



Original Research Article

Assessing the Knowledge, Attitude and Practice of Diabetes Mellitus among Diabetes Patients in Dhaka City, Bangladesh

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ABSTRACT

This study was undertaken to find out the knowledge, attitude and practice of diabetic patients at three centers BIRDEM at Shahbag, Dhaka, BIRDEM at Rampura, Dhaka and Baridhara Park, Dhaka. A well-structured questionnaire was used to collect information on knowledge, attitude and practice along with socio-demographic data of the patients and clinical history of diabetes and clinical data reflecting diabetes complications. Out of 202 patients, 97.52% were aware of the signs and symptoms of diabetes, 78.71% were aware of the risk factors of diabetes and 51.49% had knowledge of causes of diabetes. About 88.61% of patients were aware of the symptoms of hyperglycemia; a lower percentage, 59.9% were aware of the symptoms of hypoglycemia whereas HbA1C level was known to only 27.72% patients. Majority of patients reported regular routine follow up diet and exercise etc. for controlling DM. However, glycemic control was poor among 46.67% of respondents and 62.38% patients never performed self-blood sugar test due to lack of knowledge or lack of the feeling of necessity to do it. Knowledge and attitude towards diabetes mellitus is showing improvement in Dhaka, however more efforts should be taken by healthcare professionals so that patients improve self-control of sugar.

Keyword: Diabetes mellitus; diabetes patient; knowledge of diabetes; practice pattern of diabetes

INTRODUCTION

Diabetes is a chronic metabolic disorder that occurs either due to insufficient insulin production by the pancreas or when the produced insulin is not effectively used by the

body [1]. This may result in hyperglycemia [4]. Blood sugar is regulated by Insulin hormone [1]. As per World Health Organization (WHO), about 9% of adults having age above 18 years had

diabetes in the year of 2014. In 2012 around 1.5 million people died because of diabetes. Developing countries account for more than 80% of the diabetes deaths [2].

The percentage of population affected by diabetes is increasing day by day among all age groups. Worldwide diabetic prevalence was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people suffering from diabetes is assumed to increase from 171 million in 2000 to 366 million in 2030.

The top three countries estimated to have the highest numbers of people with diabetes in 2000 and 2030 are India, China, and U.S. In the both time period Bangladesh, Brazil, Indonesia, Japan, and Pakistan are considered within the top ten countries [3].

Universally adopted classification of diabetes mellitus was given in 1997 by The Report of the Expert Committee on the Diagnosis and Classification of Diabetes Mellitus. Autoimmune destruction of beta cells is the reason of Type 1 diabetes. The reason may also be idiopathic. Adults are mainly affected by the Type 2 DM (Diabetes Mellitus) as a result of insulin resistance. Other types are impaired fasting glucose (IFG), impaired glucose tolerance (IGT), gestational diabetes and some genetic defects of beta cells [4].

Diabetes screening is important for both symptomatic patient and individuals without having any symptoms [7]. Individuals are considered to be at high risk of developing diabetes mellitus and its complication if impaired fasting glucose (IFG), impaired glucose tolerance (IGT) or a glycated hemoglobin (A1C) of 6.0% to 6.4% is observed during diagnosis. Usually this condition is referred as "Prediabetes" [6]. Screening will detect either individual is at low risk or high risk for developing diabetes. Strategies for screening may vary depending on the type of diabetes and effective ways to prevent the development of diabetes from prediabetes and/or to minimize the risk of

complication that are associated with diabetes [7].

Early prediction of individual's risk of developing type 1 diabetes is possible from profiling immunity and genetic markers [9] and from family history of type 1 diabetes with the information about the age of onset and sex of that family member [8].

Active researches are still trying to find out the preventive measure of type 1 diabetes. It is proved that lower rates of cardiovascular disease and renal failure, overall significant health benefits can be achieved because of delayed onset of type 2 diabetes [5].

Primary approaches for preventing diabetes in a population can be promoting physical activity and healthy diet intake among general population and targeting high-risk individuals [10, 11].

