Knowledge regarding diabetes and its medication among patients with diabetes mellitus visiting Okhaldhunga Community Hospital, Okhaldhunga

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ABSTRACT

Introduction: Diabetes mellitus is an emerging worldwide health problem. Nepal is a developing country where most of the people reside in rural areas. This study was done to assess the knowledge regarding diabetes and its medication among patients with diabetes mellitus visiting Okhaldhunga Community Hospital, Okhaldhunga, in the rural eastern part of Nepal.

Method: A cross-sectional study was conducted among the diabetes mellitus patients presenting to Okhaldhunga Community Hospital during the period of 5 months (January 18 to June 18, 2019). Informed and written consent was taken from the patients followed by interviews and questionnaires. Data was entered in Microsoft Excel 10 and analyzed using SPSS version 16.0.

Result: A total of 74 patients were included in the study of which 48.6% were male and 51.4% female. Most of the diabetic patients were in the age group of 50-59 years. The study shows that 98.6% had inadequate knowledge and 1.4% had moderate knowledge about diabetes mellitus. 2.8% had moderate knowledge and 97.2% had inadequate knowledge about anti-diabetic medication. A total of 32.4% of patients did not know the name of their anti-diabetic medications and 18.9% of patients did not know the time of intake of their anti-diabetic medications. A total of 75.7% of patients did not know the side effects of their anti-diabetic medications.

Conclusion: Knowledge of diabetes and its medication among diabetes patients is inadequate. Healthcare providers should focus on the necessity and importance of awareness programs, patient counseling, and education to improve knowledge on diabetes.

Keywords: Anti-diabetic medications, diabetes knowledge, diabetes mellitus, Nepal

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INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder that is characterized by increased blood sugar levels. Poor glycemic control can lead to multiple chronic complications like damage to eyes (leading to blindness), kidneys (leading to renal failure), and nerves (leading to numbness in the limbs, impotence, and foot disorders possibly requiring amputation) as well as increased risk of heart diseases and stroke.[1] The vast majority of the day-to-day care inherent in diabetes is handled by patients and their families, there is an important need for reliable and valid measures of diabetes self-management. [2]

According to the World Health Organization (WHO), the term diabetes describes a group of metabolic disorders characterized and identified by the presence of hyperglycemia in the absence of treatment. The heterogeneous etio-pathology includes defects in insulin secretion, insulin action, or both, and disturbances of carbohydrate, fat, and protein metabolism.[3]

Diabetes is an emerging public health problem. There were 657,200 cases of diabetes in Nepal in 2017 with a 4% prevalence among adults.[4] The incidence of diabetes in Nepal is increasing day by day. The estimated mean annual increment in diabetic cases in Nepal is 28,000.[5] As most of the people in Nepal reside in rural areas, large numbers of diabetic cases there remain undiagnosed. The increase in the prevalence of diabetes is likely due to a sedentary lifestyle, and changes in dietary habits. High treatment cost causes social and economic burden to the patient and country.

Diabetes is often difficult to control due to non-compliance of patients towards lifestyle changes, eating habits, exercises, and monitoring of blood glucose levels. The adequate counseling of patients with diabetes mellitus is still suboptimal during the physician-patient encounter due to time constraints and the lack of patients' self-care motivation discussion.[6]

The present study aims to assess the knowledge of diabetes and its medication among diabetic patients visiting Okhaldhunga Community Hospital, which will help to broaden the knowledge of local people regarding diabetes and its medication. Not only this, it will encourage local health bodies to organize awareness campaigns to uplift human health.

METHOD

A hospital-based, cross-sectional study was conducted at Okhaldhunga Community Hospital, Okhaldhunga during the period of five months (January 18 to July 18,2019). Ethical approval was taken from the Internal Management Committee and the ethical board of the hospital.

