



## Original Research Article

# A descriptive study of knowledge and attitude of diabetes mellitus and its management in rural population

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## ABSTRACT

**Background:** Diabetes Mellitus (DM) is a chronic disease, requiring long term medications and frequent monitoring of blood sugars. Education is one of the key components in ensuring better treatment and control of diabetes. Good glycaemic control with frequent monitoring of blood glucose, healthy diet, and adequate physical activity can go a long way in prolonging longevity of patients with DM and also in preventing morbidity.

**Objective:** This study was taken up to assess the knowledge and attitude of people in Rural India towards DM.

**Materials and Methods:** This being a hospital based descriptive cross sectional study, 550 Diabetics were evaluated by detailed questionnaire.

**Results:** The mean age observed was 49.6±8.6 years, 73% of patients were illiterates. Majority of patients were farmers who indulged in heavy work (55%). (11%) was aware about diabetic diet while only 5% actually followed it. Majority (86.2%) were adherent to medications, while only 15.3% were actually aware regarding consequences and complications of missing medications dosage. None of patients were having facilities for home monitoring of glucose and only 9% got their sugars checked regularly. Only, 62.5% of patients used footwear regularly. Only 21.6% patients were aware regarding importance of foot examination, while only 7.4% performed it regularly. 75% did not come to hospital for regular glycemic monitoring as there was no one to accompany them.

**Conclusions:** Spreading knowledge regarding diabetes and its management in the form strict adherence to prescribed medications, diabetic diet, and regular physical activity will motivate individuals with diabetes to visit hospitals regularly. This is an important step in preventing diabetes-related complications. Awareness methodology specific for rural populations needs to be adopted

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## 1. Introduction

Diabetes mellitus (DM) is a major clinical and public health problem accounting for 4.6 million deaths annually worldwide.<sup>1</sup> 80% of people with T2DM live in low and middle income Countries and almost half of them are undiagnosed. As per current estimates, prevalence of DM is 9.1% in India. In the developed world, diabetes is common among

the elderly but in contrast 35-64yrs is the most commonly affected age group in the developing world.<sup>2</sup>

DM is a chronic disease, requiring long term medications and frequent monitoring of blood sugars. Further, medication dosage and type (oral hypoglycaemic drugs versus injectable) are subjective to change by the treating physician depending on blood glucose levels. Uncontrolled blood glucose levels have a detrimental effect on health of internal organs like heart, kidney, nerves and eyes in the

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form of micro and macro vascular complications.

Education is one of the key components in ensuring better treatment and control of diabetes.<sup>3</sup> Many authors have reported that poor health literacy is one of the major social determinant in the progression of this disease.<sup>4,5</sup> There is also evidence to show that increasing knowledge regarding diabetes and its complications has significant benefits including increase in compliance to treatment, thereby decreasing the complications associated with diabetes.<sup>5,6</sup> Good glycaemic control with frequent monitoring of blood glucose, healthy diet, and adequate physical activity can go a long way in prolonging longevity of patients with DM and also in preventing morbidity.

Numerous studies have shown that proper education and awareness programs can bring about a change in the attitude of people regarding diabetes. Recently, prevalence of DM has been increasing in rural India where health literacy is poor. Review of literature shows, paucity of studies in assessing knowledge and attitude of DM in rural India. This study was undertaken in rural India to assess knowledge and attitude of DM, and its management.

### 1.1. Need for study

Representative data on knowledge and awareness about diabetes is scarce in India and is extremely important in preventing and controlling diabetes related micro and macro vascular complications.

## 2. Objectives of Study

1. To assess the knowledge and awareness about Diabetes Mellitus
2. To assess adherence to medications
3. To assess importance of foot care
4. To determine the social factors interfering with DM management

## 3. Materials and Methods

### 3.1. Setting

The study was conducted on Diabetic patients attending OPD or admitted by the Medicine department at Dr Chandamma Dayananda Sagar Institute of Medical Education and Research.

### 3.2. Duration of study

1<sup>st</sup> January 2020 to 31<sup>st</sup> August 2020

### 3.3. Type of study

Hospital based, Descriptive, Cross sectional study

### 3.4. Sampling method

Random sampling done among the patients attending OPD and admitted in wards. Study population consisted of 550 diabetic patients. All the patients in the diabetic group were newly confirmed diabetics as per ADA criteria or already receiving treatment for DM.