Active patient participation in the management of the disease condition and self-monitoring of the physiological processes is known as Self-management Education (SME) [12]. Monitoring of relevant health parameters, healthy eating, physical activity, pharmacotherapy, prevention and management of hypo-/ hyperglycemia, and prevention and surveillance of complications should be included in basic knowledge of diabetes mellitus Self-management Education (SME). Skill training should include using self-monitoring of blood glucose (SMBG), making appropriate dietary choices, incorporating an exercise regimen, using medications as recommended and adjusting medication [14, 15].

Insulin therapy is initiated among the patients immediately after being diagnosed with type 1 diabetes. At this point insulin regimen selection and patients' education is very important [16]. Patients of type 2 diabetes are from heterogeneous group. In this type of diabetes, glucose levels worsen over time because of ongoing decline of beta cell function. That's why individualized treatment regimens and therapeutic targets are required [17]. Detailed

information on how to care for and use insulin; prevention, recognition and treatment of hypoglycemia; sick-day management; adjustments for food intake (e.g. carbohydrate counting) and physical activity; and self-monitoring of blood glucose (SMBG) should be included in the initial and ongoing education programme [16].

MATERIALS AND METHOD

The study was conducted between the period of November 2014 to April 2015 at three centers BIRDEM (Bangladesh Institute of Research and Rehabilitation for Diabetes, Endocrine and Metabolic Disorders) at Shahbag, Dhaka, BIRDEM at Rampura, Dhaka and Baridhara Park. The patients having diabetes were included in the study and given predesigned questionnaire. Children and pregnant women were excluded from the survey. The questionnaire did not contain any questions which can reveal the identity of patients or their treating doctors. Out of 225 patients who were given questionnaire, only 202 patients were included for the final analysis. Rests were excluded due to incomplete or irrelevant information and poor handwriting. In addition to KAP, we collected socio-demographic data that include gender, age, occupation, marital status, educational level, income, family history of diabetes, duration of diabetes and medications.

Clinical data, including diabetes complications and HbA_{1c} (within six months prior to the survey) of participants were retrieved from medical records (HbA_{1c} available for 30 patients only). Glycemic control was considered good, acceptable or poor when HbA_{1c} levels were less than 7%, 7 to 8% and greater than 8, respectively, according to the American Diabetes Association's recommended guidelines [18].

In the questionnaire, patients' knowledge of diabetes was assessed using questions related to definitions, symptoms, causes and complications of DM. Attitudes were assessed

using a series of questions on positive and/or negative attitudes towards having the disease, the ability to self-manage diabetes and awareness of the importance of adherence to DM (self) care. Patients' practices were assessed using questions on self-care, dietary modification, compliance with medications, weight control, self-monitoring of blood sugar, and regular follow up. Information about their treatment was collected either from the patient or from their prescription,

Data were analyzed using Microsoft Excel 2007.

RESULTS

Among 202 participants 105 (51.98%) were male. A large number of participants 56 (27.72%) were illiterate, whereas 62 (30.69%) completed primary education and only 18 (8.91%) participants were graduate. Majority of the study population 137 (67.82%) has an age range of 40-60 years. Majority of the participants (47.52%) had family income of Tk. 10,000-25,000 (Table 1).

Of the 202 participants about 162 (80.29%) did not have any idea about their type of diabetes, only 26 participants identified their type of diabetes. About 81 (39.9%) patients were suffering from diabetes for 5.1-10 years. Duration of diabetes was 1.1-5 years and 10.1-20 years among 48 (24.03%) and 46 (22.59%) respectively. For most of the patients 117 (57.21%), diagnostic mode was symptomatic. Around 92 (45.2%) participants had family history of diabetes and about 30 (14.42%) patients did not know whether they had family history of diabetes or not (Table 2).

Around 41.58% patients thought that diabetes is due to excessive intake of sugar and sweets. Only 15.34% and 11.8% participants identified failure to respond to insulin and not producing enough insulin by body as the cause of diabetes (Fig 1).

