

Original Article**Study of Health Care Practices and Comorbidities in Diabetic Population at small community level in Biratnagar: A Cross-Sectional Descriptive Study****Rimu Mishra*, Alok Acharya, Amar Yadav, Kaushal Sigdel**

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Article Received: 5th August, 2021; Accepted: 20th November, 2021; Published: 31st December, 2021**DOI: <https://doi.org/10.3126/jonmc.v10i2.41578>****Abstract****Background**

Death in diabetes mellitus occurs mostly due to co-morbidities and complications resulting from diabetes. To reduce morbidity and mortality, awareness regarding diabetes and its complications is necessary. The aim of the study is to assess the health care practices and co-morbidities associated with the disease.

Materials and Methods

A descriptive cross-sectional study was conducted at community level (Kharji ward number 4) at Biratnagar. All diagnosed patients of type II diabetes mellitus \geq 18 years of age were enrolled for the study. Data for socio-demographic factors and clinical status were collected by pretested semi structured Questionnaire. Random blood sugar was measured using a portable glucometer. Anthropometric measurements were done by measuring height and weight of participants and body mass index was calculated by standard formula. The data was analyzed using SPSS version 21.0.


Results

Out of the total 205 participants, 55.7% were found to be within the age group of 45-64 years i.e. middle aged (55.6%). Almost equal participants of the male and female were found, 50.7% and 49.3% respectively. More participants were found of below poverty line 67.31%. More than half 47.8% of the participants were suffering from the diabetes for less than 5 years of duration. All most all participants 98.5% knew about diabetes and its complications. Majority of the respondents 62.4% were having co-morbidity, among them 34.6% of participants were having hypertension. Majority of the participants were utilizing private health care service 79%.

Conclusion

The diabetic participants were mostly of middle age with almost equal number of male and female having adequate knowledge about diabetes. Hypertension was the most common co morbidity among participants and they preferred private health care service mostly.

Keywords: *Community, Diabetes Mellitus, Health Care*

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Introduction

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. Hyperglycemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels [1]. There were 700, 700 cases of diabetes in Nepal in 2014. Prevalence of diabetes in adult in Nepal in 2014 for age group (20-79 years) was 4.6 % with more than 14,778 deaths that year [2, 3].

The study was conducted to know the status of health care practices among people in the context of handling diabetes mellitus at defined community level and also to get information about the post diabetic complications.

Materials and Methods

It is a descriptive cross-sectional study conducted at Kharji ward number 4, Biratnagar for a period of one year from March 2019 to March 2020 after getting the ethical approval from Institutional review committee, Nobel Medical College Teaching Hospital (Ref. No. 209/ 2018). All diagnosed patients of type II diabetes mellitus ≥ 18 years of age, residing in Kharji ward number 4, were enrolled for the study. The patients with gestational diabetes or with mental illness or incapable of providing relevant information or diagnosed as type 1 Diabetes Mellitus, were excluded in the study. The sample size was calculated as 202 [using formula $n = 4pq/ d^2$, where $p = (45.84\%)$ [4], $q = 54.16$, $d = \text{error} (7\%)$]. However the study sample was 205. The sampling was done purposively. All the participants had signed the informed consent for the study.

Pretested Semi structured Questionnaire was used for the study to get information about socio-demographic factors (age, gender, caste/ ethnicity, religion, marital status, type of family, level of family, level of education, occupation and family income) and clinical status (duration of illness, number of anti-diabetic medications, number of additional illness, family history of diabetes). Random blood sugar was measured using a portable glucometer, verified by NMCTH, Biratnagar lab periodically during the study. Anthropometric measurements were done by measuring height and weight of participants. Height was taken in centimeters using non-stretchable measuring tape based on the principle of Stadiometer. Weight was taken using digital weighing scale. BMI was calculated. BMI

is the ratio of weight in kilograms to the square of height in meters (kg/m^2). It is expressed categorically as underweight ($<18.5\text{kg}/\text{m}^2$), normal ($18.5\text{-}22.9\text{kg}/\text{m}^2$), overweight ($23\text{-}24.9\text{kg}/\text{m}^2$), obese ($>25\text{kg}/\text{m}^2$) according to BMI cut-offs for Asian population [3]. Scoring method for accessing knowledge regarding diabetes mellitus among diabetic participants. Score of 1 was given for "Yes" and 0 for "No". Total score of 7 was there as per the number of questions.

