



Patients' Awareness about the Complications of Diabetes Mellitus and its Co relation with the Glycemic Status

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ABSTRACT

Introduction: Diabetes is a major cause of morbidity and cardiovascular related mortality along with a major cause of preventable blindness and foot amputation. There are limited studies on diabetes awareness, attitude, and prevalence.

Methods: Thus, we designed a study to seek the patients awareness about the complications associated with diabetes. It was a prospective observational study which included 123 patients with Diabetes Mellitus.

Results: The mean age of population studied was 53 years mainly from the Rupandehi and Nawalparasi districts in Nepal attending a clinic. In the study Erectile Dysfunction was statistically significant with postprandial hyperglycemia. Lack of Awareness about a calorie specific diet plan was significantly associated with increased blood sugar fasting level >110mg/dl. A majority of patients (58%) had awareness regarding kidney damage and 51% had awareness that Diabetes causes delayed wound healing. Only 3% of the patients did a regular foot care and 9% knew what the target glycemic status is. About 36% know that there can be cardiac complications due to diabetes and 27% regarding eyes. Similarly 36% of the patients also knew that there is neuropathy due to diabetes and 18% were aware about CVA. About 54% of the patients had Fasting >110mg%.

Conclusion: The study showed that though the patients are on OADs but they lack awareness about the major complications related to diabetes mellitus.

Keywords: awareness of diabetic complications; HbA1c; patient awareness.

INTRODUCTION

Diabetes is an emerging pandemic in the South Asia. As per the International Diabetes Federation, the latest estimates indicate that there are 382 million people living with diabetes. One in twelve has diabetes in South East Asia.¹

In a study by Nepal Diabetes Association the prevalence of diabetes in population of 20 years and above was estimated to be 14.6% and 2.5% in urban and rural areas respectively.² The risk of developing diabetes increases by five times in patients with metabolic syndrome.³

As the risk for diabetes is increasing so will be the complications related to this and the trend towards patient's education and self care has to increase.⁴ There are limited studies on diabetes awareness, attitude, and prevalence.⁵ Interestingly patients do a regular blood sugar fasting and postprandial in our setup. So we designed a study to look for the patients awareness about the complications related to diabetes and compare that with the desired blood sugar levels.

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METHODS

Study Design: Prospective Observational study
Duration: 15th November 2014 till 15th March 2015 were enrolled for the study. **Consent:** Consent from the patients was taken before enrollment. **Ethical approval:** The study was approved from the Christian Medical College. **Inclusion Criteria:** Patients with diagnosed Type 2 Mellitus on Medications/MNT with age of diagnosis more than one year. **Exclusion criteria:** Refusal to give the consent

STATISTICAL ANALYSIS

A total of 123 patients were enrolled in the study. The data was collected using a structured questionnaire incorporating demographics; assessment of complication awareness. Diabetic control was assessed by the most recent HbA1c level and last Blood sugar level both fasting and postprandial.

Data were entered in Microsoft excel 2000 and converted into SPSS version 20 for statistical analysis. Percentage, graphical presentation and other descriptive statistics were calculated. The significance level of the data which were taken for the analysis was ≤ 0.05 .

RESULTS

There were altogether 123 patients who were enrolled in the study. The results are depicted in the following self explanatory tables and graphs.

Table 1: Baseline Characteristics of the patient enrolled in the study.

Characteristics	Minimum	Maximum	Mean	Std. Deviation
Age in years	25.00	76.00	53.50	10.76
Duration of Diabetes in years	1.00	15.00	6.03	3.34
Weight in kg	42.00	86.00	58.36	9.70
Height in cms	139.00	176.00	155.97	7.33
BMI(kg/m ²)	16.80	33.33	23.95	3.29
Waist circumference in cms	70.00	112.00	93.90	7.68
Circumference in cms	64.00	111.00	94.31	6.66
Waist Hip ratio	0.88	1.11	1.00	0.05
HbA1c in %	5.0	12.4	7.80	1.49

Table 2. Showing the different awareness characteristics at HbA1c <7% .