Table 1: Socio-Demographic characteristics of the study population (n = 202)

Variable	N (%)
Sex	
Male	105 (51.98%)
Female	97 (48.01%)
Marital Status	
Single	8 (3.96%)
Married	194 (96.03%)
Divorced	0
Level of education	
Illiterate	56 (27.72%)
Primary	62 (30.69%)
Secondary	31 (15.34%)
College	29 (14.35%)
Graduate	18 (8.91%)
Post graduate	6 (2.97%)
Age	
<40	16 (7.92%)
40-60	137 (67.82%)
>60	49 (24.26%)
Family Income	
<5000	14 (6.93%)
5000-6000	30 (14.85%)
10000-25000	96 (47.52%)
>25000	62 (30.69%)
Living with family	
Yes	192 (95.04%)
No	10 (4.95%)

Table 2: Clinical characteristics of the study population (n = 202)

Variable	N (%)
Types of diabetes mellitus	
Type 1	16 (8.17%)
Type 2	10 (4.8%)
Don't know	162 (80.29%)
Duration of DM	
<1year	13 (6.73%)
1.1-5	48 (24.03%)
5.1-10	81 (39.9%)
10.1-20	46 (22.59%)
>20	8 (3.84%)
Mode of diagnosis	
Symptomatic	117 (57.21%)
Incidental	85 (39.9%)
Family history of diabetes	
Yes	92 (45.2%)
No	78 (38.46%)
Don't know	30 (14.42%)

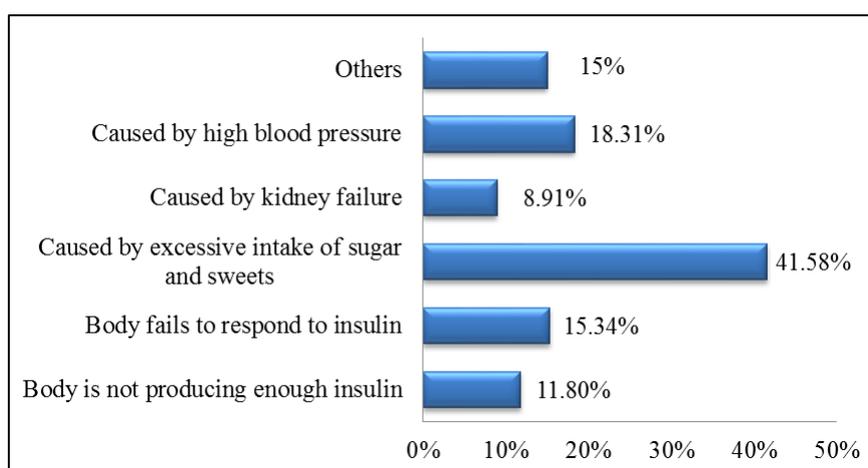


Fig. 1: Knowledge about the causes of diabetes

Around 197 (97.52%) study population had knowledge about the signs and symptoms of diabetes. Most of them identified increased thirst (16.48%), frequent urination (15.76%), weight loss (12.48%), slow healing wounds (11.46%) etc. as main signs and symptoms of diabetes mellitus (Fig 2).

Risk factors of diabetes were known by 159 (78.71%) participants. Identified major risk factors were hereditary (19.42%), obesity (17.33%), unhealthy diet (16.69%), high BP (14.60%), and age (13.85%) (Fig 3).

