**Original article**

# A study to assess awareness regarding Diabetes Mellitus and factors affecting it, in a tertiary care hospital in Kancheepurum District.

[1]Ashok J. Vankudre, [2]Manasi S. Padhyegurjar, [3]H. Gladius Jennifer, [4]Shekhar B. Padhyegurjar

[1]Assistant Professor, [2]Professor, [3]Assistant Professor – Bio-statistics, [4]Professor & Head Dept. of Community Medicine, Karpaga Vinayaga Institute of Medical Sciences, Madhuranthagam

**Correspondence to** Dr. Ashok J. Vankudre, E-mail ID: easyashok@gmail.com

**Abstract**

**Background:** World will have 300 million diabetics by 2025. The disease leads to high levels of morbidity and mortality and has huge financial impact on individuals and national budgets. Knowledge of the disease will play a great cost effective role in prevention and control of the disease.

**Objectives:** This study was undertaken with the aim to assess awareness regarding diabetes mellitus and factors affecting the awareness levels.

**Methods**: Patients of a tertiary care hospital, with diabetes mellitus were included in the study. Awareness regarding diabetes was judged for knowledge, self care practices and complications by using a self administered questionnaire. The scores are analysed against the variables to determine the factors affecting the scores.

**Results:** The average scores on all three aspects were observed to be above 60 %. Awareness regarding fasting and post prandial blood sugar, high fibre diet, foot care and ophthalmic complications was observed to be high. Moderate awareness was observed regarding diabetes mellitus being a lifestyle disorder, self monitoring of sugar and renal, cardiac and cerebral complications. Poor knowledge was observed regarding Hb A1c. Females and unemployed individuals had significantly lower scores. Self employed, higher education, family history of diabetes mellitus and long duration of sickness had positive effect on the scores. Age, marital status and BMI had no effect on the scores.

**Conclusions:** Awareness regarding all the aspects of diabetes mellitus needs to be increased for better control of the disease and its complications. Females and unemployed individuals need to be given special emphasis.

**Key Words:**
Diabetes Mellitus, Knowledge, Complications, Self Care

## Introduction:

Diabetes is a chronic disease caused by inherited and /or acquired deficiency in production of insulin by the pancreas or in its effects. The worldwide prevalence of diabetes is 4% (1995) which will be 5.4% in 2025. [1] In India, thirty-five million people have diabetes—a number expected to more than double by 2025, disproportionately affecting working-age people. The economic impact of this increase could be devastating to India's emerging economy. [2] Studies in India estimate that, for a low-income Indian family with an adult with diabetes, as much as 25% of family income may be devoted to diabetes care. Intangible costs (pain, anxiety, inconvenience and generally lower quality of life etc.) also have great impact on the lives of patients and their families and are the most difficult to quantify. [3] It is believed that patient's knowledge of self care is the key to achieving therapeutic goals in ambulatory care. [4] Being aware of various aspects of the disease is the first step for primary and secondary prevention. If the health care providers are aware of the level of awareness in community they can plan their preventive measures accordingly.

With this background, the current study was planned with the objective of

assessing level of awareness regarding various aspects (Knowledge, Self care practices and Complications) of diabetes mellitus and to assess the factors affecting this level of awareness.

## Materials and Methods:

This Cross sectional study was conducted at a tertiary health care hospital attached to a Medical College in Kancheepurum District, Tamil Nadu. The study was carried out among patients diagnosed with Type II Diabetes Mellitus (DM). Patients with DM coming to OPD for routine follow up, who agreed to be a part of the study were included in the study group. A 23 item questionnaire was prepared according to steps given in US National Diabetes Education Programme.[5] The questionnaire included demographic variables like age, sex, marital status, education, occupation and years with diabetes, family history of DM etc. Questions on awareness regarding DM were divided under three headings, namely knowledge of DM, self care practices and knowledge regarding complications of DM. The questionnaire was translated in Tamil and was pilot tested.

The study was carried out over a period of seven months (April 2012 to November 2012). Informed consent of 123 patients was taken. The questionnaire was self administered to them. All the respondents were assured of confidentiality and anonymity. The time taken by each patient to complete the questionnaire ranged from 15 – 20 minutes. The responses were in the format of Yes, No and Don't know. These were analysed as correct, don't know, wrong and were scored as 2, 1, 0 points respectively. Scores were calculated separately for knowledge, self care practices and complications and were also compared with demographic variables. SPSS 16 version was used. Independent t test and one way ANOVA were applied at 5 % level of significance.

