cardiovascular disease found more consumption of meat, poultry, refined cereal products, khoa, dalda, groundnut oil and ghee. More significant risk factors were with the patients who were habituated by excessive intake of alcohol, smoking and soft drink. Vegetarian food intake, consumption of fish, non refined cereals, leafy vegetables, fruits, blended oil and intake of tea were not found associated with prevalence of cardiovascular disease. Hence, by adopting proper dietary intake pattern and change in routine life style may keep healthy heart for longer life.

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