The patients were informed about the study, and written consent was taken before conducting the interview using a questionnaire by one of the authors. The questionnaire consisted of two parts; the first part consisted of socio-demographic data (gender, age, body weight, height, marital status, level of education, occupation, family income, history of diabetes, and family support) and the second part consisted of a set of test questions to calculate the diabetes knowledge score and diabetes medication knowledge score of the respondents.[7,8]

The questions were explained as preferred by the patients and recorded directly in the questionnaire during face-to-face interviews. The questionnaire was filled out simultaneously in the order. For calculating the knowledge score of the patients, a set of questions were asked and one point was scored for each correct answer and zero for an incorrect or unknown response. The knowledge score ranges from 0 to 20 and the medication knowledge score ranges from 0 to 10. The knowledge was then classified into three broad categories; inadequate knowledge (<70%), moderately adequate knowledge (70-85%), and adequate knowledge (>85%).[9]

Data was entered in Microsoft Office Excel 2016 and analyzed using SPSS software version 17.0. Descriptive statistics used were frequency, percentage, range, mean, and standard deviation. Test of significance were performed using chi-square tests. The level of statistical significance was p ≤0.05.

RESULT

Of the 74 respondents, 36(48.6%) were males. The majority of the respondents were from the age group 50-59 years 27(36.5%) followed by the 40-49 years 15(20.3%) as shown in Figure 1. The mean height ± SD and weight ± SD of the respondents were (158.4±9.4) cm and (58±12) kg respectively.

Table 1 shows the socio-demographic characteristics of the study population. The majority 68(91.8%) of the patients were married, and 32(43.2%) were illiterate, among which 21(65.6%) were female and 11(34.4%) were male.

20(27%) were able to read and write, 18(24.3%) had education till school level, and 4(5.5%) till college and above. Of 38(51.4%) female respondents, 28(73.6%) were housewives followed by farmers 8(21.1%). On the other hand, the majority of the male respondents 22(61.1%) were farmers followed by daily laborers 6(16.7%).

Table 2 shows the clinical characteristics of the respondents. Among the diabetic respondents, 39.2% had a history of diabetes for 1-5 years, 33.8% for less than one year and 27% for more than 5 years. Family history of diabetes was noted in 12.2% of respondents. For the majority of the patient 68(91.9%), sources of information were doctors who were followed by friends 2(2.7%) and family members 1(1.4%). While for others, TV 1(1.4%), radio 1(1.4%) and pharmacist 1(1.4%) were the source.

Patients' knowledge regarding diabetes
Despite many years of taking anti-diabetic medications, some (12.2%) believed that diabetes can be cured. Over half (52.7%) of the study population knew that diabetes can be controlled, not cured, with proper medications. Other characteristics regarding respondents' knowledge about diabetes as a disorder are shown in Table 3.

Majority 56(75.5%) of patients did not know about diabetes and 4(5.4%) wrongly believed that diabetes is a result of eating too much sugar. Of the total participants, 47(63.5%) did not know about risk factors for developing diabetes. On the contrary, majority of the patients 60(81.1%) did not know all these blood sugar level ranges.

Regarding the knowledge of respondents about their medication, the data is shown in Table 4. 45(60.81%) of patients were taking metformin and 16(21.62%) were taking glimepiride as their anti-diabetic medications. The majority 56(75.7%) of the patients did not know about the side effects of anti-diabetic medications. Among the patients, 14(18.9%) did not know their medication timing. 8(10.8%) person did not know whether to take alcohol or not and 5(6.8%) people thought it is okay to take alcohol even if the patient is under anti-diabetic medication. Though there were no options regarding things that can be done under hypoglycemic condition, most 42(56.8%) of the respondents answered it correctly while minority 32(43.2%) were unaware of how to manage it. A minority of patients 5(6.8%) said it is best to take glucose when having a low blood sugar level while others said eating sugar or sweets or chocolates is an alternative. Of the 74 patients, 13(17.6%) were under insulin. All the patients under insulin knew about the abdomen as the primary site of injection.