### 3.5. Data Collection

Data was collected using a structured questionnaire translated into the local language that included

1. Details on demography, socioeconomic status, marital status
2. Physical activity
3. Dietary patterns
4. Specific questions were asked regarding duration of DM, medications and its dosage, cost of medications, adherence to medications, affordability and accessibility to medications, side effects of medications, awareness regarding consequences of missing diabetic medications.
5. Frequency of blood glucose monitoring, preference and affordability to home glucose monitoring.
6. Usage of footwear, importance and frequency of foot care.
7. Awareness regarding symptoms of micro and macro vascular complications.
8. Personal questions were asked if patients had any obligation in attending to hospital for diabetes related care.

### 3.6. Inclusion criteria

1. Adult subjects aged between 18 and 60 years irrespective of gender.
2. Patients diagnosed with T2DM as per the American Diabetic Association Criteria (American Diabetes Association, 2016).
3. Patients willing to participate in the study.

### 3.7. Exclusion criteria

Subjects not willing to participate in the study

### 3.8. Data analysis

Data was entered into Microsoft excel sheet and Statistical analysis was performed using SPSS v.18.0

#### 3.8.1. Ethical consideration

The purpose of study was explained to all patients and informed consent taken from them. Ethical committee clearance was taken.

#### 4. Results

Out of 550 patients studied, majority were males (382/550).

**Table 1:** Age distribution of patients

Age group	Number (550)	Percentage
18-30	18	3.2
30-40	32	5.8
40-50	154	28
50-60	142	25.8
60-70	128	23.2
>70	76	13.8

Mean age of patients was  $49.6 \pm 8.6$  years while mean weight and mean BMI were  $56.6 \pm 7.6$  kgs and  $29.3 \pm 2.25$  kg/m<sup>2</sup>.

Majority of patients (470/550, 85.4%) were married. 432(78.5%) patients had taken up farming as their occupation, followed by housewives and businessmen. Majority of patients were illiterates (402/550, 73%), followed by those completed primary education (50/550, 9%)

**Table 2:** Performance of physical activity

Type of activity	Number (%)
Sedentary lifestyle	23(4.1)
Light work	78(14.1)
Heavy work	303(55)
Regular walking >30minutes	128(23.2)
Exercises at home	18(3.2)

Majority of patients were farmers indulged in heavy work (55%) followed by those who did regular walking for more than 30 minutes.

Only 110/550(20%) patients knew that food consumption at regular intervals had a role in controlling blood glucose. 418(76%) patients had food at irregular intervals. Only a small percentage (11%) was aware about diabetic diet while only 5% actually followed it.

**Table 3:** Duration of diabetes

Duration (years)	Number (%)
<5	102(18.5)
5-10	238(43.2)
10-20	121(22)
>20	89(16.1)

The duration of diabetes ranged from 1.5 to 26 years with the mean of  $9.15 \pm 4.33$  years.

402(73%) patients were on oral hypoglycemic agents followed by 92(16.7%) patients who were on both oral agents and insulin. 56(10.1%) patients took only insulin.

Majority (86.2%) were adherent to medications, while only 15.3% were actually aware regarding consequences and complications of missing medications dosage.

**Table 4:** Medication usage

Factors assessed regarding medications usage	Response was "yes"
Adherence	86.2%
Affordability	72.4%
Accessibility	65.5%
Side effects experienced	32.3%
Awareness of complications of missing dose	15.3%

**Table 5:** Frequency of blood glucose monitoring

Frequency of monitoring	Response was "yes"
Daily	0
15 days	4%
1 month	9.2%
1-6 months	65.2%
>6 months	21.6%

None of patients were having facilities for home monitoring of glucose and thus none monitored their glucose daily. Majority (65.2%) had their blood glucose assessed once in 1-6 months, followed by 21% who checked them irregularly. Only 9.2% monitored their blood glucose levels once a month.

**Table 6:** Foot care

	Response was "yes"
Regular foot wear usage	62.5%
Awareness of foot examination	21.6%
If performing foot examination	7.4%
Awareness of foot care	14.5%
Whether performing foot care	6.5%

Only, 62.5% of patients used footwear regularly. Only 21.6% patients were aware regarding importance of foot examination, while only 7.4% performed it regularly.

Only, 46.6% patients were aware regarding complications of DM. Of these, only 35.2% were aware regarding symptoms of micro vascular complications affecting various organs.

**Table 7:** Social factors affecting hospital visits

	Response was "yes"
Lack of time to come to hospital	63.5%
Financial problems	22.5%
Busy in family obligation	33.4%
Busy in work related stress	36.6%
No one to accompany to hospital	74.5%
Shifted to alternative medicine	23.2%

Majority of patients refrained from regular hospital visits for glycemic monitoring as there was no one to accompany them to the hospital.

