Assessment of Diabetes Related Knowledge, Attitude and Practice among Diabetics and Non-diabetics using Self Prepared Questionnaire for Awareness of Health Promotion

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ABSTRACT

Introduction: As diabetes mellitus is one of the most challenging public health problem in 21st century, it is important to know about the awareness level of a disease condition in a population, which plays a vital role in future development, early detection and prevention of disease. Objective: To assess the awareness and knowledge regarding diabetes mellitus among diabetic and non-diabetic subjects. Methods: A prospective and observational study was done in 100 diabetic and 50 non-diabetic subjects. All in-patients and out-patients either gender, of age 20-80 years were included in the study. Paediatric patients, pregnant/lactating women were excluded. Result: After analysing the scores, it was found that among diabetic patients 46% had poor knowledge, 45% had medium knowledge and 9% had good knowledge regarding Diabetes Mellitus where as 64% of non-diabetics had poor knowledge, 34% of non-diabetics had medium knowledge and 2% of non-diabetics had good knowledge regarding Diabetes Mellitus. Conclusion: Overall, our study concludes that diabetic patients had more knowledge regarding diabetes mellitus than non-diabetic subjects.

Key words: Awareness, Diabetes mellitus, knowledge, Early detection, Prevention, Complications.

INTRODUCTION

As Diabetes Mellitus (DM) is one of the most challenging public health problems in 21st century. It currently affects over 366 million people worldwide and this figure is likely to double by 2030. It is important to know about the awareness level of a disease condition in a population, which plays a vital role in future development, early detection and prevention of disease. Prevention is important because the burden of the diabetes and its complications on health care and its economic implications are enormous, especially for a developing country like India. Patient education is always considered an essential element of DM management. Studies have consistently shown that improved glycaemic control and strict metabolic control can delay or prevent the progression of complications associated with diabetes. Evidences suggest that patients, who are knowledgeable about DM self-care, have better long term glycaemic control. Thus it is indispensable to ensure that patient's knowledge, attitudes and practices are adequate.

Risk factors

Awareness of risk factors is a prerequisite to prevent diabetes among general population and also in high-risk groups, such as Impaired Fasting Glucose (IFG) and Impaired Glucose Tolerance (IGT). The common risk factors are obesity, family history, insulin resistance, hypertension, and hyperlipidemia.

Complications

Major problem with diabetes is that if it is poorly controlled it leads to increase in micro vascular and macro vascular complications such as coronary artery disease,
stroke, blindness, kidney failure, foot amputation, poor blood supply to the limbs leading to increased morbidity. Patient education becomes a central component in the prevention and control of disease.

**Self-care practices**

The self-care practices of individuals are influenced by their knowledge about diabetes; the more they know about their illness, more they would have self-management skills. Many research work published have shown that the diabetic population don’t have enough awareness of diabetes, the proper use of medications, lifestyle modifications, dietary plans, myths associated with insulin and other education programs on health issue.

**METHODOLOGY**

**Study Design**

The study was a Prospective and Observational study.

**Study Site**

This study was conducted at Bhimavaram Hospital, Bhimavaram. It is a 300 bedded multi-speciality tertiary care hospital.

**Study Period**

The study was carried out over a period of six months from Dec 2015 to May 2016.

**Source Of Data And Materials**

- Method of collection of data:
  - Patient interview
  - Patient case note/prescription
  - Patient counselling
- Method of collection of material
  - Self-questionnaire
  - Patient consent form
  - Patient data collection form
  - Diet chart
  - Chart on insulin administration technique.

**Study Criteria**

**Suggested Inclusion Criteria**

- Male and female Diabetic and Non-diabetic population between 20 to 80 years old.
- Patients with type1 and type 2 diabetes.

**Exclusion Criteria:**

- Paediatric Patients.
- Patients who are not willing to give the consent form.
- Pregnant/lactating women.

**Study Procedure:**

**Method of data collection**

A total of 150 subjects were interviewed and their details were noted in a specially designed data collection form. Among them 100 subjects were diabetic and 50 were non-diabetic. The data collection form contains information about socio demographic characteristics, questionnaire about patient awareness on illness, risk factor, symptoms, complications, self-care practices, lifestyle modifications and management. The awareness was assessed by giving scores based on the answers given by the participants during the interview. The questionnaires were interpreted into local languages, to those who could not understand or read English.