## Results:

Majority of the individuals (50.4%) are in the age group of 46 – 60 years. Mean age is 51.88 years, Standard Deviation is 10.63 years and range is 21 – 74 years. 60.2 % of respondents are females, 85.4 % are married. 43.9% are unemployed and 20.3% are illiterate.

Figure 1 shows Awareness scores based on correct responses on various aspects of DM. Out of 123, 80(65%) had good knowledge of DM, 109(88.6%) were well aware of self care practices and 79(64.2%) knew about the complications. Table 1 shows the details of the scoring system and distribution of the respondents according to it.

In Table 2 selected questions from the questionnaire have been discussed. It is observed that 69 (56.1%) did not answer correctly that DM is a life style disorder. 69.1% were aware of the importance of getting fasting as well as post prandial sugar checked, however only 14.6% were aware about Hb A1 C. Only 39.8% were aware of self monitoring of blood glucose. However majority (86.2 & 82.1 respectively) appreciated the importance of high fibre diet and foot care. More than half of the respondents were aware of complications like blindness, renal problems, Ischemic Heart Disease and Stroke.

Table 3 shows comparison of average awareness score with demographic variables. Maximum numbers of patients are between 30 – 60 years of age 92 (74.8%). It is observed that average score of awareness is equally distributed among different age groups, indicating that age has no effect on awareness score ($F = 1.139$, $p = 0.3$). Though number of females 60.2% is more than the males in the study group, the score is observed to be more in males than in females. This difference is statistically significant. ($t = 3.59$, $p = 0.00$). 85.4% of the sample is married though it is observed that marital status does not affect the distribution of the score ($F = 2.5$, $p = 0.08$). However it should be

noted that sample size of unmarried is relatively small (0.8%). 43.9 % of the study sample is not actively earning a livelihood (39 % housewives and 4.9% unemployed). The mean awareness score was highest in self employed. Significant difference is observed in the average score of respondents of different occupational status, unemployed being the lowest (F=4.09, p=0.001). 20.3% of population was illiterate. Significant association is observed between average score of knowledge and increasing educational status. (F=13.76, p=0.00). Score is observed to be less in post graduate category because the sample size is small. 43.1 % of the respondents had a family history of DM. The average score is significantly higher in respondents having family history of DM. (t = 2.39, p=0.018). BMI of 95 (77.3%) respondents was above the normal range. However BMI showed no effect on the average score (F = 1.95, p = 0.12). Half 50.4% of the respondents were suffering from diabetes for a duration of 1-5 years. Increase in duration since diagnosis is shown to have significant effect on the awareness score. (F = 2.97, p = 0.03)

## Discussion:

Majority of the individuals (50.4%) in the present study are in the age group of 46 – 60 years. This is on the higher side as compared to a study conducted in rural Tamaka in Kolar District, where 54.8 % of diabetic patients were observed to be in the age group of 30 - 45 years and another conducted in Dharward, an urban area in India, where 65 % of study population was in the age group of 30-49 years. [6, 7] The sample consisted of 60.2 % females, with a majority of married individuals and literates. Similar demographic findings have been observed in multiple studies conducted in different parts of the country. [7, 8, 9]

Awareness was more than 60 % in all three aspects that have been measured. Similarly, Mehta RS et al observed that majority of the subjects (82.1%) had knowledge about the disease. [9]

In the current study, awareness regarding fasting and post prandial blood sugar, high fibre diet, foot care and ophthalmic complications was observed to be high. Chandalia HB et al conducted a case control study, where it was observed that, diabetics had more awareness about footwear, foot care and knowledge of symptoms relating to diabetic foot than the non-diabetic controls though even in the diabetics the total average score was 57% indicating that there was scope for improving knowledge about prevention of diabetic foot disease.[10]

Moderate awareness was observed regarding DM being a lifestyle disorder, self monitoring of sugar and renal, cardiac and cerebral complications in this study. In the study conducted by Mehta RS et al 42.9% were familiar with complications of diabetes. [9] In a study conducted by Mohan D et al. regarding awareness and knowledge of Diabetes in Chennai, only 19.0% of whole population knew that diabetes could cause complications. Among those aware, foot problems (23.0%) and kidney disease (17.4%) were the most commonly reported complications.[11] However Munninarayan et al. observed that 74.2% were aware that diabetes could produce some complications.[6] 85.4 % of respondents were not aware of Hb A1c. Similarly, in a study conducted by Gulabani et al 94.1% patients did not know about glycosylated hemoglobin (HbA1c). [12]

Females and unemployed individuals have significantly lower scores in the current study. Similarly, Gulabani et al. observed that the mean score in men was 2.84 points higher than that in women and the difference was found to be statistically significant. [12] However, in study conducted in Nigeria it is observed that female patients are more knowledgeable. [4]