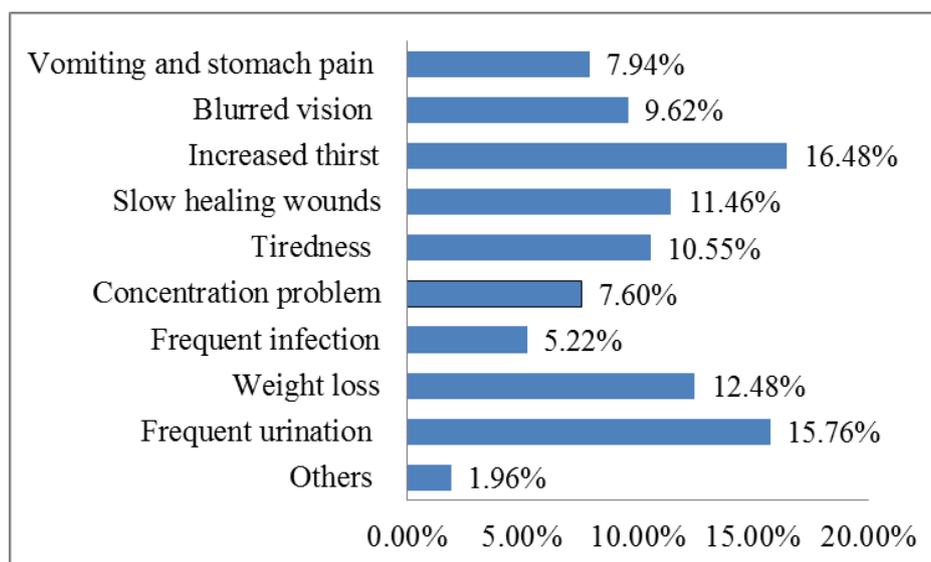


Fig 2: Knowledge about the sign and symptoms of diabetes

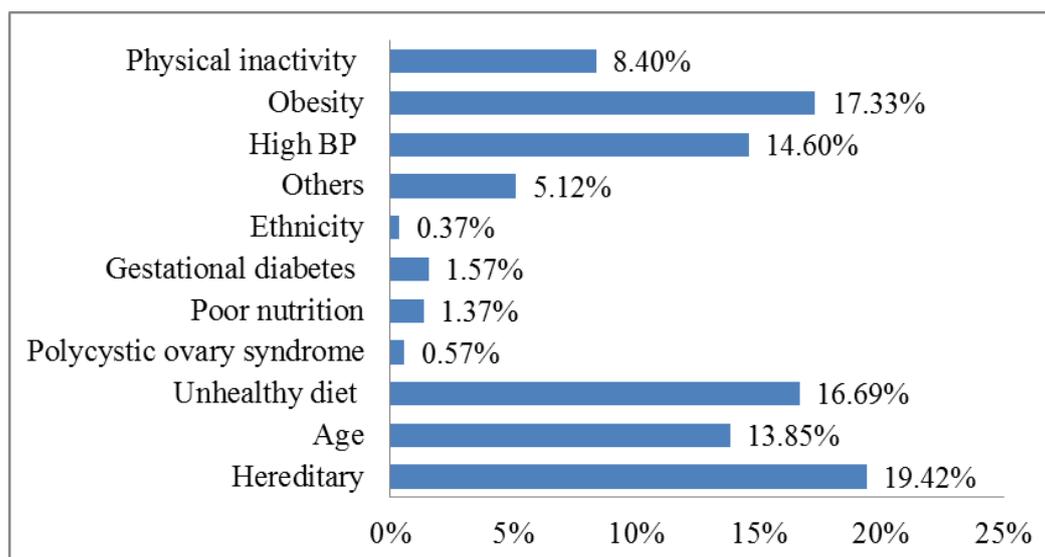


Fig. 3: Knowledge about the risk factors of diabetes

Most of the patients identified gum disease (16.27%), eye damage (14.19%), cardiovascular disease (10.42%), hearing impairment (10.02%), Alzheimers disease (9.76%), and foot damage (9.24%) as complications of diabetes (Fig 4). About 179 (88.61%) participants had an idea about the symptoms of hyperglycemia. Among them majority of the patients identified fatigue

(17.57%), increased thirst (15%), blurry vision (14.45%), headache (13.15%) etc as symptoms of hyperglycemia (Fig 5).

About 121 (59.9%) participants claimed that they had knowledge about the symptoms of hypoglycemia. Most commonly identified symptoms were feeling nervous (10.50%), fast heartbeat (9.96%), and hunger (9.10%) (Fig 6).

