

Correlation with dietary fiber consumption awareness pattern and lipid profile among cardiovascular disease patients

R.M. KAMBLE AND A.B. KALE

Dietary fibers are complex carbohydrates, which play a vital role in reducing lipid profile of the cardiovascular disease (CVD). However, the consumption practice about dietary fiber needs to evaluate with its association in lipid profile. One hundred and eighty CVD patients were assessed from Sangli, Satara and Kolhapur districts of western konkan of Maharashtra. They were examined in relation with their dietary practices especially dietary fiber and correlated with their grades of lipid profile. Strong positive correlation was noticed in ignorance about dietary fiber with higher level risk in lipid profile among CVD patients.

Key Words : Dietary fibers, KAP, Lipid profile, Correlation

How to cite this article : Kamble, R.M. and Kale, A.B. (2012). Correlation with dietary fiber consumption awareness pattern and lipid profile among cardiovascular disease patients. *Food Sci. Res. J.*, 3(2): 192-195.

INTRODUCTION

Dietary fibre is an extremely important food commodity in everyday life. High fibre diets seem to alter the body's chemistry associated with a low incidence of heart disease (Cummings, 1998). Many researchers proved that dietary fibre acts in lowering blood triglycerides (Dodd, 1994, Latto, 1998, Lindner and Moller, 2009) and cholesterol (Morris *et al.*, 2001; Shaper, 2002). However, now a days the Indian dietary pattern is drastically changed due to multifactorial reasons. Blind foods, empty carbohydrates, fast foods, ready to eat foods, energy dense food, readymade food formulaes etc. consumptions are increasing in the present scenario. This type of food habits will lacking the dietary fibre consumption. It may leads to many health problems like obesity, diabetes mellitus, constipation, heart disease, gallstone etc. By keeping this in view, the present research work is designed to assess the consumption pattern of dietary fiber and its relation with the prevalence of cardiovascular disease in relation of lipid profile.

MEMBERS OF RESEARCH FORUM

Author for correspondence :

R.M. KAMBLE, Department of Home Science, Rajaram College, KOLHAPUR (M.S.) INDIA
Email: rmkamble@hotmail.com

Associate Authors' :

A.B. KALE, Department of Home Science, Rajaram College, KOLHAPUR (M.S.) INDIA

METHODOLOGY

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 :

One hundred and eighty CVD patients in the age group between 40 to 60 years who attended as OPD of the three civil hospitals *i.e.* Sangli, Satara and Kolhapur over a period of 3 months were selected from the secondary source of data.

Collection of data :

The data related to the study were collected through self structured questionnaire. Specified questions regarding the awareness about dietary fibre, rich sources and its consumption, eating habits, food preparation methods, selection of foods etc. were asked during the personal interview to the CVD patients and their family.

Tools and techniques :

Lipid profile :

Prevalence of cardiovascular disease among these patients were measured by applying biochemical analysis method. The lipid profile especially triglycerides and blood cholesterol level, LDL (mg /dl). HDL (mg/dl) of the patients

were determined by using methods described by AOAC (1975) and NIN (2003). Obtained lipid profile of these patients was compared with their standard normal values and they were classified as Type A: within borderline and Type B: above borderline.

Interpretation of data :

The relevant data were classified into per cent of consumption pattern of dietary fibre and level of lipid profile of the CVD patients. The correlation of CVD with dietary fiber intake was crossly examined statistically by applying two way analysis method of correlation coefficient given by Gomez and Gomez (1984) and Kerlinger (1983).

OBSERVATIONS AND ASSESSMENT

The data regarding the dietary fiber consumption awareness and its correlation with the lipid profile of cardiovascular disease (CVD) patients is presented in Table 1 to 4. Table 1 shows data on knowledge regarding dietary fibers among CVD patients. Majority of the patients (67.2 per