The overall knowledge score of the respondents was found to be low as shown in Table 5. Regarding diabetes knowledge, only one respondent had moderate knowledge. On the other hand, 2 respondents had moderate knowledge about diabetes medication.
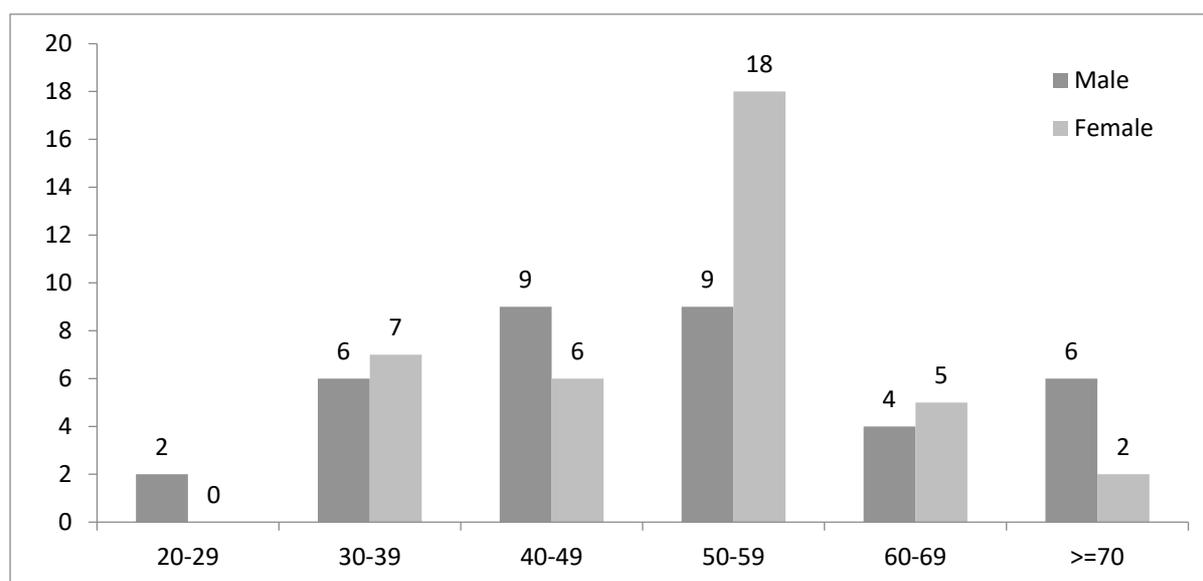

Figure 1. Age and gender-wise distribution of patients (n=74)

Table 1. Socio-demographic characteristics of the respondents

Variables	Frequency N(%)		Variables	Frequency N(%)
Marital status			**Occupation**	
Married	68(91.8%)		Housewife	28(37.8%)
Single	4(5.4%)		Student	3(4.1%)
Divorced	1(1.4%)		Farmer	30(40.5%)
Widowed	1(1.4%)		Government employee	2(2.7%)
Education			Daily laborer	6(8.1%)
Illiterate	32(43.2%)		Others	5(6.8%)
Able to read and write	20(27.0%)			
School level	18(24.3%)			
College and above	4(5.5%)			

Table 2. Clinical characteristics of the respondents

Variables	N(%)		Variables	N(%)
Years since diabetes diagnosis			**Source of information**	
< 1 year	25(33.8%)		Doctors	68(91.9%)
1-5 years	29(39.2%)		Friends	2(2.7%)
> 5 years	20(27.0%)		Family members	1(1.4%)
Family history of diabetes			Others	3(4.0%)
Yes	7(9.5%)			
No	67(90.5%)			