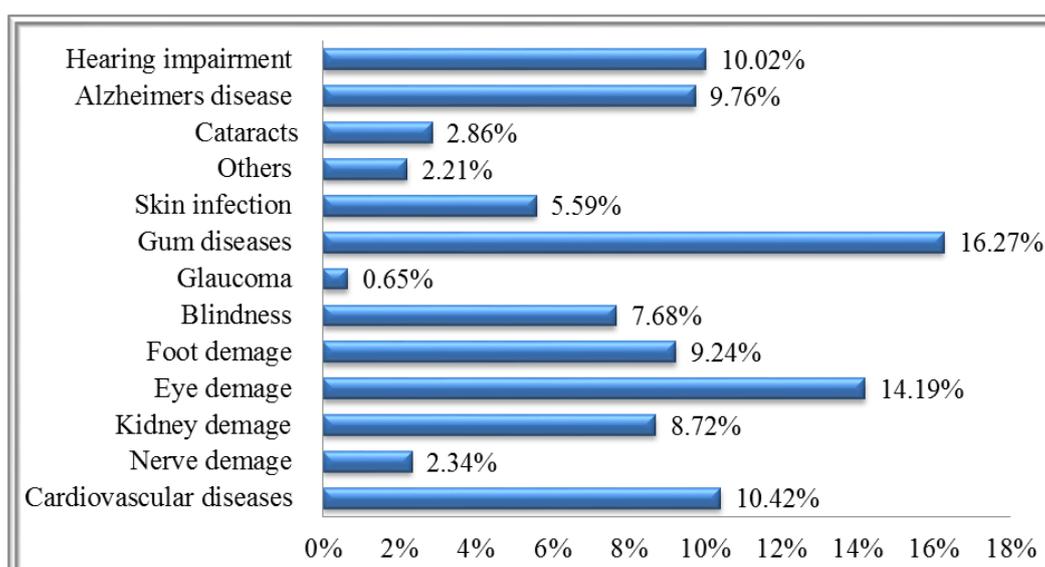


Fig. 4: Knowledge about the complications of diabetes

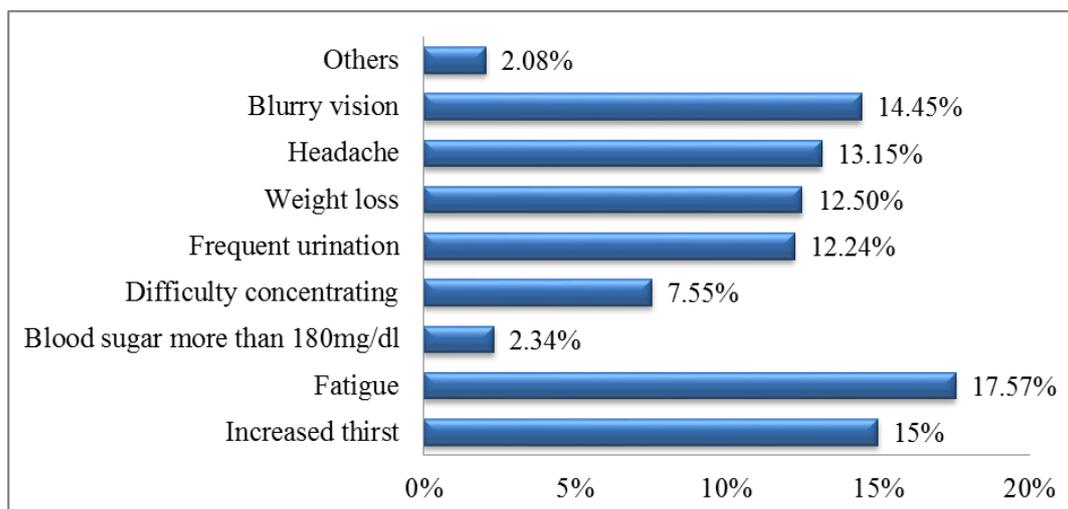


Fig. 5: Knowledge about the symptoms of hyperglycemia

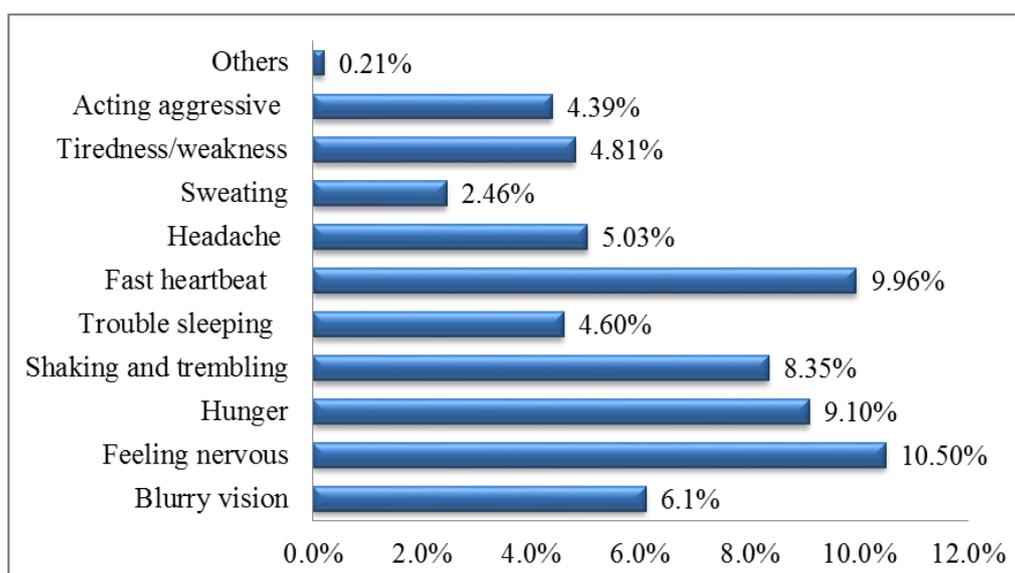


Fig. 6: Knowledge about the symptoms of hypoglycemia

About 99% participants claimed that they always attend DM clinic/doctor for follow up. Around 98.01% study population always undertake physical exercise and maintain their weight. Though a large percentage of study population check blood pressure (97.02%), follow special DM diet (97.02%), perform urine examination (97.52%) but about 99% of participant never checked lipid profile (Table 3).

Around 62.38% study population never used self-testing instrument for blood sugar and among them 78.22% claimed that they did not know how to read the result. A few claimed self testing is too expensive (2.97%) and too painful (2.97%) (Table 4).

Only a small percentage (about 14.85%) of participants performed HbA1c test. Among them majority had poor glycemic control (about

46.67%) and only 20% had good glycemic control (Fig 7).

Table 3: Control of Diabetes among the study population

Variable	Never (%)	Sometimes (%)	Always (%)
Attend DM clinic/doctor for follow up	0	0.99	99
Control weight	0	1.96	98.01
Undertake physical exercise	0	1.96	98.01
Following special DM diet	0	2.97	97.02
Comply with medication	0.49	1.98	97.52
Take care of toes and feet	0.99	0.49	98.01
Check Blood pressure	0.49	1.98	97.02
Check lipid profile	99	0	0.99
Perform urine examination	0	2.47	97.52

Table 4: Self-control and test of blood sugar among the study population

Variable	N (%)
Patients self-control of blood sugar	
Always in good control	18.32
Often in good control	29.7
Sometimes in good control	36.14
Never in good control	15.84
Patients self-test of blood sugar	
Always test for blood sugar	21.29
Often test for blood sugar	9.41
Sometimes test for blood sugar	6.93
Never test for blood sugar	62.38
Barriers of self-testing	
Too expensive	2.97
Too Painful	2.97
Not really needed	15.84
Don't know how to read the result	78.22

To manage hyperglycemia 27.54% participants said that they inject insulin and about 25.40% of study population claimed that they undertake exercise but only 2.94% participants were careless about their hyperglycemia (Fig 8).

Carbohydrate intake was the major way to control hypoglycemia by the study population (around 44.05%). But about 50.49% of the participants were not concerned about their hypoglycemia management (Fig 9).