Complications Awareness	Yes	No	P value
Eyes	11(34.4%)	24(27.9%)	0.494
Kidneys	17(24.3%)	18(37.5%)	0.123
Neuropathy	8(19.0%)	27(35.5%)	0.061
Poor Wound Healing	18(29.5%)	17(29.8%)	0.970
IHD	10(23.3%)	25(33.3%)	0.249
CVA	4(20.0%)	31(31.6%)	0.299
Awareness about Hypoglycemia	5(20.8%)	30(31.9%)	0.289
Knowledge of the Glycemic status as recommended	1(11.1%)	34(31.2%)	0.205
Foot Care	2(66.7%)	33(28.7%)	0.435
On a diet based on calories	1(14.3%)	34(30.6%)	0.623
Erectile Dysfunction	2(14.3%)	33(31.7%)	0.180

Table 3. Showing the different awareness characteristics at the level of awareness at HbA1c >7%.

Complications Awareness	Yes	No	P value
Eyes	21(65.6%)	62(72.1%)	0.494
Kidneys	53(75.7%)	30(62.5%)	0.123
Neuropathy	34(81.0%)	49(64.5%)	0.061
Poor Wound Healing	43(70.5%)	40(70.2%)	0.970
IHD	33(76.7%)	50(66.7%)	0.249
CVA	16(80.0%)	67(68.4%)	0.299
ED	12(85.7%)	71(68.3%)	0.180
Diet	6(85.7%)	77(69.4%)	0.627
Glycemic status	8(88.9%)	75(68.8%)	0.205
Foot care	1(33.3%)	82(71.3%)	0.435
Hypoglycemia	19(79.2%)	64(68.1%)	0.289

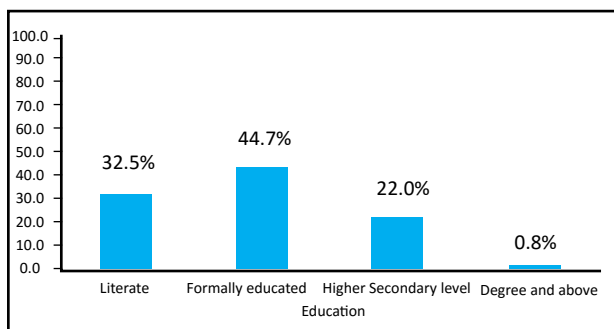


Figure 1. Showing the educational status of the patients

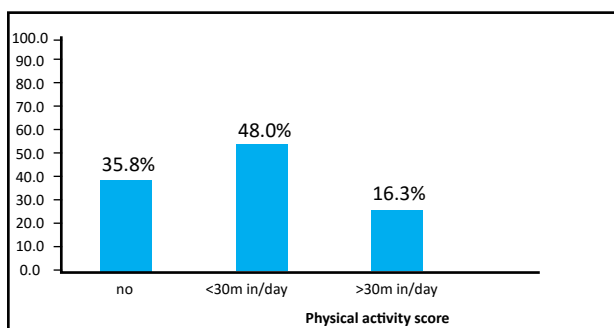


Figure 2. Showing the physical activity level of the population in study.

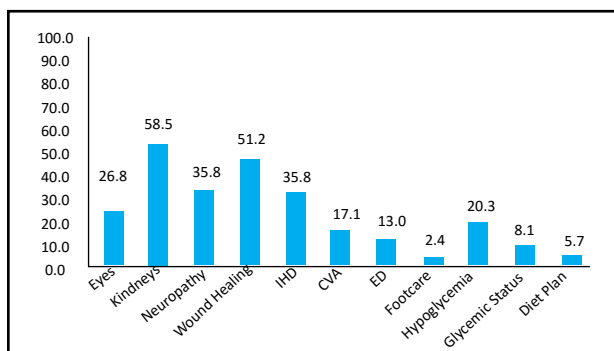


Figure 3. Showing the percentage distribution of awareness of different complication of diabetes.