Self employed status, higher education, family history of DM and long

duration of sickness had positive effect on the scores. Similarly Adibe MO observed that patients who were attending or stopped at secondary school and patients who had lived many years with diabetes (>10 years) were more likely to be knowledgeable.[4] Similar association with education and duration of disease was also observed in other studies. [12, 13]

Age, marital status and BMI had no effect on the scores. However Adibe MO observed that younger patients were more knowledgeable.[4]

## Conclusion:

Diabetes is another popular example where prevention is bound to be better than cure. Understandably the first objective of National Diabetes Control Programme is prevention of diabetes through identification of high risk subjects and early intervention in the form of health education.[1] Knowledge is the greatest weapon in fight against diabetes. Information can help people assess their risk of diabetes, motivate them to seek proper treatment and care, and inspire them to take charge of their disease.[7]

The current study shows that awareness is not even in all the aspects of the disease. We need to develop a comprehensive health education programme where all aspects of DM namely, knowledge about the disease and complications, self care, HbA1c, self monitoring etc. are covered. We specially need to target women and illiterate population. We need to reach out to individuals who are not diagnosed from the community. Further research needs to be done regarding the felt needs of the patients. Although diabetes action has been initiated, efforts are weak and fragmented. Progress is impeded by a health system that places a higher priority on communicable diseases and maternal and child health services and by a private health system driven by curative medicine. However, prevention is cost-effective and should be a focus.[2]

**Table 1: Distribution of respondents according to the Awareness score**

| | Category | No. (%) n =123 |
|---|---|---|
| Knowledge of diabetes among study group | Good (Score 14–20) | 80 (65%) |
| | Fair (Score 7–13) | 43 (35%) |
| | Poor (Score 0–6) | - |
| Knowledge of self care practice for diabetes among study group | Good (Score 12–18) | 109(88.6%) |
| | Fair (Score 6–11) | 14 (11.4%) |
| | Poor (Score 0–5) | - |
| Knowledge of Complications | Good (Score 6–8) | 79 (64.2%) |
| | Fair (Score 3–5) | 43 (35%) |
| | Poor (Score 0–2) | 1 (0.8%) |

**Table 2: Response to selected questions on awareness regarding Diabetes Mellitus**

| Sr. No. | Question | Yes No. (%) | No No. (%) | Do not Know No. (%) |
|---|---|---|---|---|
| | **Knowledge of Diabetes** | | | |
| 1 | Is the diabetes Mellitus life style related disease? | 54 (43.9) | 3 (2.4) | 66 (53.7) |
| 2 | Is it important to do both fasting as well as Post Prandial blood sugar level for diagnosis & monitoring? | 85 (69.1) | 2 (1.6) | 36 (29.3) |
| 3 | Apart from blood sugar level are you aware about HbA1c? | 18 (14.6) | 2 (1.6) | 103 (83.7) |
| | **Self care practices** | | | |
| 4 | Are you aware of self monitoring of blood glucose in Diabetes? | 49 (39.8) | 3 (2.4) | 71 (57.7) |
| 5 | Is it necessary to consume high fibre diet in DM care? | 106 (86.2) | 1(0.8) | 16 (13) |
| 6 | Is foot care necessary in DM ? | 101 (82.1) | 2 (1.6) | 20 (16.3) |
| | **Knowledge regarding complications of DM** | | | |
| 7 | Unmanaged DM can cause eye problems or even blindness | 85 (69.1) | 1(0.8) | 37 (30.1) |
| 8 | Uncontrolled DM can affect your kidneys | 73 (59.3) | 1(0.8) | 49 (39.8) |
| 9 | Uncontrolled DM can cause Ischemic Heart disease | 62 (50.4) | 1(0.8) | 60 (48.8) |
| 10 | Uncontrolled DM can cause stroke | 67 (54.5) | 1(0.8) | 55 (44.7) |

