

# Study on Barriers to Dietary Compliance in Diabetes Mellitus

Neha Maria Baby\*, Peter George\*\*

\*Resident, \*\*Professor; Department of Medicine, Father Muller Medical College, Mangalore, S India

## Correspondence:

\*Dr Neha Maria Baby, Resident, Department of Medicine, Father Muller Medical College, Mangaluru, S India. 575002. E-mail: nehamariababy[at]gmail.com; Phone: +919483968486

## 1. Introduction and Need for the Study

The prevalence of type -2 diabetes mellitus (T2DM) is increasing globally. There were over 72 million cases of diabetes in India in 2017. <sup>(1)</sup>A study on control of sugars, management and complications among diabetics found over half the patients from Asian countries to have poor glycemic control. <sup>(2)</sup>

Diabetes mellitus is a metabolic state with profound nutritional implications. The management goals in diabetes and its complications are dependent on pharmacotherapy, dietary modification, lifestyle changes and regular assessment for emerging acute or chronic complications. Diabetic diet is the initial step towards effective management of diabetes. American Diabetes Association <sup>(3)</sup>, has identified beneficial effects of the dietary pattern in diabetes mellitus. Conventional Indian diet is rich in carbohydrate and could associate with hyperglycemia. Dietary habituation with frequent small feeds and good calorie count could improve long term control of diabetes. They must be educated about nutrition, physical exercise and weight maintenance to keep diabetes under control and to prevent or delay its acute or chronic complications. <sup>(4)</sup>

Poor control of diabetes is from lapses in dietary compliance. They have multiple barriers in achieving an optimal dietary intake. There is limited data from South of India on adherence to dietary guidelines in Diabetes mellitus. We intend to identify the barriers in dietary compliance in diabetes mellitus.

## 2. Objectives of the Study

To study the barriers to dietary compliance in diabetes mellitus.

## 3. Materials and Methods

### Source of data:

Patients attending the out-patient and in-patient services of Father Muller Medical College Hospital will be the source of study.

### Study Design:

Questionnaire based descriptive cross-sectional study.

### Study population:

Patients with diabetes mellitus attend the out-patient and in-patient services of Father Muller Medical College Hospital fulfilling the selection criteria and have given the informed consent were the source for this study.

### Study duration:

The study was conducted over a period of three months.

### Study sample size:

The sample size was calculated using the formula:  $n = Z^2 \frac{P(1-P)}{d^2}$

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E 2

Where n = sample size,

Z = Z statistic for a level of confidence, of 95%, which is conventional, Z

value is 1.96

P = expected prevalence or proportion (in proportion of one; if 20%, P =

0.2), and

d = precision (in proportion of one; if 5%, d = 0.05).

e= Allowable error

Prevalence – 8.5%

p-0.007, e 5%

n- 101

## 4. Methodology

The study was commenced after obtaining the approval from Institutional Ethics Committee. The patients with diabetes attending the out-patient and in-patient services at Father Muller Medical College Hospital was selected at random. 102 patients who fulfilled the selection criteria was included in this study after obtaining their written informed consent. The structured and validated questionnaire was administered to them by the investigator and their responses were marked in the preformatted blinded data sheet. The data collection included demographic details followed by questions to assess barriers in dietary compliance. The questionnaire was divided into four sections; namely 1) demographic data, 2) individual barriers, 3) healthcare related barriers and 4) knowledge related barriers. Excepting the demographic data all questions are structured to give an 'yes' or 'no' response.

The Questionnaire was Validated by an Endocrinologist.

#### Selection criteria:

#### Inclusion criteria:

Patients diagnosed to have diabetes mellitus.

#### Exclusion criteria:

Patients with established vascular complications of diabetes.

Persons with motor disability.

Elderly patients staying alone or in old age homes.

Patients living in hospices.

Patients with history of stroke, coronary diseases.

#### Data Analysis:

Data collected will be analysed using SPSS v20.0

## 5. Results

**Table 1:** shows the socio-demographic characteristics of participants and its relation to the barriers to dietary guidelines.

	Awareness on diabetic diet	Knowledge on diabetic diet	Health care related	Total n (%)
<b>AGE (mean age)</b>	56	64		60
<b>GENDER</b>				
Male, n (%)	26 (25.49%)	16 (15.68%)	16 (15.68%)	58 (56%)
Female, n (%)	24 (23.52%)	10 (9.8%)	10 (9.8%)	44 (44%)
<b>FAMILY HISTORY</b>				
Yes, n (%)	26 (25.49%)	10 (9.8%)	16 (15.68%)	52 (51%)
No, n (%)	24 (23.52%)	16 (15.68%)	10 (9.8%)	50 (49%)
<b>OCCUPATION</b>				
Employed, n (%)	29 (28.43%)	8 (7.84%)	13 (12.74%)	50 (49%)
Unemployed, n (%)	21 (20.58%)	18 (17.64%)	13 (12.74%)	52 (51%)
<b>TREATMENT</b>				
Insulin, n (%)	1 (0.98%)	0 (0%)	0 (0%)	1 (0.98%)
Tablets, n (%)	33 (32.35%)	16 (15.68%)	15 (14.7%)	64 (62.74%)
Both, n (%)	16 (15.68%)	10 (9.8%)	11 (10.78%)	37 (36.27%)
<b>DURATION (Years)</b>				
<1, n (%)	5 (4.9%)	13 (12.74%)	2 (1.96%)	20 (19.60%)
1-5, n (%)	21 (20.58%)	3 (2.94%)	7 (6.86%)	31 (30.39%)
>5, n (%)	24 (23.52%)	10 (9.8%)	17 (16.66%)	51 (50%)
	<b>50 (49.01%)</b>	<b>26 (25.4%)</b>	<b>26 (25.4%)</b>	<b>102 (100%)</b>