Data Collection and Analysis

Data was collected with the help of Semi structured Questionnaire and was entered periodically in SPSS software 21st Version. The raw data was edited on the same day of data collection to detect errors and omissions. The data was analyzed using SPSS version 21.0 and percentages and means were calculated and the inferential statistical test Chi-square was applied. The results was presented in the form of various tables, charts etc. A p-value of <0.05 was considered significant.

Results

Out of 205 participants, more than half (55.6%) comes under the age group 45-64 years. The mean age of the respondent was 58.03 ± 12.59 years. The proportions of male and female participants were near to equal i.e. 50.7% and 49.3% respectively. Married participants were found 90.2%. Majority of the participants were Hindu 82.9%. Similarly, the data for BMI, educational status, occupation and poverty line status of the participants are mentioned in Table 1.

The data for participant's health facilities are mentioned in Table 2. We found that 90.7% of the participants take less than 30 minutes to reach health facility. Majority of the participants (75.6%) were diagnosed first as diabetic patient at private health center. Majority of the participants (77.1%) waiting time for the doctor visit after reaching the health center was 1 to 2 hours Table 2. In our study, 98.5% participants know to measure diabetes, 94.6% know complication of diabetes, 81.5% know diabetes is genetic disease, 95.2% know diabetes can control by regular exercise, 97.1% know diabetes can control by avoiding carbohydrate, 98.1% know diabetes can control by avoiding sugar and 79.1% know diabetes can control by avoiding smoking Table 3.

In the present study participants of age group ≥ 65 years (82.8%) utilizes private health facilities well, other age group people also follows the same 15-44 years(85%) 45-64 years(81.6%)



Table 1: Socio-demographic profile of participants (n=205)

Characteristics	Categories	Frequency(n)	Percentages (%)
Age	15 – 24years	1	0.5
	25-44years	28	13.7
	45- 64years	114	55.6
	≥65 years	62	30.2
Mean ± SD (Min, Max) 58.03 ± 12.5 9 (18, 96)			
Gender	Male	104	50.7
	Female	101	49.3
Marital status	Unmarried	2	1
	Married	185	90.2
	Widow	18	8.8
Ethnicity	Brahmin/Chhetri	117	57.1
	Madhesi	10	4.9
	Janjati	63	30.7
	Others (dalit)	16	7.8
Religion	Hindu	170	82.9
	Buddhist	23	11.2
	Others (christan, Muslim, Kirat)	4+3+5 =12	2+1.5+2.4 =5.9
BMI	Underweight (<18.5)	5	2.4
	Normal (18.5 -<23)	30	15
	At risk/ pre-obese (23-<25)	15	25
	Obese ≥25	119	58
Education Status	Illiterate	94	45.9
	Literate	111	54.1
Occupation	Professional	6	2.9
	Semi-professional	7	3.4
	Clerk, Shop-owner, Farmer	52	25.4
	Skilled worker	8	3.9
	Semi-skilled	2	1.0
	Unskilled	7	3.4
	Unemployed	39	19.0
	Housewife	63	30.7
Poverty line	Others(migrants)	21	10.2
	<1.9\$/person/day	138	67.3
	≥1.9\$/person/day	67	32.7

Table 2: Distribution of participants according to health facilities

Characteristics	Category	Frequency	Percentage
Time to reach health facility	<30 minutes	186	90.7
	>30 minutes	19	9.3
Nearest health facility	Public hospital	36	17.6
	Private Clinic/hospital	169	82.4
Place of DM diagnosis	PHC	12	5.9
	Private Clinic/hospital	155	75.6
and treatment	Others(zonal hospital, BPKIHS)	38	18.5
Waiting time	<1hour	13	6.3
	1-2hour	158	77.1
	>2hours	34	16.5
Treatment pattern of diabetic patients	OHA	131	63.9
	Both combined(OHA +insulin)	24	11.7
	Traditional medicine	6	2.9
	Diet/lifestyle modification	36(19+17)	17.6
	OHA and Diet/lifestyle modification	4	2.0
Traditional and Diet/lifestyle modification		4	2.0
Visit in hospital in last 6 month	No	39	19.0
	Yes	166	81.0
Visit in emergency room in last 6 month	No	202	98.5
	Yes	3	1.5
Overnight stay in hospital	No	200	97.6
	Yes	5	2.4

were using private health care facility, which was not found statistically significant. Female 85.1% utilizes and 73.1% males were utilizing private health facility where female participants were