DISCUSSION

The awareness about diabetes and related issues is poor in general population.⁶ Whereas in diabetic population the awareness about the diabetic complications was observed to be 50% in a study done in Pakistan.⁷ In our study of 123 patients included 56% male patients and 44% female patients. In a study done by Maskey et al in Nepal also showed a Male preponderance whereas other studies have shown a female preponderance.⁸ A similar study conducted in Bangladesh by haque et al had a female preponderance in the study.⁹ The mean BMI in our population was 24kg/m² whereas the mean waist to hip ratio was 1. Similar findings were observed

in the study by Mohan V.¹⁰ In our study it was observed that about one third patients (33%) had not received any formal education. The educational status of the study population was significantly associated with the knowledge of glycemic status (P value- 0.007) and awareness about the foot care (P value-0.001). The physical activity was less than the recommended. In a study conducted in Shivkashi district in India it was found that 74% of the diabetic population had no awareness regarding the long term effects of Diabetes.¹¹ In a population based study in Tamilnadu by Mohan V et al it was found that only 19.0% (4951/26001) of whole population knew that diabetes could cause complications. In our study the family history of Diabetes was present in 39.8% whereas in a urban population study in India it was 38.2%.¹²

In our study we observed that there was a majority population with awareness of kidney diseases (59%). Following this the patient were mainly aware that Diabetes causes Poor wound healing (52%) followed by Neuropathy (36%), affects the heart mainly Ischemic Heart disease (36%), affects the Eyes (27%), Causes Cerebrovascular accidents(18%), causes erectile dysfunction(14%), Knowledge of glycemic status(8%), Awareness about a calorie specific diet plan(6%) and Foot care(2%). The awareness to cardiovascular effects with diabetes is low in our study as compared to a similar study where it was 52% compared to 36%.¹³

In a study done in Ethiopia 67.79%) had knowledge about long-term complications.¹⁴ In the study we observed that awareness about neuropathy and the HbA1c level > 7% is nearly statistically significant (P value: 0.06). Similarly Lack of knowledge about a calorie specific diet plan is statistically significant with the blood sugar fasting of > 110mg%. Similarly lack of awareness about erectile dysfunction was associated with increased postprandial blood sugar level > 140mg% (P value 0.02). In contrary to our study, a study done in Chandigarh showed that almost two third of the patients with T2DM had good knowledge about the disease.¹⁵

Our study population had no idea about foot care in Diabetes. Ahmad J in his article pointed out that approximately 10-15% of diabetic patients developed foot ulcers at some state in their life and 15% of all load in amputations are performed in patients with diabetes.¹⁶

In a nationwide study conducted by the Indian Council for Medical Research it was concluded that the Knowledge and awareness about the Diabetes is poor in India in both the Urban and Rural population.¹⁷ In an article by Misra A et al, they mention that the key areas that need focus are: generation of awareness, screening of high risk groups, maximum coverage of the population with

essential medicines, and strengthening primary care.¹⁸

In a similar study it was observed that the two most important sources were friends & neighbor (51%) and family (49%) respectively, followed by electronic media (46%) whereas in our study it was almost by the healthcare provider.¹⁹ Ying et al in their study also had finding similar to our study and they also concluded that the main strategy is patients education about the complications.²⁰ Nearly all the patients were on some form of medications for the treatment of diabetes. In a

survey done by Nepal Health Research Council in 2013 it was indicated that most of the respondents in the survey were on OAD agents (64%).²¹

CONCLUSION

In this Prospective Observational study it was observed that there is a significant lack of awareness about both microvascular and macrovascular complications in the patients with diabetes mellitus. They also lack awareness about the calorie specific diet plan.

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