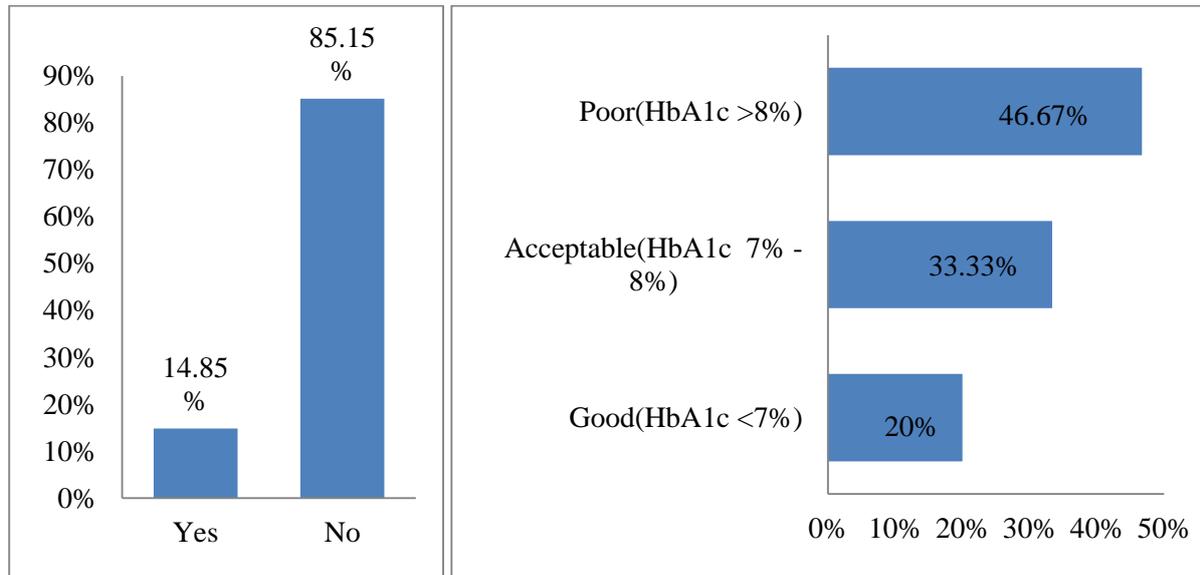


Fig. 7: HbA1c test and glycemic control among the study population

Most of the study population (about 43.75%) identified that checking fasting blood glucose level is the most accurate method of monitoring diabetes. Only a small percentage of study population identified checking HbA1c and OGTT as accurate method of checking diabetes 1.70% and 0.28% respectively (Fig 10).

The main source of diabetes health information of our study population was doctors, about

73.48%. Friends and family was identified as the second major source of diabetes health information by the participants (around 14.88%) (Fig 11).

Majority of the study population (71.78%) claimed that they visit health care provider more than twice in a year and only 0.49% participants said that they never visited health care provider (Fig 12).

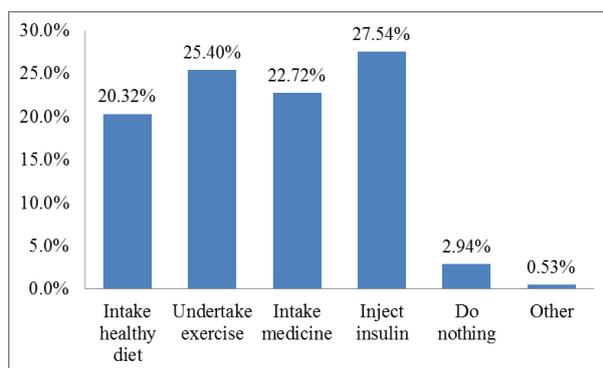


Fig. 8: Hyperglycemia management by the study population

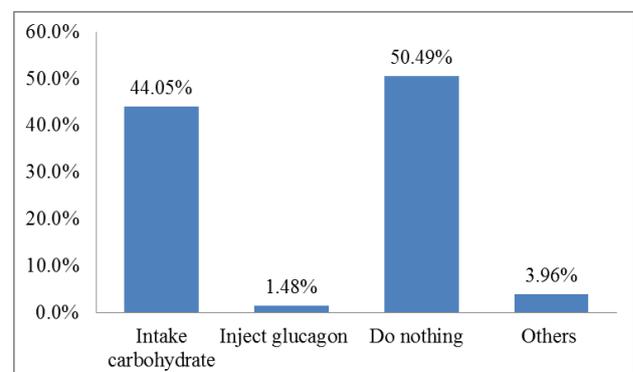


Fig 9: Hypoglycemia management by the study population

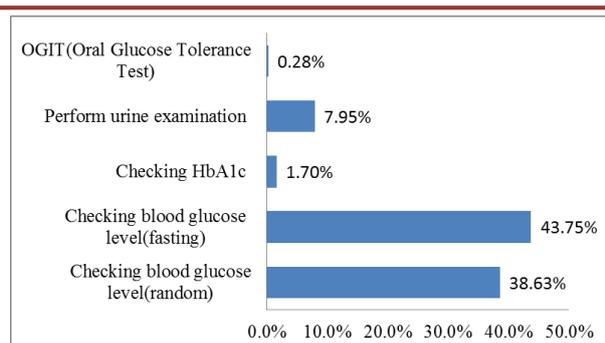


Fig 10: Perception about the most accurate method of monitoring Diabetes by the study population

