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Original Article

Assessment of Dietary Pattern in Type-2 Diabetes Mellitus Patients: A Healthy Eating Index Scoring

Priyanka N [1, *], Yogananda R[1], Prashanth G [2], Bharathi D R[1]

[1] Department of Pharmacy Practice, SJM College Of Pharmacy, Chitradurga-577502 Karnataka, India.

[2] Department of General medicines, Basaveshwara Medical College Hospital and Research Centre, Chitradurga-577502 Karnataka, India.

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ABSTRACT

Dietary pattern is the quantities, proportions, variety or combination of different foods, drinks, and nutrients in diets, and the frequency with which they are habitually. Diabetes mellitus (DM) is a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, action or both. Diabetes is a chronic disorder its complications are raising day to day. To prevent this complications proper diet is necessary in this population. So study performed to assess the dietary pattern in Type-2 Diabetes Mellitus patients toimprove their eating habits and to prevent the diabetes induced complications. A 107 patients with diabetes were selected randomly and intervenedwho visited Chitradurga diabetic center (CDC), for a period of six months and who met inclusion criteria were included. Individuals were asked to complete a questionnaire to determine their 24-hour food intake and frequency of intake of various food substances.Healthy eating index scoring (HEI) is used to assess dietary pattern of type 2 diabetes mellitus patients. The food variety component of the HEI had the lowest mean score (1.3) and had highest mean score of (7.9) dietary cholesterol. In conclusion the results of present study concludes that subjects with diabetes should improve their dietary plan and quality along with this proper exercises and medication adherence plays an important role in type-2 diabetes mellitus patients.

Key words:Dietary Pattern, Diabetes Mellitus, Diet plan, Healthy Eating Index

1. INTRODUCTION

Diabetes is a metabolic disorder this leads to an economic and disease burden to the patient. Diabetes is a majorly occurring global health problem. Many etiological conditions like insulin deficiency, lifestyle, diet, age and other factors cause diabetes. Long term diabetes is associated with many vascular

Corresponding author *
Priyanka N
Department of Pharmacy Practice, SJM College Of Pharmacy, Chitradurga-577502 Karnataka, India.
E Mail: priyaraji.cta@gmail.com

complications like retinopathy, nephropathy, neuropathy, coronary heart disease, stroke, peripheral vascular disease. So to manage diabetes self-care towards their disease is required to minimize the further complications[1]. So they should have an update knowledge regarding their disease, medication, diet and also about healthy life style[2].

Pharmacist plays an important role in health care team. They must have update knowledge on effective medication, diet. Their role in health care system helps in reducing the disease and economic burden of the patient through proper counseling[3]. Counseling from the pharmacists to the patient is necessary in maintaining proper health.[4]

Dietary pattern

Dietary pattern is the quantities, proportions, variety or combination of different foods, drinks, nutrients in diets and the frequency with which they are habitually consumed[5]. Healthy eating means consuming the right quantities of foods from all food groups in order to lead a healthy life. American Diabetes Association (ADA) explains that diet varies among an all individuals so that there is not an "one-size-eating pattern for all individuals with diabetes"[6]. Diabetes Prevention Programs necessary for diabetes patients[7]. These programs provides a positive outcome on behavioral aspects and glucose level[8]. A good nutrition includes the five main food groups - whole grains, fruits and vegetables, protein, diary, and fat & sugar. To maintain proper glycosylated hemoglobin(HbA1C)along with diet, physical activity, medications maintenance needed[9]. So to fill the gap between the patient on diet knowledge to evaluate the dietary quantity of Type-2 Diabetes Mellitus patients this study is needed. Objective of this study to assess the dietary pattern in Type-2 Diabetes Mellitus patients to improve their eating habits and to prevent the diabetes induced complications.

2. MATERIALS AND METHODS

The randomized study was conducted in Chitradurga Diabetic Center(CDC), Chitradurgafor a period of six months. The study involves following criteria

Inclusion criteria:

- Type 2 Diabetes Mellitus patients with or without co-morbid condition.
- Type 2 Diabetes Mellitus Patients willing to give informed consent.

Exclusion criteria:

- Patients with type 1 Diabetes Mellitus.
- Patients with Gestational Diabetes Mellitus.

The study was approved by the Institutional Ethical Committee of Basaveshwara Medical College Hospital & Research Centre. Vide number: IEC-543h/2014-2015. A 107 subjects were selected randomly both males and females with diabetes mellitus. Subjects interviewed individually to obtain the daily dietary details and made them to recall what they had within 24hrs and assessed using HEI criteria and scored accordingly. The data was entered in Microsoft Excel-2013 version and the results analyzed using Statistical Package for Social Services (SPSS 16.0).

3. RESULTS

- GENDER DISTRIBUTION:

Out of 107 patients, males were 60 (56.07%) and females were 47 (43.9%).