cent) described as dietary fiber is one of the important component in food as a nutrient. 28.9 per cent replied as dietary fiber is a portion of balanced diet. None of the CVD patients given the answer of dietary fiber is as a antinutrient. Where as only 3.9 per cent have the correct knowledge about dietary fiber as a complex carbohydrate. Very wrong concept regarding the sources of dietary fiber was noticed among CVD patients. 31.1 and 19.4 per cent patients given response that all type of foods content dietary fiber and non vegetarian foods only (meat, fish, chicken), respectively. However, the response about knowledge regarding the sources of dietary fiber was noted as 22.2 per cent for cereals, pulses, fruits and vegetables only. The ignorance about functions of dietary fiber was noted in 56.7 per cent CVD penitents. Where as 26.7 per cent were given faulty functions of dietary fiber. They replied as dietary fiber is required as dietary treatment for all types of disease. Only 16.7 per cent CVD patients have proper knowledge about functions of dietary fiber. The knowledge of recommended dietary allowance (RDA) of the nutrients is very essential to put into daily practices about balanced diet and importance of nutrients in particular food. However majority of the CVD patients *i.e.* 58.3 per cent were not known about RDA of dietary fiber. Most of the patients given wrong answer about RDA of dietary fiber. 21.1 and 13.9 per cent patients reported the RDA of dietary fiber as 0–20 and 20–40 g/day, respectively. Where as only 6.7 per cent responses of the patients found correct knowledge about RDA of dietary fiber.

The data about lipid profile of CVD patients was categorized into Type A and B according to their per cent values in comparison with their standard normal level. This data is given in Table 2. The patients who found within borderline total cholesterol level (mg / dl) were recorded as 37.8 per cent.

However 62.2 per cent CVD patients reported above border line total cholesterol level where as 30.6 and 69.4 per cent patients noticed as within and above borderline of triglyceride (mg/dl) level, respectively. The patients having LDL (mg/dl) within border line were noticed as 39.4 per cent. Majority of the patients *i.e.* 60.6 per cent who found above border line LDL were noted in more risk level. Only 29.4 per cent patients found within borderline level of HDL (mg/dl). Where as 70.6 per cent CVD patients reported in danger line of HDL (mg/dl).

Table 1. Knowledge regarding dietary fibre among CVD patients

Awareness about dietary fibre	CVD patients (n = 180)	
	Frequency	Per cent
Known about dietary fiber :		
It is a balanced food	52	28.9
It is a nutrient	121	67.2
It is a antinutrient	0	00.0
It is a complex CHO	7	3.9
Sources of dietary fiber :		
Cereals and pulses only	32	17.8
Fruits and vegetables only	17	9.4
Cereals, pulses, fruits and vegetables only	40	22.2
Milk, meat, fish, chicken only	35	19.4
All type of foods	56	31.1
Functions of dietary fiber :		
They are important for -		
Body building, energy yielding and protective for body	102	56.7
Dietary treatment for all diseases		
Dietary treatment for obesity, constipation, diabetes mellitus, heart disease, dental caries, gallstone	48	26.7
	30	16.7
RDA of dietary fiber (g/day) :		
0-20	38	21.1
20-40	25	13.9
40-60	12	6.7
Not known	105	58.3

Table 2. Lipid profile of CVD patients

Sr. No.	Lipid profile	CVD Patients (n = 180)	
		Type A: Within border line	Type B: Above border line
1.	Total cholesterol (mg/dl)	68 (37.8)	112 (62.2)
2.	Triglycerides (mg / dl)	55 (30.6)	125 (69.4)
3.	LDL (mg / dl)	71 (39.4)	109 (60.6)
4.	HDL (mg / dl)	53 (29.4)	127 (70.6)

Table 3. Practices regarding dietary fibre consumption by CVD patients

Sr. No.	Practices regarding dietary fibre consumption	CVD patients (n = 180)		'Z' value
		Using	Not using	
1.	Whole grains	82 (45.6)	98 (54.4)	(2.85)*
2.	Sprouted legumes	70 (38.9)	110 (61.1)	(3.11)**
3.	Raw salads	74 (41.1)	106 (58.9)	(2.92)*
4.	Flours without seving	22 (12.2)	158 (87.8)	(4.59)**
5.	Fruits with skin	16 (8.9)	164 (91.1)	(6.55)**
6.	Matured vegetables	10 (5.6)	170 (94.4)	(7.61)**
7.	Vegetables without peeling	19 (10.6)	161 (89.4)	(5.78)**

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

Table 4. Correlation of lipid profile of CVD patients with their knowledge and awareness about dietary fiber