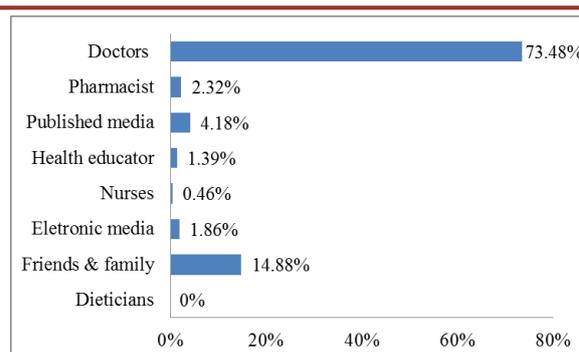


Fig 11: Sources of Diabetes health information by the study population

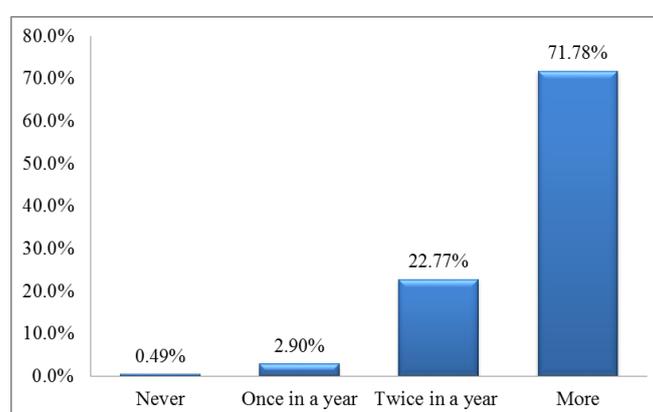


Fig. 12: Frequency of visiting healthcare provider by the study population

DISCUSSION

Studies from different countries showed that diabetes knowledge is generally poor among the diabetic patients [19, 20]. The level of knowledge seemed particularly low in our study population. Patients' general awareness of diabetes symptoms, risk factors and complications were satisfactory, which accord the result of *Al-Maskari, F., et. al* and *Choudhury, S. D., et. al* [19, 21]. However, detailed analysis showed that there are gaps in their knowledge, for example, about 41.58% of patients identified excessive sugar consumption as the primary cause of the disease which is comparable with the findings obtained by *Al-Maskari, F., et. al* [19].

Doctors plays important role in providing DM health information among the participants and a large number of (about 71.78%) patients visit

healthcare providers more than twice a year which is quite parallel to the findings obtained by *Al-Maskari, F., et. al* [19].

Analysis showed that most patients had satisfactory practice, and that the majority had reported regular routine follow up, diet, exercise, and sugar monitoring etc. for controlling DM. These comply with the findings of Mashige, K. P., et. al [22]. Our study population is concerned about the management of hyperglycemia, for which some of them take healthy diet (20.32%), intake medicine (22.72%), inject insulin (27.54%) and undertake exercises (25.40%) etc. But unfortunately majority of them (about 50.49%) don't take any step to manage hypoglycemia. This present study showed that most of the patients (about 62.38%) never perform self-blood sugar test because either

they don't know how to interpret the result or they feel this is not really needed which contradicts the findings of Al-Maskari, F., et. al [19]. Glycemic control was poor among majority of the respondents (46.67%), which is comparable with the study performed in United Arab Emirates by Al-Maskari, F., et. al [19].

CONCLUSION

In conclusion, overall knowledge about diabetes among our patients was adequate. Since this study was conducted on a small study population, the results do not reflect the knowledge of the general population and further studies are required particularly in different settings to evaluate diabetic knowledge in other provinces among the rural and urban population as well as on health care providers so that comparative inferences can be drawn. This will assist in empowering patients and health care workers with knowledge of DM (Diabetes Mellitus) and the importance of understanding treatment and management options.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no competing interests.

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