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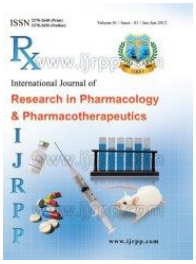

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Assessment of level of knowledge and to explore association between knowledge and diabetic complications among type 2 diabetes mellitus patients

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ABSTRACT

Aim

To assess the level of knowledge and to explore the association between knowledge and diabetes complications among patient with type 2 Diabetes Mellitus.

Methods

A cross sectional study was conducted among 428 patients with type 2 diabetes mellitus attending a diabetic clinic at Palakkad district. Subjects of both sex and age group between 18to 80 years, who were capable of understanding and completing questionnaire, were included in the study. Subjects not willing to participate were excluded. DKQ adapted for south Asian population was used to assess the diabetes knowledge. DKQ score was a 24 point scale, participants showing more than 18 points were considered as good knowledge. Association between DKQ and diabetic complications were analyzed.

Results

Among 428 subjects, 4% of the participants had well, (52%) had moderate and (44%) had poor knowledge on diabetes. The mean DKQ score was 13.2± 2.2. Most of the participants show Microvascular complications (55%), 45% had Macrovasular complications.

Conclusion

Patients with type 2 diabetes mellitus have limited knowledge, majority of patients have low educational level. Data also show that there is a relationship between knowledge and diabetes complications. Participants with poor knowledge and poor glycemic control are susceptible for developing long term complications. Improving diabetes knowledge of people with diabetes might allow achieving better glycemic control. Involving a clinical pharmacist with endocrinologist might achieve this objective of improving patient knowledge of diabetes when followed longitudinally.

Keywords: Diabetes Knowledge, Questionnaire, Complications, Diabetes education, Barrier

INTRODUCTION

Diabetes represents a spectrum of metabolic disorders, which has become a major health challenge worldwide [1]. Diabetes has emerged as a major healthcare problem in India. According to Diabetes Atlas (ADA) published by the International Diabetes Federation (IDF), there is an alarming rise in disease progression from 40 million in 2007 to 70 million by 2025 in India and every fifth person with diabetes will be an Indian 2, Diabetes mellitus is described by World Health Organization (WHO) as "Metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both. The effects of diabetes mellitus include long term damage, dysfunction and failure of various organs". Diabetes if uncontrolled, leads to several acute and chronic complications.[2] Type 2 diabetes is a metabolic disorder, the effective management of which requires not only medication use but also active patient awareness with appropriate life-style modifications. Major problem with diabetes is that if it is poorly controlled it leads to increase in complications associated with diabetes. Diabetes increases the risk of various Microvascular and Macrovascular diseases such as coronary artery disease, stroke, blindness, kidney failure, and foot amputation [2,3] leading to increased morbidity.

In India 20% of the elderly has type II diabetes mellitus. This is due to many socio demographic factors such as increased life expectancy, high rates of obesity and changes in dietary habits.[3] Insufficient diabetes education and poor self-care practices contribute to poor glycemic control and complications like diabetic nephropathy, diabetic retinopathy, diabetic neuropathy etc. Additionally, those with poor understanding of the disease have shown increased hospitalization for unstable diabetes. On the contrary, patients with excellent knowledge and understanding of diabetes are able to adhere to the principles of self care and have documented better glycemic control along with improved health outcomes.

Diabetes mellitus treated for life thus cost associated with diabetes [5] and its associated co-morbidities and complications imposes an extensive economic burden on cost of care [6, 7] for individual [8], society [6,9,10] and healthcare system [8]. However, in order to achieve good metabolic control, it is necessary to measure glycated hemoglobin (HbA1c) as well as assess awareness about diabetes among diabetes subjects. Poor diabetes knowledge has a negative impact on self-care behavior [11]. Though education of patients has very important role in effective management of diabetes, there is a shortage of trained personnel in India to provide education about diabetes and its associated complications [12].

Formal assessment of knowledge about diabetes and its management of subjects with diabetes is a prerequisite .Thus aim of our study was to assess the level of knowledge and to explore the association between knowledge and diabetic complications among patients with type 2DM.

METHODS

Cross-sectional study included adults with type2DM who are visiting the outpatient clinic of the hospital. Patient of either sex between the age of ≥18 to below 80yrs and capable of understanding and completing questionnaires and willing to give informed consent were included in the study.