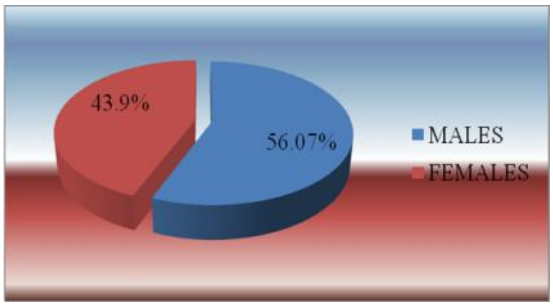

Fig 1: Distribution of diabetic patients according to gender

- FOOD HABIT:

Out of 107 subjects 57 (53.27%) were non vegetarian, followed by 47 (43.92%) vegetarian and as followed.

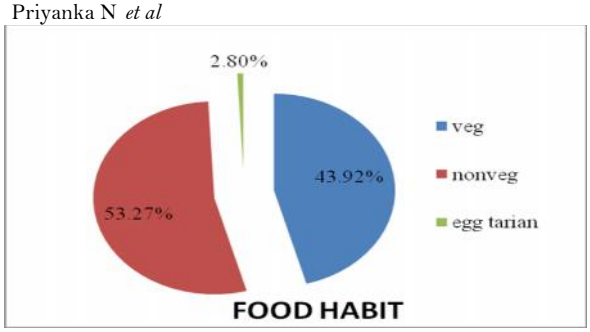

Fig 2: Distribution of diabetic patients according to food habit

- HEALTHY EATING INDEX (HEI) SCORE:

The HEI component scores for saturated fat, vegetables, dairy products and meat consumption were less than 5, whereas average scores for fat, cholesterol, fruits, grains, and sodium consumption were more than 5. The food variety component of the HEI had the lowest mean score (1.3) and had highest mean score (7.9) of dietary cholesterol.

Table 1: Healthy eating index score components

HEI	N	Mean	Std. Deviation
HEI TOTAL FAT	107	7.2	3.4
HEI-SATURATED FAT	107	6.9	3.6
HEI-DIETARY CHOLESTROL	107	7.9	3.4
HEI-FRUITS	107	2.2	3.4
HEI-VEGETABLES	107	2.8	3.2
HEI-GRAINS	107	2.6	3.1
HEI-MILK	107	2.8	3.7
HEI-MEAT	107	3.1	4.1
HEI-SODIUM	107	6.04	3.5
HEI-FOOD VARIETY	107	4.7	1.3

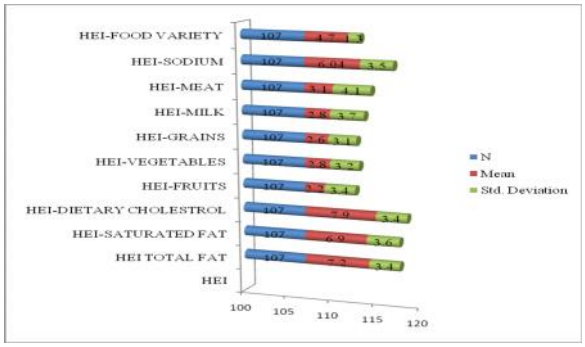

Fig 3: Healthy eating index score components

4. DISCUSSION

Our study reveals that out of 107 patients, 60 were males (56.07%) and 47 were females (43.9%) whereas the study conducted by Kannan*et al.*, shows that 74(57.36%) male patients and females (42.63%). A similar study conducted by Adisa R *et al.*, found that 108(61.4%) females and 68 (38.6%) males[11].From these above studies it was proved that male patients more prone to type-2 DM[10].

Our study reveals that the food variety component of the HEI had the lowest mean score (1.3) and had highest mean score (7.9) of dietary cholesterol. Asimilar study conducted by Agoren H *et al.*, explains that the HEI component scores from highest to lowest as cholesterol (8.2), food variety (7.2), saturated fat (6.1), sodium (6.0), fat (5.7), meat (4.9), milk (4.8), fruit (4.8), cereals (4.5) and vegetables (4.0)[12]. A similar study by Santos's *et al.*, HEI component scores from highest to lowest as in study was meat (8.9), sodium (8.5), fat (8.1), cholesterol (8.1), saturated fat (7.0), variety (6.7), grain (4.7), fruit (4.9) and milk (4.6)[13].

5. CONCLUSIONS

From this present study it concludes that a dietary patterns rich in all kind of required micro, macro nutrients play an important and beneficial role in maintaining proper health and glucose level. The strength of this study was that, it explains the importance of non- pharmacological therapy(diet, exercise) along with pharmacological therapy in diabetes patients. And enables to design specific diet chart according topatientrequirements. The weakness of this study was that it conducted only in outpatients. And study was carried out ina patients who undergone HbA1c test.

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