Table 3: Distribution of the participants regarding knowledge about Diabetes

Characteristics	Category	Frequency (n=205)	Percentage
How to measure Diabetes	Yes	202	98.5
	No	3	1.5
Complication of Diabetes	Yes	194	94.6
	No	11	5.4
Is diabetes genetic or hereditary	Yes	167	81.5
	No	38	18.5
Can diabetes control by regular exercise	Yes	195	95.2
	No	10	4.8
Can diabetes control by avoiding carbohydrates?	Yes	199	97.1
	No	6	2.9
Can diabetes control by avoiding sugars?	Yes	201	98.1
	No	4	1.9
Can diabetes control by avoiding smoking	Yes	162	79.1
	No	43	20.9
Information about effect of medicine	Yes	109	53.2
	No	96	46.8
Information about complication	Yes	171	83.4
	No	34	16.6
Information about diet control	Yes	199	97.1
	No	6	2.9
Information about physical activity	Yes	198	96.6
	No	7	3.4

found more Table 4. In our study, less than half of the participants (47.8%) were suffering from the diabetes for less than 5 years. Many of the participants (62.4%) were having co-morbidity other than diabetes. Among 205 participants, 24.8% were suffering from the complication of diabetes. Participants had family history of diabetes was found (24.4%). Large number of respondents (88.3%) believed that the illness is less severe Table 5. In this study, we found 55.4%

Table 4: Association of health care utilization with various socio-demographic Characteristics

	Health care Utilization		P- value
	Public n (%)	Private n (%)	
Age Category			
15-44 years	45(17.2)	24(82.8)	0.730
45-64 years	21(18.42)	93(81.6)	
≥65 years	7(13.5)	45(86.5)	
Gender			
Male	28(26.9)	76(73.1)	0.034
Female	15(14.9)	86(85.1)	
Marital status			
Unmarried	1(50.0)	1(50.0)	0.444
Married	37(20.0)	148(80.0)	
Widow	5(27.7)	13(72.3)	
Ethnicity			
Brahmin/Chhetri	24(20.5)	93(79.5)	0.316
Other caste	19(21.5)	69(78.5)	
Total Participants	43 (21)	162 (79)	



participants having hypertension Figure 1.

Table 5: Participants having duration of diabetes, co-morbidity and complication (n=205)

Characteristics	Category	Frequency	Percentage
Duration of Diabetes	<5years	98	47.8
	5-10years	59	28.8
	11-19year	39	19.0
	>20 years	9	4.4
Co-morbidity	Yes	128	62.4
	No	77	37.6
Complication due to Diabetes	Yes	51	24.8
	No	154	75.2
Family history of Diabetes	Yes	50	24.4
	No	155	75.6
Perceived severity	No	181	88.3
	Yes	24	11.7