The study carried out over a period of six months from December 2016 to May 2017. The study protocol was approved by the Institutional and review/ethical committee. All the participants were informed about the aims and objectives of the research and that they had the right to withdraw from the study at any point without any obligations written inform consent from all participants before the interview. The data was collected from patient record book and patient interview. All necessary and relevant baseline information collected on a standard, data collection proforma which contains patient demographic report and medical records of patient with diabetes.

We carried out the search to identify for validated questionnaire suitable and easy to use in Indian clinical setting. Worldwide many knowledge questionnaires have been developed for assessing diabetes patient's knowledge about diabetes and its management. DKQ [13] is a validated tool for evaluating diabetes knowledge among subjects with Diabetes mellitus.

Modified DKQ was utilized for the study for assessing knowledge of people with diabetes. The entire questionnaire can be administered to patients with type2 DM. Modified DKQ comprises 24

questions concerning patients diabetes knowledge of people with diabetes. The entire questionnaire can be administered to patients with type 2 DM. Modified DKQ comprises 24 questions concerning patients and additional demographic questions. DKQ was then translated to Malayalam [14]. This DKQ was designed and with in simple languages [English, Malayalam] for people with low literacy level. Based on patient ability to read and/or understand DKQ in suitable languages was used to assess patients diabetes knowledge. In this study it was assumed that all the questions can be answered by educated as well as illiterate people.

Under supervision of Diabetologist researcher administered DKQ orally by conducting face to face interview of people with diabetes and asked patients to answer the questions orally by choosing correct option from two options (Yes/No). For the participants who cannot read or write to complete the DKQ the researcher provide assistance to complete the questionnaire. If some people could not follow the terminology the researcher gave a simple explanation based on the study for their understanding and to motivate them and extract answers. It was ensured that answer given by the patients in order to ensure that they understood questions completely. The questions took approximately 5-15 min to complete the interview.

Sores of DKQ were collected for each participant. One point given for each correct answer, no point for incorrect answers. The total score was summed up for diabetes knowledge score for each subject with diabetes. To assess the level of diabetes knowledge scores were utilized. Maximum score offered being 24 and <12 rated as poor knowledge, 13-18 satisfactory knowledge and ≥ 18 as high knowledge. Higher score indicates better knowledge of diabetes subject about Diabetes.

DATA ANALYSIS

Data were tabulated and analyzed by using Microsoft Excel.

RESULT

Among 428 participants in this study 224 (52%) were female and 204 (48%) were males and the mean ± SD age of the participant was 57.72± 10.8. Mean duration of diabetes was 6.5± 4.5 and 77% of participants had a family history. In this study nearly half (50%) had below matriculation education. Glycemic level were found to be high, FBS 144± 53.8 and PPBS 219.18± 86.080. 64% were using oral hypoglycemic only 36% were using Insulin+ oral hypoglycemic.

(Table 1) Present knowledge on diabetes of the participants in terms of different characteristics, mean DKQ score13.3± 2.6, overall 4% (n=52) who were graduates had good knowledge, 52% had moderate knowledge and 44% had poor knowledge on diabetes mellitus. Most of the participants shows Microvascular complications (55%), 45% had Macrovascular complications.

Table: 1 Characteristics of respondents

PARAMETER	
AGE, YEAR (Mean)	57.72± 10.8
Males, n (%)	52
Female n (%)	48
Level of education	
Illiterate, n (%)	1 (0%)
Below Matriculation, n (%)	56 (13%)
Matriculation, n (%)	216 (51%)
Higher secondary, n (%)	99 (23%)
Graduation, n (%)	56 (13%)
FBS (Mean)	144± 53.8
PPBS ,(Mean)	219.18± 86.08
Diabetes knowledge score mean ±SD	13.3± 2.6
People with diabetes receiving oral medication only, n (%)	229 (64%)

People with diabetes receiving insulin +oral medication, n (%)	129 (36%)
Micro vascular complications (%)	55%
Macro vascular complications (%)	45%

DKQ: Diabetes Knowledge Questionnaire, FBS: Fasting blood sugar, PPBS: Post prandial blood suagr