**Research and Ethical Committee Aproval**

Institutional research and ethical committee approved the study and issued a letter of permission to conduct the study.

**Statistical Methods**

Descriptive statistical analysis has been carried out in the present study. Mean ± Standard deviation (Min-max), one way ANOVA and p value as well as Percentages

**RESULTS AND DISCUSSION**

The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels.

This study was conducted to improve the knowledge regarding disease characteristics, natural course, complications and management of diabetes mellitus. The study was conducted for 6 months from December 2015 to May 2016 in a tertiary care hospital. A total of 150 participants were selected in the study of which 100 are diabetic patients and 50 were non-diabetic subjects.

Table 1 shows demographic characteristics of participants. Most of the patients were in the age group of 41-59 yrs and the lowest age group was 20-40 yrs. Diabetic patients which include 64 (64%) men, 36 (36%) women and non-diabetic patients include 21 (42%) men, 29 (58%) women. The mean and standard deviation of diabetic and non-diabetic patients regarding gender was 50 ± 19.8 and 46 ± 5.65. In our study knowledge regarding diabetes mellitus was increase in graduates which was consistent with the study done by (Nehad M. Hamoudi et al 2012). The mean and standard deviation of educational status of diabetic patients was 19.8±5.44 and non-diabetic subjects were 39.6 ±
10.8. 36% diabetic and 14% non-diabetic patients had family history of diabetes whereas 64% diabetic and 72% non-diabetic had no family history of diabetes. The mean and standard deviation for family history of diabetic patients was 50 ± 19.8 while in non-diabetic patients 50 ± 31.1. Most of the responders had duration of disease >5 yrs whereas 27% of people were having duration of disease <1yr. Mean and standard deviation of their duration of illness was 33 ± 7.77. Majority of the diabetic and non-diabetic subjects are overweight and their mean and standard deviation were 20 ± 22.29, 10 ± 12.38.

### Table 1: Socio demographic profile of diabetic and non-diabetic subjects

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Diabetic patients (n=100)</th>
<th>% Diabetic</th>
<th>Non-diabetic patients (n=50)</th>
<th>% Non-diabetic</th>
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<tbody>
<tr>
<td>GENDER</td>
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<td></td>
<td></td>
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<tr>
<td>Male</td>
<td>64</td>
<td>64</td>
<td>21</td>
<td>42</td>
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<tr>
<td>Female</td>
<td>36</td>
<td>36</td>
<td>29</td>
<td>58</td>
</tr>
<tr>
<td>BMI</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Under Weight</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>34</td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Over Weight</td>
<td>52</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese class I</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obese class II</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family History</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>36</td>
<td>36</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>No</td>
<td>64</td>
<td>64</td>
<td>36</td>
<td>72</td>
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<td>DURATION OF ILLNESS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-1yr</td>
<td>27</td>
<td>27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5yr</td>
<td>31</td>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;5yr</td>
<td>42</td>
<td>42</td>
<td></td>
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</tr>
</tbody>
</table>

### Table 2: Educational status of the study population

<table>
<thead>
<tr>
<th>Education</th>
<th>Diabetic Patients</th>
<th>% Diabetic</th>
<th>Non-diabetic Patients</th>
<th>% Non-diabetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Schooling</td>
<td>28</td>
<td>28</td>
<td>10</td>
<td>20</td>
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<tr>
<td>Secondary Schooling</td>
<td>15</td>
<td>15</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Graduate</td>
<td>22</td>
<td>22</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>15</td>
<td>15</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>Illiterate</td>
<td>19</td>
<td>19</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>Mean</td>
<td>19.8</td>
<td>19.8</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>5.4497</td>
<td>3.3166</td>
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<td></td>
</tr>
</tbody>
</table>

### Table 3: Percentage of diabetic and non-diabetic patients on knowledge on risk factors

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Diabetic Patients</th>
<th>% Diabetic</th>
<th>Non-diabetic Patients</th>
<th>% Non-diabetic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>45</td>
<td>45</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>Family History</td>
<td>63</td>
<td>63</td>
<td>39</td>
<td>78</td>
</tr>
<tr>
<td>Hypertension</td>
<td>19</td>
<td>18</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Lack Of Physical Activity</td>
<td>27</td>
<td>27</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Smoking</td>
<td>19</td>
<td>19</td>
<td>14</td>
<td>28</td>
</tr>
<tr>
<td>GDM</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>All</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>None</td>
<td>28</td>
<td>28</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