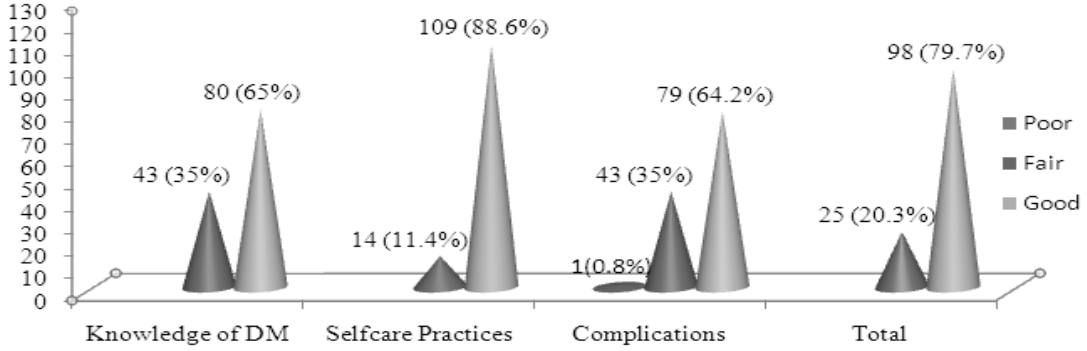
n = 123

**Table 3: Comparison of Awareness score with demographic variables.**

| Sr. No. | Characteristics | Category | Frequency (%) | Mean Score ± SD |
|---|---|---|---|---|
| 1 | Age ( Years) | < 30 yrs | 5 (4.1%) | 37.0 ± 4.3 |
| | | 30 – 45 yrs | 30 (24.4%) | 38.73 ± 6.58 |
| | | 46 – 60 yrs | 62 (50.4%) | 36.53 ± 5.49 |
| | | > 60 yrs | 26 (21.1%) | 35.58 ± 7.89 |
| | | **F = 1.139, p = 0.3 (One way ANOVA)*** | | |
| 2 | Sex | Male | 49 (39.8%) | 39.39 ± 5.53 |
| | | Female | 74 (60.2%) | 35.36 ± 6.33 |
| | | **t = 3.59, p = 0.00 (Independent t test) †** | | |
| 3 | Marital Status | Single | 1 (0.8%) | 25 |
| | | Married | 105 (85.4%) | 37.31± 5.98 |
| | | Widow | 17 (13.8%) | 35.41±7.68 |
| | | **F = 2.5, p = 0.08 (One way ANOVA)*** | | |
| 4 | Occupation | Unemployed | 6 (4.9%) | 30.5 ± 5.79 |
| | | House wife | 48 (39%) | 36.19 ± 5.59 |
| | | Employed | 19 (15.4%) | 39.37 ± 5.36 |
| | | Self Employed | 13 (10.6%) | 41.08 ± 5.72 |
| | | Retired | 8 (6.5%) | 40.12 ± 6.36 |
| | | Farmer | 4 (3.3%) | 39.25 ± 2.75 |
| | | Others | 25 (20.3%) | 34.6 ± 6.95 |
| | | **F = 4.09, p = 0.001 (One way ANOVA) †** | | |
| 5 | Education | Illiterate | 25 (20.3%) | 32.48 ± 5.84 |
| | | Primary | 47 (38.2%) | 35.02 ± 5.25 |
| | | Secondary | 40 (32.5%) | 40.75 ± 4.83 |
| | | Under graduate | 8 (6.5%) | 43.0 ± 3.29 |
| | | Post graduate | 3 (2.4%) | 37.67 ± 10.97 |
| | | **F = 13.76, p = 0.00 (One way ANOVA) †** | | |
| 6 | Family History of DM | Yes | 53 (43.1%) | 38.49 ± 6.52 |
| | | NO | 70 (56.9%) | 35.79 ± 5.94 |
| | | **t = 2.39, p = 0.018 (Independent t test) †** | | |
| 7 | Body Mass Index (BMI) | Underweight ( < 18.5) | 6 (4.9%) | 37.17 ± 4.31 |
| | | Normal ( 18.5 – 23) | 22 (17.9%) | 34.09 ± 6.69 |
| | | Pre obese ( 23 – 27.5) | 51 (41.5%) | 37.86 ± 6.18 |
| | | Obese ( > 27.5) | 44 (35.8%) | 37.3 ± 6.27 |
| | | **F = 1.95, p = 0.12 (One way ANOVA)*** | | |
| 8 | Duration since diagnosis | Up to 1 yr | 28 (22.8%) | 34.43 ± 6.29 |
| | | 1 yr to 5yr | 62 (50.4%) | 37.15 ± 5.79 |
| | | 5yr to 10yr | 22 (17.9%) | 37.82 ± 7.17 |
| | | More than 10 yr | 11 (8.9%) | 40.55 ± 5.79 |
| | | **F = 2.97, p = 0.03 (One way ANOVA) †** | | |

n = 123, * = Non-significant, † = Significant

**Figure 1: Awareness regarding various aspects of DM**

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## Acknowledgement:

We are thankful to Medical Social Worker, Mr. V Anbu Sagaya Raj and technicians Mr A. Anburaj, Ms. Mano Mangayarkarasi and Mrs Gunasundari form the department of Community Medicine for helping us with data collection and other logistics.