Table 2: Distribution of DKQ score

DKQ SCORE (KNOWLEDGE)	FREQUENCY	PERCENTAGE
DKQ SCORE≤12 (POOR)	191	44
DKQSCORE 13-18(MODERATE)	221	52
DKQ SCORE >18 (HIGH)	16	4

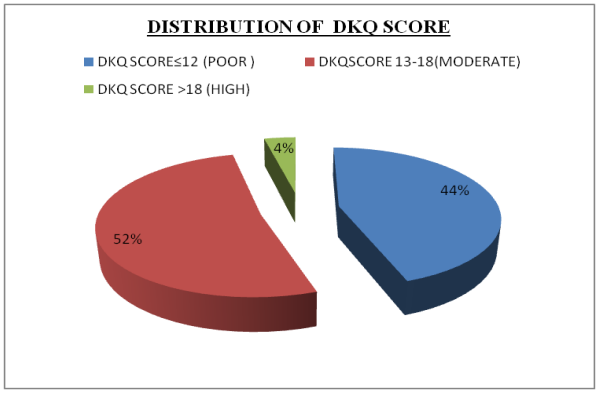

Fig 1: Distribution of DKQ score

Table: 3 Distribution of Micro and Macro- vascular complications and DKQ score

DKQ SCORE	MICRO VASCULAR COMPLICATIONS (n=365)	MACRO VASCULAR COMPLICATIONS (n=296)
≤12	191	147
13-18	166	141
>18	8	8

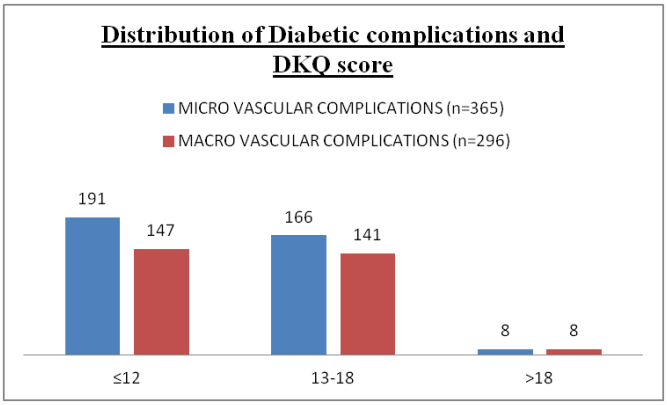

Fig 2: Distribution of Micro and Macro- vascular complications and DKQ score

DISCUSSION

The present study carried out in Palakkad District, Kerala, explored the association between knowledge and diabetic complications. At the same time, it examined the knowledge and perception on diabetes among the patients with type2 DM. Overall patients with T2DM had limited knowledge about the disease, risk factors, management and complications,(Table 2) only 4% had good knowledge with a mean composite score of 13.3±2.6. 52% had moderate knowledge and 44% had poor knowledge. There are many barriers for achieving glycemic control, the most important barrier was found to be inadequate knowledge and understanding about diabetes [15]. In this present study majority of the people have poor diabetes knowledge, which might be acting as a barrier to achieve glycemic target goals, we found that the majority of the patients who were with lower education level (up to school) had significantly lower DKQ score. Results of this study indicate that lower education level has an impact on knowledge and it is similar to the evidence of earliest studies [16, 17]. Though diabetes knowledge of patients have very important role ineffective management of diabetes.

This study shows that poor knowledge lead to developing long term diabetic complications. Participants with Microvascular complications (52%) and Macrovascular complications (48%) had poor knowledge. Participants had high knowledge shows less complications compared to others. The present study shows that level of knowledge in people with diabetes attending the hospital was low. Improving the knowledge of these people with diabetes might allow achieving better glycemic control this who can control or minimize the development of long term complications.

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CONCLUSION

Patients with type2 DM have limited knowledge on diabetes, majority of the patients have low educational level. Data also shows that there is a relationship between knowledge and diabetic complications, Participants who had poor knowledge and poor glycemic control was more susceptible for developing long term complications. Therefore, the traditional diabetes education might not be sufficient to control diabetes. Innovative strategies should be identified and adopted to further to improve the diabetes education to make it more effective. For effective management of diabetes involving a Clinical Pharmacist with endocrinologist might achieve this objective of improving knowledge of diabetes when followed longitudinally.

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