Original Research Article

Study on Awareness of Diabetic Diet and Treatment Compliance among Diabetic Patients in Rural Pondicherry

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Abstract: Diabetes Mellitus is a metabolic syndrome characterized by chronic hyperglycemia and disturbance of carbohydrate, protein and fat metabolism associated with absolute or relative deficiency of insulin secretion and/or insulin action. Type 2 Diabetes mellitus is a metabolic disorder, the effective management of which requires not only medication use but also active patient awareness with appropriate life style modification. Diabetes increase the risk of various microvascular and macrovascular diseases such as coronary artery disease, stroke, diabetic retinopathy, diabetic neuropathy and foot amputation leading to increased morbidity. To study the awareness of diabetic diet among diabetic patients. To find out the treatment compliance in diabetic patients of rural Pondicherry. This is a cross sectional descriptive study done among diabetic patients of rural Pondicherry. A house to house survey was done to collect data by using a predesigned and pretested questionnaire. Demographic profile like age, sex, education, income and occupation, years with diabetes mellitus, knowledge of diabetic diet, whether following, type of treatment and its compliance were collected among the diabetic patients. The data collected were analyzed using suitable statistical methods. Among the participants, majority of the individuals were in the age group of 41-50 years (30%) and 56.5% were males and 43.5% were females. The present study shows only 55% of the participants had knowledge regarding the diabetic diet to be followed. It was replied, 58% of them were practicing the diet for past 5 yrs and among them 57% were following regularly and 43% were irregular. Statistical significance was found between the duration, regularity of diet and age of the patients (P value-0.06, 0.024). The study results also showed 82% have regular health check up, 65% go to government hospital and 98% follow allopathic medicine. 62.5% of them responded, their blood pressure and blood sugar investigation was done before 2 months. The study shows the overall awareness of diabetic diet among patients was only 55%. The role of Family physicians is vital, as they have to emphasis on their proper diet practice and treatment compliance.
Keywords: Diabetic diet, treatment compliance, knowledge, awareness, rural.

INTRODUCTION:

Diabetes mellitus is a major clinical and public health problem accounting for 4.6 million deaths annually world-wide. According to the International Diabetes Federation, around 366 million people globally are currently estimated to have diabetes, of which 80% live in low and middle income countries. The more worrisome fact is that about 50% of those with diabetes remain undiagnosed. The Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB study) showed that India had 62.4 million people with diabetes in 2011. These numbers are projected to increase to 101.2 million by 2030[1].

India is a country with diverse social, economic, cultural, and educational patterns. A large proportion of the population of India is from the rural sector. A number of these regions are still underdeveloped and people have varied beliefs and misconceptions regarding disease. Not much is known

about the level of awareness and prevalence of diabetes in developing countries like India. There is very little epidemiological data available from some regions of India such as the northeastern states which are ethnically distinct from the other states of India [2].

In a diabetic, there is impaired metabolism of glucose in the body, which leads to excess of glucose in the blood and urine. Insulin helps in checking and maintaining the level of glucose in the blood. Insulin deficiency leads to accelerated utilization of energy reserves from fat stores. The fatty acids are oxidized by liver to ketone bodies, which accumulates in urine resulting in ketoacidosis, leading to diabetic coma. Studies in England showed that diabetics ate an average 1000 kcal per day more than non-diabetics. It was also found that most diabetics were in non-manual occupations than non-diabetics [3].

When diabetes is detected, it must be adequately treated. The aims of treatment are to maintain blood sugar levels, maintain body weight, small frequent meals and oral antidiabetic drugs. Many of our Indian rural population are not aware or less knowledge regarding the diet should be followed when they become diabetic. There are no many studies done regarding the awareness of diabetic diet. So the study is designed to assess the awareness of diabetic diet, treatment adherence among diabetes mellitus patients which are important aspects of management of diabetes mellitus [3].