Table 3. Respondent's knowledge regarding diabetes as a disorder

SN	Questions	Correct response (%)
1.	Diabetes is having too much sugar in the blood because of a lack of insulin.	14(18.9%)
2.	The common type of diabetes found in Nepal is Type 2 diabetes.	8(10.8%)
3.	Older age is a risk factor for diabetes.	60(81.1%)
4.	Being obese is a risk factor for diabetes.	16(%21.6)
5.	A family history of diabetes is a risk factor for diabetes.	8(10.8%)
6.	Pregnancy is a risk factor for diabetes.	1(1.4%)
7.	Lack of adequate exercise is a risk factor for diabetes.	5(6.8%)
8.	A sedentary life/poor diet habit is a risk factor for diabetes.	11(14.8%)
9.	Diabetes is a condition that can be controlled.	39(52.7%)
10.	Frequent urination is a symptom of diabetes.	45(60.8%)
11.	Excessive thirst is a symptom of diabetes.	52(70.3%)
12.	Excessive hunger is a symptom of diabetes.	24(32.4%)
13.	High blood sugar is a symptom of diabetes.	3(4.1%)
14.	Weight loss is a symptom of diabetes.	9(12.2%
15.	Blurred vision is a symptom of diabetes.	11(14.8%)
16.	Slow healing of cuts and wounds is a symptom of diabetes.	3(4.1%)
17.	The feeling of weakness is a symptom of diabetes.	29(39.2%)
18.	The normal sugar level is 70-140 mg/dl.	14(18.9%)
19.	The normal fasting blood sugar level for diabetic patients is 72-108 mg/dl.	9(12.2%)
20.	The normal post-prandial blood sugar level for diabetic patients is below 180 mg/dl.	7(9.5%)

Table 4. Respondent's knowledge of their medication

SN.	Questions	Correct response (%)
1.	What is the name of your current medicine?	50(67.6%)
2.	Low glucose level is the side effect of anti-diabetic medication.	10(13.5%)
3.	Unconsciousness is the side effect of anti-diabetic medication.	8(10.8%)
4.	Fever is the side effect of anti-diabetic medication.	0(0.0%)
5.	Body ache is the side effect of anti-diabetic medication.	71(95.9%)
6.	When to take the medication in regards to food?	60(81.1%)
7.	Alcohol should not be taken while taking medication.	61(82.4%)
8.	Action to take in terms of hypoglycemia	42(56.8%)
9.	The abdomen is the primary site to inject insulin.	74(100%)
10.	Insulin should be stored in a refrigerator/freezer/clay pot.	57(76.9%)

Table 5. Summary of Diabetic Patients' Knowledge of Diabetes and its Medications

Variables	Mean ± SD score
Knowledge	4.2±3.2
Medication	3.5±1.8
Total knowledge DM score	3.8±2.5

DISCUSSION

This study has been conducted to assess the knowledge of patients about diabetes and its medication. In this study, 27(36.5%) of the respondents were from the age group 50-59 years. This finding contradicted the study done by Khapre MP et al. where the majority of the respondents were from the 40-49 age group.[10] This may be due to late presentation to health facilities and unawareness about diabetes mellitus.

Since a large population of the respondents were illiterate females over the age of 20, schooling was not an appropriate alternative for them. Hence, community-based counseling programs could be organized so that they could learn about diabetes.

Among the study population, 47(63.5%) of the respondents did not know about the factors causing diabetes and its risk factors. 16(21.6%) of the respondents responded to obesity, followed by 14(18.9%) for older age and 11(14.8%) for sedentary life as the risk factors for diabetes. This was similar to the study done at Mewar University Gangarar, Chittorgarh Rajasthan, India by a PhD Scholar Sharma S.[11]

The present study's finding shows that excessive thirst is the main symptom of diabetes. This finding contradicts the findings from the Study to Help Improve Early Evaluation and Management of Risk Factors Leading to Diabetes (SHIELD) by Clark N. G *et al*. who have pointed out frequent urination as the predominant symptom.[12] This suggests that patients with diabetes can present with variable symptoms.