Knowledge regarding risk factors of diabetes mellitus

Table 3 shows the knowledge regarding the risk factors of diabetes. 63% diabetic patients and 78% non-diabetic patients were having idea that hereditary is one of the major risk factor for diabetes mellitus. 48% diabetic and 45% non-diabetic were aware that obesity can cause diabetes mellitus. While coming to other risk factors 19% diabetic and 40% non-diabetic, 27% diabetic and 24% non-diabetic have the awareness on hypertension and lack of physical activity. Smoking also one cause and it was found to be aware in 19% diabetic and 28% non-diabetic subjects. In the present study 28% diabetic patients and 8% non-diabetic patients was found to be not aware of any risk factor of diabetes. Mean and standard deviation of diabetic and non-diabetic patients regarding risk factors was found to be 23.1 ± 20.73, 27.5 ± 24.5.
Knowledge regarding complications of diabetes mellitus

In this study regarding knowledge and awareness on diabetes, Table 6 shows the percentage of knowledge on complications of diabetes for both diabetic and non-diabetic subjects. It shows 4% diabetic and 4% non-diabetic were aware on all complications.

Eye Complications: 69% diabetic patients and 58% non-diabetic patients knew that DM can affect your eye.

Cardiac complications

51% diabetic and 54% non-diabetic patients knew that DM is a risk factor for developing heart diseases.

Kidney complications

4% diabetic and 4% non-diabetic were aware of the symptoms of diabetes.
As regards the kidney complication of DM, 59% diabetic and 54% non-diabetic were aware that DM is a risk factor for renal diseases.

**CNS complications**

28% diabetic and 18% non-diabetic respondents were aware that Diabetes can affect nerves leading to neuropathy while 1% diabetic and 2% non-diabetic knew that it can affect the blood vessels. 21% diabetic and 18% non-diabetic patients were unaware of diabetes mellitus.

**Knowledge regarding symptoms of diabetes mellitus**

Figure 2 shows the comparison between diabetic and non-diabetic patients towards knowledge of symptoms. The results showed that the respondents had a fairly good understanding of the symptoms of diabetes. Early recognition of symptoms may aid in early detection of the disease, allowing for prompt treatment, and would seek prompt medical attention. The symptoms of Type 2 diabetes are so mild those patients who are fortunate to be diagnosed early do not require long term therapy. It is important to educate the public about the complications of diabetes mellitus, so that they could encourage their diabetic friends or relatives to comply with therapy. This may reduce the burden of diabetes and its complications. Only 1% diabetic and none of diabetic patients were aware on diabetic symptoms. Majority of Responders (71% diabetic and 80% non-diabetic) were aware on Polyuria as a diabetic symptom whereas 37% diabetic and 34% non-diabetic were aware on polydypsia as a diabetic symptom, 34% diabetic and 26% non-diabetic, 67% diabetic and 36% non-diabetic, numbness of hands as 38% diabetic and 14% non-diabetic, 48% diabetic and 20% non-diabetic, 6% diabetic and 4% non-diabetic were aware on abnormal sensation of feet, numbness of hands, nocturia weight loss as a symptoms of diabetes mellitus. 4% diabetic and 4% non-diabetic participants were unaware of any of the symptoms of diabetes.

**Knowledge regarding management of diabetes**

It is essential that diabetic patients should possess good knowledge about their illness in order to improve their self-management skills and there by prevent complications. Research has found that less frequent self-care behaviours were evident among particularly high-risk diabetic patients with lower educational levels. For instance, while over 90% Knew that diabetes can be managed with dietary modification and drugs, only about a third (Mostly males) of our study participants knew that exercise is an essential component of diabetes management. Lifestyle patterns and exercise is known to be very important in management of metabolic disorders like type 2 diabetes mellitus. This study included a set of questions addressing the lifestyle and exercise status of the respondents. Figure 1 shows that 27% diabetic and 20% non-diabetic subjects check their glucose levels by the glucometer. 50% diabetic and 44% non-diabetic patients are aware on the advantage of physical activity in diabetic patients. 28% diabetic and 84% non-diabetic participants gave correct responses to the daily physical activity. 72% diabetic and 16% non-diabetic gave incorrect response to daily physical activity. But only 23% diabetic and 4% non-diabetic subjects with sedentary lifestyle did walking, 8% diabetic and 2% non-diabetic subjects did the aerobic exercises for 30 minutes a day for four or more days a week. The general awareness about the metabolic disorders and associated conditions was found to be much lower in the study Population.