METHODOLOGY

The community based descriptive cross sectional study was conducted in the rural field practice area of Department of Community Medicine, Sri Lakshmi Narayana Institute of Medical Sciences, Pudhucherry. The study participants were selected, using convenient sampling technique from the villages covered by the department of community medicine. A house to house survey was conducted with a pre-designed and pre-tested questionnaire. The study was carried out among 200 participants, who were identified with type II diabetes mellitus. Approval of Institutional Ethical committee was obtained before the commencement of the study. Diabetes mellitus (DM) patients who accepted to be a part of the study were included in the study and patients who did not give consent were excluded. The study was carried out over a period of two months (May-June, 2016). Informed consent was obtained from the participants included in the study.

A predesigned questionnaire was given to the sample population. The questionnaire is based on the demographic data like age, sex, education, income and occupation, years with diabetes mellitus, knowledge of diabetic diet, whether following, type of treatment and its compliance. The data were collected by the trained Interns posted in the department of community Medicine. The response was in the form of yes or no and they were analyzed using suitable statistical methods and presented as tables and figures.

RESULTS

Among the participants, majority of the individuals were in the age group of 41-50 years (30%) and 56.5% were males and 43.5% were females. Most of the study participants follow Hindu religion (96%), 83% were married, unskilled workers 71%, 24% were illiterate and 54.3% belongs to class I – BG Prasad"s classification. The present study shows only 55% of the participants had knowledge regarding the diet to be practiced due to DM and 45% did not have any knowledge regarding diabetic diet. 61% of the individuals are willing to follow the diabetic diet, if they are aware. Questions were asked related to the duration of diabetic diet followed by them. It was replied that 58% of them were practicing for past 1-5 yrs and among them 57% were following regularly, 43% were irregular. Statistical significance was found between the duration, regularity of diet and age of the patients (P value-0.06, 0.024).

Almost 58% of the individuals were taking oral anti diabetic drugs in the range of 1-5 years, 77% were taking only drugs and 17% were taking both drugs as well as insulin. However 80% of the individuals reported as, they are prone to have giddiness as side effects.

Data was collected, regarding the regular health check up and follow up of blood sugar. This study showed 82% have regular health check up, 65% go to government hospital and 98% follow allopathy medicine. However health check up vs gender and age was not statistically significant. Statistical significance was observed between gender and duration of medication (P value-0.004) and age and medication (P value- 0.00). It was asked, when the participants had checked their blood pressure lastly, 62.5% responded their blood pressure was done before less than 2 months. More than 80% of the participants have done their blood sugar level check before 6 months and most of them (61%) were having their RBS level in the range of 100-200 mgs/dl and 42.5% had their PPBS levels as 200-300 mgs/dl. However, 70% and 56% has

appreciated the importance of having their blood pressure and ophthalmic examination done. ECG monitoring and renal function test has also been checked by 39% and 19% of the individuals respectively (table 3).

Table–1: Demographic variables of the study participants

Variables	Sum	Percentage
Age		
20-30	5	2.5%
31-40	27	13.5%
41-50	60	30%
51-60	50	25%
>60	58	29%
Sex		
Male	113	56.5%
Female	87	43.5%
Occupation		
Skilled	25	12.5%
Semi-Skilled	33	17.5%
Unskilled	142	71%
Education		
Illiterate	48	24%
Primary	43	22.5%
Middle	44	22%
SSLC	30	15%
Diploma\Degree	35	17.5%
Income-BG Prasad Classification		
Class I - >4860	109	54.3%
Class Ii - 2406-4859	20	10%
Class Iii - 1424-2405	7	3.5%
Class Iv - 737-1423	5	2.5%
Class V - <736	59	29.5%