## 5. Discussion

In the present study, male preponderance (70%) was noted. This was in accordance with the study by Agrawal ET al.<sup>7</sup> However, female patients formed a large subset (60%) in Rani P K et al study.<sup>5</sup>

Mean age of patients was  $49.6 \pm 8.6$  years, similar mean age was also observed by Agrawal et al and Mehrotra R et al.<sup>7,8</sup> In our study 63% of the subjects were above 50 years of age and being closer to retirement, they may have different priorities or lack of self-interest. They may also lack motivation, adequate social support from family or possibly poor compliance to medications due to financial difficulties. Hence these patients require frequent follow-ups and monitoring along with motivation and counseling, stressing the importance of life-style modifications and adherence to medications.

In the present study, majority of the patients were illiterate (73%). 52% of study participants were illiterates in Gupta et al study.<sup>6</sup> This shows a low level of health literacy in the study population lacking awareness regarding the disease, its management, consequences of missing medication dose. All these make them vulnerable to develop uncontrolled blood glucose state further leading to diabetes related complications.

53% of our study set were farmers indulged in heavy physical activity and 23% were practicing regular walking. In contrast, only 35% had habit of exercise in a study done by Saadia et al<sup>9</sup> and 40% in study by Priyanka Raj et al<sup>10</sup> Many studies have confirmed the beneficial role of physical activity in improving glycemic control.<sup>11</sup>

Diet plays an important role in the prevention and management of DM. Only 11% in our study were aware regarding diabetic diet but only 5% actually followed it. Findings were similar to Saleh F et al study where 90% did not follow dietary advice<sup>12</sup> where as 23% were aware regarding diabetic diet in study conducted by Gul N in Pakistan<sup>13</sup> In a similar study conducted by Shu Hui Ng conducted in Malaysia <45% were following regular exercise and <50% were compliant with diabetic diet.<sup>14</sup> As DM is a chronic disease requiring long term dietary goals, patient requires persistent motivation and education to pursue the same.<sup>15</sup> The lack of proper knowledge of each patient should be given individual attention with clear view of its purpose, so that they understand and follow it in practice.<sup>16</sup>

9.2% monitored their blood glucose levels regularly in our study as against 47% who regularly checked glucose levels in Gupta et al study done in rural northern India.<sup>6</sup> Similar results were also noted by Kapur et al<sup>17</sup> Study participants underestimated the importance of regular blood glucose monitoring. This might be due to the fact that most were asymptomatic despite high sugars and also unaware regarding consequences of uncontrolled blood sugars.

In our study, only 14% were aware regarding importance of foot care. In a study conducted by Saleh et al in Bangladesh 19% were aware regarding the same.<sup>12</sup> It is well known that poor care of the foot of diabetic patients may result in diabetic foot complications.<sup>10</sup>

Only, 46.6% patients were aware regarding complications of DM, this was in comparison with study done by Mohan D Raj et al at Chennai where 40% were aware regarding diabetes related complications.<sup>18</sup> A large study conducted by Visser et al in different parts of India also showed similar results.<sup>19</sup>

Social factors play a crucial role in DM management. In rural areas, family members accompany diabetic patients for hospital visits (especially female patients), counsel them in following a diabetic diet and healthy physical activity. All these factors help the diabetic patients to cope up with their disease well. In present study, 75% of the patients stated that they missed regular monitoring as there was no one to accompany them for hospital visits. Education is the key component for the management of diabetes. Hence it becomes important not only to educate the patients regarding the importance of regular hospital visits and medication usage but also the family members accompanying them to the hospital.

In a study conducted by Shah V N et al in Gujarat 90% of participants felt that it was the duty of treating doctor to educate them regarding diet, physical activity, importance of medications. They also felt the doctor spent <5 minutes with each patient.<sup>20</sup> This may be due to factors like lack of time due to the huge patient loads and lack of appropriately trained support staff like educators. This issue can be solved by training more diabetic educators in the form of nurses, dieticians, and paramedical staff who can provide more detailed information to the patient. More diabetes awareness activities in the form of mass media campaigns, public lectures and door to door campaigns on a massive scale can be planned.

## 6. Limitations of study

1. Data was patient centered, depends exclusively on the information given by the patient and hence subjected to recall bias.
2. Small sample size of the study population
3. The present study was a cross sectional study, done in one location hence the results of the study cannot be generalized to the entire population.

## 7. Conclusion

1. Spreading knowledge regarding diabetes and its management in the form strict adherence to prescribed medications, diabetic diet, and regular physical activity will motivate individuals with diabetes to visit hospitals regularly. This is an important step in

preventing diabetes-related complications.

2. Social factors play a crucial role in DM management. Hence it becomes important not only to educate the patients regarding the importance of regular hospital visits and medication usage but also the family members accompanying them to the hospital.

## 8. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

## 9. Source of Funding

None.

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