In this study Figure 5 shows that the mean of FBG and PPBG values were very high during their first visit and after providing necessary interventions like diet chart, insulin administration technique chart and patient counselling. The mean of FBG and PPBG values has been decreased during their second visit.

By using the study done by (Shahnooshi Javad et al 2014) we gave scores for the each question. (Aware = 2, partially aware=1, unaware=0) answered by both diabetic and non-diabetic patients. The mean score for each section (risk actors, and complications, symptoms and self care practices) was calculated based on the total possible score in each; then it was expressed as mean ± standard deviation (SD) and then analysis was done by using one way ANOVA. The P value = 0.001 which is highly significant. It shows that diabetic patients had more knowledge than non-diabetic patients. Overall study show that in diabetic male patients have good knowledge towards DM etiology and complications than females. But in non-diabetics, females have more knowledge towards risk factors and low knowledge towards DM clinical manifestation than males.

**CONCLUSION**

The current study provides a snapshot of the current situation of knowledge and awareness of diabetes mellitus. Present study emphasizes the need for improvement in knowledge and awareness on diabetes mellitus among the diabetic as well as non-diabetic subjects in order to achieve prevention and better control of diabetes risk factors, complications and its management.
After analyzing the scores, it was found that among diabetic patients 46% had poor knowledge, 45% had medium knowledge and 9% had good knowledge regarding diabetes mellitus where as 64% of non-diabetics had poor knowledge, 34% of non-diabetics had medium knowledge and 2% of non-diabetics had good knowledge regarding diabetes mellitus.

Out of the total study population, 51% diabetic male patients, 26% diabetic female patients where as 42% non-diabetic male subjects and 52% non-diabetic female subjects were aware on diabetic risk factors.61% diabetic male patients and 35% diabetic female patients where as 42% non-diabetic male subjects and 52% non-diabetic female subjects were aware on diabetic symptoms. 54% diabetic male patients and 26% diabetic female patients where as 32% non-diabetic male subjects and 50% non-diabetic female subjects were aware on diabetes associated complications. The overall level of awareness in both male and female diabetic and non-diabetic participants was found to be low.

In our present study, we have reviewed the diabetic patients FBS and PPBS values. The mean values of FBS and PPBS of diabetic patients were reduced in their second visit as we provided pharmacist interventions in their first visit.

Regarding knowledge on diabetic self-care practices in our total study population 28% diabetic patients and 84% non-diabetic subjects has been performing their daily physical activity. 83% diabetic patients and 58% non-diabetic subjects were following their diet restrictions.

There is a big space for raising the educational awareness about diabetes through formal, well organized approaches by healthcare professionals in hospitals, clinics and community based healthcare centres. Because the American Diabetes Association has clearly defined the critical role of diabetes education in quality of diabetic care, diabetes self-management education is a critical element in order to improve patient outcomes.

Health care professionals may be additional proactive in disseminates health information about diabetes to the public. Over all, the result of the study indicates, it is essential that the health managers and authorities to take proper steps to increase the awareness among the population regarding causes, symptoms, alternative treatment practices and management of type II diabetes and its complication in order to build our community healthier and prosperous.

ACKNOWLEDGEMENT

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CONFLICT OF INTEREST

No conflicts of interest

ABBREVIATION USED

PCOS: Polycystic ovarian syndrome; GDM: Gestational diabetes mellitus; MODY: Maturity onset disease of young; BMI: Body mass index; DM: Diabetes mellitus; IGT: Impaired glucose tolerance; IFG: Impaired fasting glucose; RBS: Random blood sugar; FBG: Fasting blood glucose; PPBG: Post prandial blood glucose; HbA1c: Glycosylated haemoglobin; ANOVA: Analysis of variance; SD: Standard deviation; CNS: Central nervous system; TV: Television; SC: Sub cutaneous; PO: Per oral; OD: Once daily; BD: Twice daily; TID: Three daily; HIV: Human immune deficiency virus; AIDS: Acquired immunodeficiency virus.

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