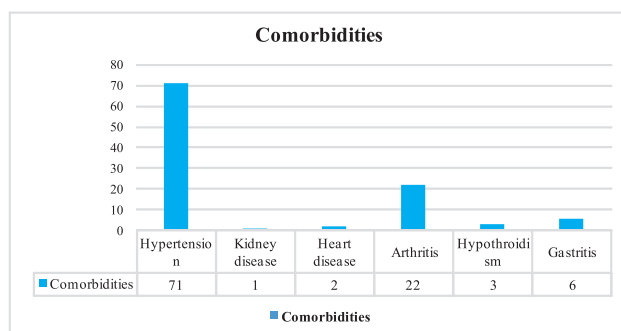


Figure 1: Distribution of the participants according to specific Co-morbidities

Discussion

As the prevalence of diabetes is increasing day by day, its associated complications, economic cost of treatment and various health care practices. Age is one of the most important risk factors for type 2 diabetes and the burden of the disease is very high in older age groups. In this study, Among 205 participants, more than half (55.6%) of them belonged to the age group of 45-64 years, followed by 30.2% in the age group of ≥ 65 years and 13.57% in the age group of 25-45 years and the lowest at the age group of 15-24 years that is 0.1%. The mean age \pm SD of the respondent was 58.03 ± 12.59 years. The finding was similar with the study done in Koshi Hospital, Biratnagar Nepal. The highest numbers of respondent i.e. 58% were in the age group of 40-60 years, 26% of age group > 60 years and lowest number i.e. 16% was in the age group of 20-40 years [4]. Finding of this study is also similar to a study done in the USA, aged 65 or older, the prevalence of diagnosed diabetes in 2011 was 20% [5]. In contrast to our study a study done in Dhaka in 2017, Most of the diabetic participants were between age group of 26-45 years 54.4% [6] but in our study age group 25-44 years was only 14.5%. It may be due to small sample size in our study. Male and female were almost equally participated in this study i.e. 51%

and 49% respectively. This is comparable with the study done in Pakistan, where 51.70% were male and 48.30% were female [7]. In this study, 58% of the participants were obese i.e. BMI>25mg/kg². This finding is comparable with the cross-sectional study done in rural South India, where about 59% were either overweight or obese⁶¹. But in a study done in Nepal, showed BMI>25 were 47.1% [8].

Among the participants, 81% of the participants visited to any type of health facilities in last 6 months and 98.5% had no emergency visit in last 6 month. This finding was comparable with the study done in US, which was found 93.4% diabetic patient visited hospital and 82.4% had no emergency visit [9]. This finding was also in agreement with the study done West Virginia University, Diabetes institute; where, 72.2% had no emergency room visit [10]. This is due to the reason that most of the participants were not suffering from the sudden deteriorating complications. In our study most participants of age group was 45-64 years 81.3%, age group 25-44 years 75% and age group ≥ 65 years were going to private hospital/clinic. According to sex distribution it shows females (85%) are using private health care facility which was found statistically significant. In our study age, educational status, ethnicity was not associated with the health facilities. However a study done in eastern plain (Terai) district of Nepal where age, educational status and ethnicity appeared to be associated with health facilities [11]. Nearest health facilities and waiting time was significantly associated with the health care utilizations in bivariate analysis. A study was done in Ilam district of Eastern Nepal where nearest health facilities are also associated with the health care utilizations [12]. Marital status, education, occupation and poverty index was not associated with health facilities. Similar finding was found in a study done in Nepal where gender, marital status, occupation also not associated with the health facilities [11]. More than half of the participants 62.4% in this study suffered from at least one co-morbidity. A study was performed at the National Taiwan University Hospital in Taipei where 44% diabetic patients had chronic complication [13]. This was similar finding with a study done among 100 type 2 diabetes mellitus patients at Mangalore, India; where 63% of the subjects had co-morbid illness [14].

Hypertension was found to be the most common co-morbidity (55.4%) in this study. A contrast finding in a study done in BIRDEM hospital, a referral in Dhaka, Bangladesh where most of the patients were suffering from respiratory illnesses



20.5% followed by cardiovascular disease [15].

Conclusion

The diabetic participants were generally in their forties and fifties, with about equal numbers of men and women possessing adequate diabetes knowledge. The most frequent associated morbidity among participants was hypertension, and they primarily used private health care services. This study found significant association between health care utilizations of diabetes and nearest health facilities and waiting time in the health facility.

Limitation

Being a self-reported data in study may lead to participants under estimation or overestimation of use of health facility and co-morbidity, which may affect the study findings. In our study there was small number of sample size, so it may not be generalized.

Recommendation

More community based studies are needed to include larger study populations in order to help health care providers develop proper health care programs for these patients. Essential research remains to be done on how to best organize care for diabetic patients with co-morbid conditions to maximize clinical outcomes and quality of care, including research on how to help patients and clinicians set management priorities and on how to evaluate the quality of care these patients receive. Though multiple demographic, socio-economic and social support factors can be considered as positive contributors in facilitating self-care activities in diabetic patients, role of clinicians in promoting self-care is vital and has to be emphasized.

Conflicts of interests: None

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