Sr. No.	Knowledge and awareness about dietary fiber	Correlation with lipid profile ('r' value)		
		Type A	Type B	Annova
1.	Concept of dietary fiber :			
	Yes : (33.9 per cent)	(2.89)	(3.94)	(P < 0.01)
	No : (66.1 per cent)	(2.31)	(5.22)**	(P > 0.01)
2.	Sources of dietary fiber :			
	Yes : (21.7 per cent)	(2.18)	(2.32)	(P < 0.01)
	No : (78.3 per cent)	(2.46)	(6.30)**	(P > 0.01)
3.	Functions of dietary fiber :			
	Yes : (6.7 per cent)	(1.29)	(2.01)	(P < 0.01)
	No : (93.3 per cent)	(2.95)	(8.85)**	(P > 0.01)
4.	Use of dietary fiber in daily diet :			
	Yes : (2.8 per cent)	(1.06)	(1.33)	(P < 0.01)
	No : (97.2 per cent)	(2.40)	(9.62)**	(P > 0.01)

** indicates significance of value at P=0.01

The data about correlation in dietary fiber consumption practices with type of lipid profile of CVD patients are presented in Table 3.

Figures in parentheses indicate percentage It reveals that, high significant correlation was noticed in above border line lipid profile with not use of matured vegetables (94.4 per cent), fruits with skin (91.1 per cent), vegetables without peeling (89.4 per cent), flours without seving (87.8 per cent) and sprouted legumes (61.1 per cent). The patients who are using the dietary fiber consumption practices such as raw salads (58.9 per cent) and whole grain (54.4 per cent) significantly shown lipid profile within borderline.

The data regarding knowledge and awareness in dietary fiber with correlation of lipid profile of CVD patients are reported in Table 4.

It indicates that, not consumption of dietary fiber in regular diet by CVD patients (97.2 per cent) shown strong positive association (P > 0.01) with higher lipid profile level among CVD patients. The positive correlation was followed in the above borderline lipid profile of the CVD patients with their ignorance related with functions of dietary fiber (93.3 per cent), sources of dietary fibers (78.3 per cent) and unknown concept of dietary

fiber (66.1 per cent).

On the whole it can be concluded that, the knowledge and awareness about dietary fiber *i.e.* concept, sources, functions, uses, RDA are found very low level among CVD patients. Therefore, they are not put into practice of dietary fiber in there daily diet. Hence, the positive association may correlates in higher lipid profile of these patients. Nutrition education and counseling may be needed to create more awareness regarding consumption of dietary fiber which may help to reduce the risk of higher lipid profile in these patients.

LITERATURE CITED

- A.O.A.C.** (1975). Association of official analytical chemists, Approved methods of Analysis, 14th Ed., Washington (U.S.A.).
- Cummings, J.H.** (1998). Nutritional implications of dietary fibre, *American J. Clin. Nutri.*, **31**:19-21.
- Dodd, H.** (1994). The cause, prevention and arrest of varicose veins, *Lancet*, **2**: 809-841.
- Gomez, K.A. and Gomez, A.A.** (1984). *Statistical procedures for agricultural research*, Wiley International John. and Sons, NEW YORK (U.S.A.).

- Kerlinger, F. N.** (1983). *Fundamental of behavioural research*. Surjeet pub, NEW DELHI (INDIA).
- Latto, C.** (1998). Practical experience in Dietary fibre, *Curr. Develop. Importance Health*, London : Libbey : pp. 151-154.
- Lindner, P. and Moller, B.** (2009). Lignin : a cholesterol- lowering agent?, *Lancet*, **2**:1259-1262.
- Morris, J.N., Marr J.W. and Clayton, D.G.** (2001). Diet and heart : A postsript, *British Medical J.*, **2**:1307-1314.
- NIN (2003).** *A manual of laboratory techniques*, National Institute of Nutrition, Hyderabad (A.P.) INDIA.
- Shaper, A.G.** (2002). Cardiocascular disease in the tropics. IV: Coronary heart disease, *British Medical J.*, **4**: 32 -51.

Received : 19.05.2012; **Revised:** 18.07.2012; **Accepted :** 18.08.2012