Out of the total participants, 32(43.2%) of the respondents had no idea about the signs of hypoglycemia. 16(21.6%) identified sweating, 15(20.3%) identified hunger, and 14(18.9%) identified shaking of the body as some signs of hypoglycemia. In an article written by Morales J., and published in The American Journal of Medicine, the symptoms of hypoglycemia have been divided into two broad groups autonomic (sweating, heart palpitations, shaking, dizziness, hunger) and neuroglycopenic (confusion, drowsiness, speech difficulty, odd behavior, incoordination).[13]

Of the 74 respondents, 14(18.9%) correctly answered that diabetes is having too much sugar in the blood because of lack of insulin while 56(75.7%) did not know the definition of diabetes. At the same time, 4 out of 74 thought that diabetes was a result of eating too much sugar. As relevant from this study, the majority of the population is unaware of diabetes. This finding is similar to Upadhyay, et al.[14] Thus, proper counseling and awareness programs must be planned and implemented for the population of this particular area of eastern Nepal.

Most of the study participants 65(87.8%) did not know about the types of diabetes, 47(63.5%) of the patients did not know about its risk factors and 24(32.4%) did not know if diabetes could be cured or controlled. More than half of the patients answered that diabetes; could be controlled with proper medication, diet, and exercise.

It was interesting to know that only a small percentage of 6(8.1%) of the patients were not aware of the symptoms of diabetes. The majority of the respondents identified excessive thirst 52(70.3%), frequent urination 45(60.8%), and excessive hunger 24(32.4%) as predominant symptoms of diabetes. Symptoms like weight loss, high blood sugar, blurred vision, slow healing of cuts and wounds, and feeling of weakness were also regarded as features of diabetes by a few patients. This might be because of a lack of knowledge and awareness about diabetes mellitus and its effect on the body.

The majority of patients 60(81.1%) did not know about random, fasting, or postprandial blood sugar levels. 24(32.4%) did not know the name of their medicine. Illiteracy, low financial status, and infrequent visits to the health sector might be the reason for this.

Most 56(75.7%) patients did not know about the adverse effects of the diabetic medicines they are taking currently. Unawareness, negligence, lack of knowledge, or inexperience with the side effects of diabetic medications might be the reason for this.

Though all the patients were under diabetic medication, 14(18.9%) of patients were still unaware of their medication time. This might be

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either because they were unaware of the pathophysiology of the disease or they were being helped by other family members.

Though 61(82.4%) answered correctly that they should not take alcohol while taking diabetic medications, the response is doubtful as the majority of the respondents do not know about diabetes and they are unaware of the reasons for not taking alcohol under medication.

As the word "sugar" is commonly used in Nepal instead of diabetes, the majority of the respondents had knowledge regarding the actions that must be done in case of low sugar levels (medically termed as hypoglycemia). They simply suggested taking sugar or its alternatives like glucose, chocolate or sweets. While 32(43.2%) respondents did not know what to do when their blood sugar level dropped.

The present study showed inadequate knowledge about diabetes and its medication among diabetes patients from the rural Eastern part of Nepal; Okhaldhunga. This was consistent with another study done in the capital city of Nepal; Kathmandu by Shrestha N. et al [15]. The average diabetes knowledge score attained by the respondents was 4.2±3.2 (maximum score =20) and the average medication knowledge score attained was 3.5±1.8 (maximum =10). None of the respondents had adequate knowledge about diabetes and its medications. Only one (1.4%) respondent had moderate knowledge about diabetes and two respondents (2.8%) had moderate knowledge about anti-diabetic medications. This finding was very low compared with the finding of Berhe KK *et al* conducted in Mekella Hospital in Mekelle city.[16]

Patients taking insulin as their anti-diabetic drug were analyzed to have adequate knowledge about its site of injection 74(100%) and storage 57(76.9%). This might be because experience with the injection had taught them so.

One of the main limitations is a single location data collection and a small sample size. Similar studies in multiple locations need to be done to obtain better statistics on the results.

CONCLUSION
The knowledge of diabetes and its medication is very poor among the diabetics under medication. This poor knowledge and awareness hinder patients from achieving control over diabetes mellitus. Thus, a need to focus on increasing awareness about the disease is necessary via diabetic educators, nutrition clinics, and dietary counseling for both in and out-patients.

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