Table 2: Knowledge of diabetic diet of the study participants

variables	Sum	Percentage
Knowledge		
Yes	111	55.5%
No	89	44.5%
Duration of diet		
<1 Year	14	12.39%
1-5 Year	63	55.75%
6-10 Year	21	18.58%
>10 Year	15	13.27%
Regularity		
Regular	80	56.73%
Irregular	61	43.26%
If No Why		
Unsupported	17	19.54%
Workload	15	17.24%
No Knowledge	50	57.47%
Not Willing	5	5.74%
Willing To Follow		
Yes	123	61.5%
No	77	38.5%

Table 3 – Health checkup and treatment compliance of the patients

| Variables	sum	Percentage
Regular health checkup		
Yes	164	82%
No	36	18%
where do you go for checkup		
Government hospital	130	65%
Private hospital	57	28.5%
PHC	13	6.5%
Duration of drugs		
<1 Year	22	11.22%
1-5 year	113	57.65%
6-10 year	35	17.85%
>10 year	26	13.26%
side effect		
Giddiness	91	79.82%
Tiredness	35	30.70%
Headache	2	1.8%
Abdominal pain	1	0.9%
Sleeplessness	1	0.9%
Blood sugar lastly done		
Before <2 month	125	62.5%
Before 2-6 month	47	23.5%
Before 7-12 month	21	10.5%
Before >1 year	7	3.5%
RBS (mg/dl)		
<100	5	2.5%
100-200	122	61%
200-300	59	29.5%
<300	14	7%
PPBS (mg/dl)		
100-200	32	16%
200-300	83	42.5%
300-400	77	38.5%
>400	8	4%
other checkup		
Dental	7	3.5%
Blood pressure	139	69.5%
Ophthalmology	112	56%
ECG	78	39%
Renal function test	38	19%
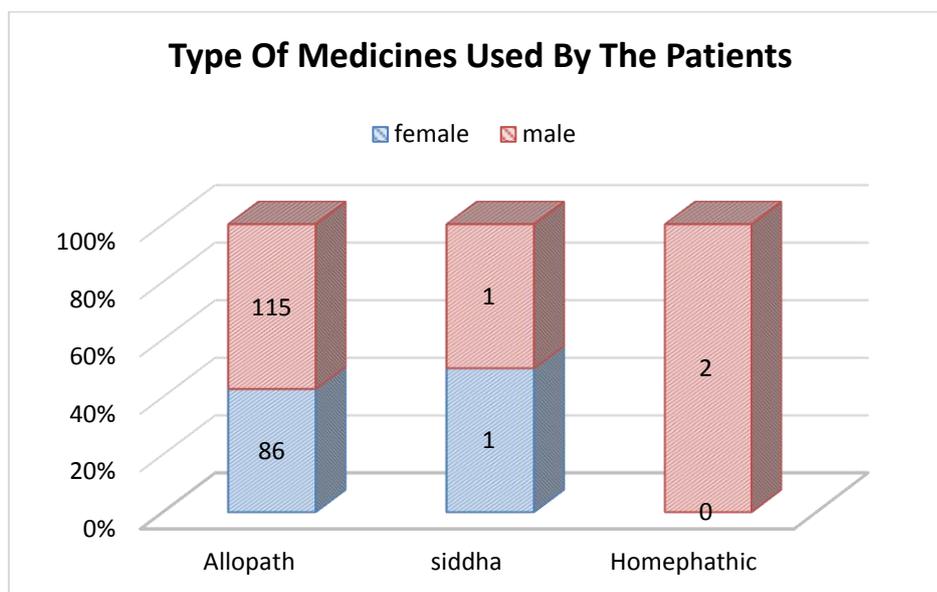
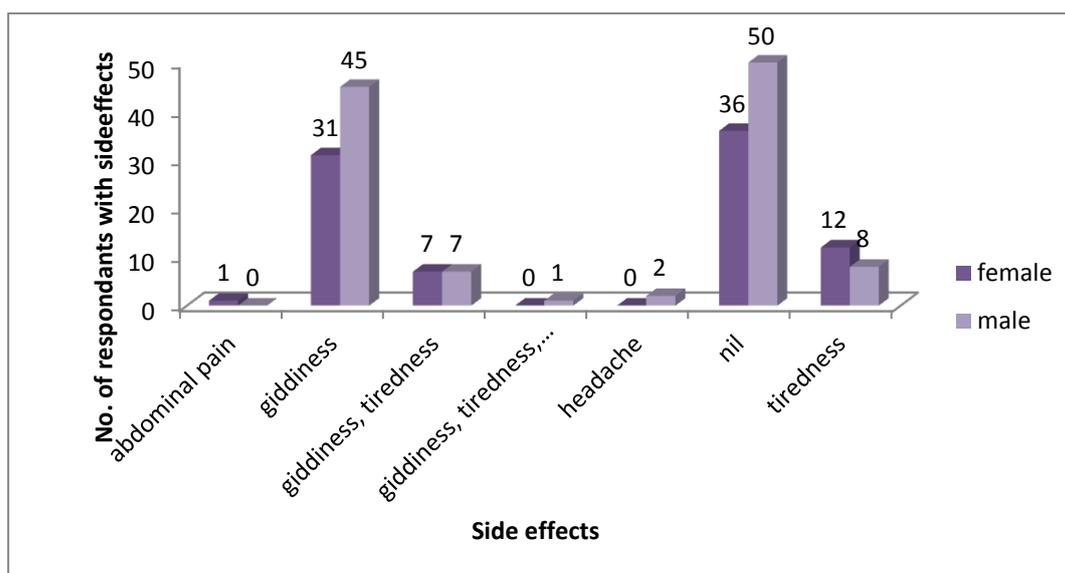**Fig.−1: Type of medicines used by the patients**