The mean age of the participants was 59.20 and more than half of them were males (55.9%). About 49% of the participants were employed and income status could not be assessed as many were unwilling to disclose the same. The duration of diabetes was subdivided into 3 groups out of which majority belonged to the duration of more than 5 years. About 51% of the participants had a family history of DM. A significant percentage (62.7%) of the study participants were on oral hypoglycemic agent. HbA1c of many of the participants were not available hence the values could not be used for statistical analysis. Among the four sections of barriers to dietary guidelines in diabetes, majority had lack of awareness on diabetic diet (49.01%) followed by lack of knowledge and health care related barriers. No patients had lack of acceptance of their condition. The demographic data of the patients were correlated to the 4 domains in which the barriers were assessed, as in Table 1. The mean age among each section is noted in Table 1. There was no significant difference between males and females based on the section of barriers assessed. None of the results were statistically significant.

## 6. Discussion

Studies have been done in various parts of the world on assessing the barriers for dietary compliance in diabetes mellitus. Dietary patterns have an important role against insulin resistance, prevention and management of type 2DM. Epidemiological studies have revealed that dietary patterns high in fiber-rich food items such as vegetables, fruits, whole grains and nuts, plus white meat sources like poultry and fish could have protective effects against the incidence of DM<sup>(5)</sup>. A large study<sup>(4)</sup> among diabetics from Asian countries found, over half of diabetics in India to have poor glycemic control. A study on self-care behaviors and glycemic control among adults with T2DM in Karnataka showed only a third to have followed dietary advice.<sup>(6)</sup> Various factors are known to affect the adherence to diabetic diet.

As with any disease, the acceptance of having the disease by the patients and their knowledge on various aspects and complications is the key to successful treatment. In our study all our participants had given a positive response to questions on acceptance which can be interpreted as all of them accepted that they are diabetics. In DM the key to

good glycemic control is dietary restraint and compliance. The factors affecting this could be food, doctor/healthcare related and knowledge related. The factors attributing with food could be taste, eating habits, culture, cost, availability, logistics, cultural differences, cleanliness, hygiene, working hours and shifts in duty. The doctor or health care related factors would be long waiting times, poor professional understanding/ communication, impractical dietary dishes/ schedules, inadequate time, lack of study materials and lack of dietician. The knowledge related factors could be poor disease understanding, wrong quantitative/ qualitative choice of food, failure to comply with diet plans, failure with drug compliance, and failure to monitor sugars. In our study majority of the individuals had deficiency in the field of awareness on diabetic diet.

Health care related issues played a major factor affecting compliance to diabetic diet, in our study 25.4% individuals had this as a major barrier. In a study conducted in Cape town, (7) at the organizational or health systems level, long waiting times and the theme of seeing different doctors emerged as problematic factors. Seeing different doctors makes doctor patient relationship less interactive, leading to poor sharing of personal issues influencing the adherence to diabetic diet. unavailability of a nearby health care facility increases the interval of visits.

The study done in Kenya (8) revealed that family support had a key role in adherence to diabetic diet. In our study it can be noted that the patients who have family history of diabetes had better knowledge on the same. It can be interpreted that the family shares knowledge on diabetic diet when there is an affected person in the family. Similar studies were conducted in Poland (9) revealed that the lack of disease acceptance and the study done in Bangladesh (10) revealed that the unavailability of a nearby health care facility had a negative impact on the patient's adherence to dietary recommendations.

Diet is an important aspect in the management of a diabetic patient. (11) Good adherence to dietary modifications is effective in reducing diabetes complications while improving patient's quality of life and life expectancy (12). The barriers may vary for the cultural, social, ethical, ethnical differences seen in various regions. Identifying such barriers in society would help healthcare providers to intervene and facilitate better health deliverance. Subsequent improvement patient education and awareness would significantly improve dietary compliance and resultant glycemic control among diabetics.

## 7. Conclusion

This study shows that majority of the diabetics are still unaware of the diabetic diet and health care factors also play an important role as a barrier against following the dietary guidelines. A better understanding of the barriers to dietary compliance in diabetes mellitus would enable clinicians to improve the areas of deficiency and thereby

achieve adequate glycemic control at an early stage of illness

## Conflicts of interest

No conflicts of interest

## Disclosures

No Disclosures to make

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