Fig. 2: Type of side effects faced by the patients

DISCUSSION

Our study was carried out in the field practice area of Department of Community Medicine, SLIMS, Pondicherry. The data was collected regarding the diabetic diet and treatment compliance of the patients in the rural areas. Many studies have been done on the prevalence, knowledge of risk factors and control of Diabetes Mellitus, but hardly studies have been done on the awareness of diabetic diet among the diabetic patients.

The present study shows, the majority of the study participants (74%) were in the age group of 41-60 yrs. This was little higher than the findings of Muninarayana [4] and Patil [5]. Similar reports have been found in many studies done at various parts of the country [6, 7].

Several studies have been done and it was reported that knowledge about diabetes and its diet is generally poor among the diabetic patients in both developing and developed countries. Our study reported

(55.5%), more than half of the patients are aware of the diabetic diet and 56.73% follow them regularly. In a study done in Kerala by Padma B Prabu et al, reports the knowledge about dietary modification was limited to avoidance of sugar and jaggary and not more than that [8]. It was perceived that, 90% of the individuals common perception of diabetic diet is to avoid sweets, rice, fatty foods and to consume more of ragi and wheat chappatis, which was reported by a study done in rural Tamaka, Kola [9].

In our study it was reported that 77% of them are taking oral hypoglycemic drugs, 4% taking insulin and 17% taking both insulin and tablets. Similar findings have been observed by Ghada EL-Khawaga, in his study done at Egypt [10].

Our study reported 80% of them had done their blood sugar check up before 6 months. The findings of Zia Ur Rahmal *et al*, in their study done at Pakistan, says only 10% of the individuals knows the importance of blood sugar monitoring [11]. His findings were contradicted by the study done by Padma B. Prabu [9] and Ashok [12], where nearly 70% of the individuals responded positively to the importance of monitoring the blood sugar regularly.

CONCLUSION
However many of the patients are having poor knowledge regarding their diabetic diet and treatment compliance. This may be because of lower level of literacy and old age hindrances in their knowledge level. Family physicians should emphasis their patients regarding their attitude, practice and compliance towards treatment and diet. Health care providers should play a vital role in imparting health message to the beneficiaries in the rural areas.

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