

Knowledge and Practice on Prevention of Complications of Diabetes Mellitus among Patients with Diabetes in a Tertiary Hospital

¹Om K Acharya, ²Takma KC, ²Krishna D Shrestha

¹Tribhuvan University Teaching Hospital, Kathmandu, ²Maharajgunj Nursing Campus, Institute of Medicine, Tribhuvan University, Kathmandu

Corresponding author :

Om K Acharya
Tribhuvan University Teaching Hospital, Kathmandu
Email: omghimire5@gmail.com

Submitted : May 29, 2019

Accepted : Jul 23, 2019

ABSTRACT

Introduction

Diabetes is a major contributing factor for overall health status, morbidity, mortality and quality of life. Adequate knowledge and sufficient practice can prevent many possible diabetic complications. Hence, the objective of this study was to find out the knowledge and practice regarding prevention of complications of diabetes among diabetic patients.

Methods

A descriptive, cross sectional design was carried out in Tribhuvan University Teaching Hospital Kathmandu (TUTH). A total 124 diabetic patients who came for follow-up in endocrine Out Patient Department were selected through purposive sampling technique by using pre-tested structured interview schedule during four weeks. Data was analyzed by using the descriptive and inferential statistics with the help of Statistical Package of Social Science (SPSS) version 16.

Results

The study findings showed that 24.2% respondents had adequate knowledge about complications. More than half of the respondents had sufficient practice (52.4%) regarding prevention of diabetic complications. Association between knowledge and selected variables showed that sex and education level tends to be significantly associated and regarding practice, area of residence and duration of illness were significantly associated ($p < 0.05$). There was a statistically significant ($p < 0.001$) and average positive relationship ($r = 0.605$) was found between knowledge and practice.

Conclusion

The study concluded that though only few respondents had adequate knowledge, more than half of the respondents had sufficient practice regarding preventing complications. This finding suggests awareness program regarding prevention of complications of diabetes mellitus should be launched periodically to increase knowledge and sufficient practice on prevention of diabetic complications.

Keywords: *Diabetic complications, diabetes mellitus, knowledge, practice*

INTRODUCTION

Diabetes is a chronic non-communicable disease. World Health Organization estimated that 422 million adults are living with diabetes mellitus.¹ Asian countries contribute to more than 60% of the world's diabetic population as the prevalence of diabetes is increasing in these countries. Similarly, India has the second largest number (>60million) of individuals with type 2 diabetes in the world with prevalence of 8.3% in 2011. In our context, overall prevalence on diabetes was 8.4%. Among them 8.1% resided in urban and

1.0% in rural areas.² Worldwide, the economic cost of diabetes is too high. The vast majority of this burden is attributable to the macrovascular and microvascular complications of diabetes.³ Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation. In 2012, an estimated 1.5 million deaths were directly caused by diabetes.⁴

Regarding diabetes knowledge, Chaurasia et al reported that 56.2% respondents knew about diabetes, 73.9% knew the impact of diabetes on other organs i.e. kidneys (11.2%), heart (9.1%) and

31.6% said diabetes effects on multiple organs.⁵ Comprehensive assessment of level of knowledge on the complications showed that majority (60 %) of Type 2 diabetes patients did not have knowledge on diabetes complications, 26.9 % had inadequate knowledge while 13.1 % had adequate knowledge on diabetes complication.⁶ Similarly, a study conducted on Bangladesh revealed that non-adherence rate for diet was 88% and exercise 25%. About 32% patients non-adhered to blood glucose monitoring and 70% to foot care.⁷ Preventive strategies can reduce the risk and complications of diabetes. Life style modification in relation to obesity, eating habit, and physical exercise can play a major role in the prevention of diabetes.⁸

Knowledge on diabetes complications has the key role in the management of the diabetes. Research however indicates that knowledge and practice on diabetes complications is generally lacking among Type 2 diabetes patients. With simple preventive measures and subtle changes in lifestyle, its complication can be prevented to a great extent. Since, there are very few studies in this field in the Nepalese context, this study was conducted to find out the knowledge and practice regarding prevention of diabetes complications among diabetic patients. It helps to initiate awareness program regarding measures to prevent complication in regular basis.

METHODS

Descriptive cross sectional research design was used for this study. Non probability purposive sampling technique was adopted to collect the data from 124 diabetic patients in Medical outpatient department of Tribhuvan University Teaching Hospital (TUTH). All type 2 diabetic patients with age 30 years and above, taking treatment in the Endocrine OPD and able to communicate & willing to participate were included. Before data collection, ethical approval was obtained from Institutional Review Committee (IRC) of Institute of Medicine, Tribhuvan University. The permission was obtained from the hospital authority of the TUTH. All the respondents were asked for permission before interview by explaining the purpose of the study. Respondents' participation in the study was voluntarily and withdrawal from the study at any time without giving reason was considered.

Data was collected through pre-tested structured questionnaire through interview from 2074/03/18 to 2074/04/13. As the obtained data was skewed, the knowledge level was calculated based on total median score obtained from knowledge questionnaire which was categorized as adequate knowledge (\geq Median) and inadequate knowledge ($<$ Median). Practice level was calculated based on total median score obtained from practice questionnaire which was categorized as sufficient practice (\geq Median) and insufficient practice ($<$ median).

Table 1. Socio-demographic characteristics of respondents

Variables	Number	Percentage
Age (in years)		
30-39	6	4.8
40-59	62	50.0
≥ 60	56	45.2
Mean \pm SD =57.93 \pm 11.21		
Sex		
Male	49	39.5
Female	75	60.5
Ethnicity		
Upper caste groups	53	42.7
Relatively advantaged janajati	53	42.7
Others	18	14.6
Place of residence		
Municipality	102	82.3
Village Development Committee (V.D.C.)	22	17.7
Marital status		
Married	123	99.2
Unmarried	1	0.8
Education		
Unable to read and write	41	33.1
Can read and Write	83	66.9
Can read and Write (n=83)		
Primary level	44	53.0
Secondary level	20	24.1
Higher secondary & above	19	22.9
Family income (Enough for)		
< 6 months	7	5.6
≥ 6 months	58	46.8
>12 months and surplus	59	47.6

After collecting data, it was checked for completeness of information. Data was then coded, entered into SPSS version 16. Upon completion of data entry, it was analyzed by using descriptive statistics (frequency, percentage, mean, median, standard deviation) and inferential statistics (chi-square test and Pearson correlation coefficient).

RESULTS

The study findings revealed that the mean age of respondents was 57.93 \pm 11.21. More than half (60.5%) were female. Majority of the respondents (82.3%) were from municipality area and almost all the respondents (99.2%) were married. More than half of the respondents (53%) were educated up to primary level. Nearly forty eight percent respondents' family income was sufficient for >12 month with surplus as shown in Table 1. Table 2 indicates nearly half of the respondents (48.4 %) were found to have family history of diabetes. About 42 % respondents

Table 2. Medical characteristics among respondents

Variables	Number (%)
Family history of Diabetes	
Yes	60 (48.4)
No	64 (51.6)
Duration of Illness (Years)	
<1	12 (9.6)
1-5	52 (41.9)
6-10	32 (25.8)
>10	28 (22.7)
Comorbidity*	
Yes	80 (64.5)
No	44 (35.5)

* HTN, COPD, thyroid disorders

had 1-5 years of duration of illness and 64.5% respondents had presence of co morbidity.

Table 3 depicts that almost all the respondents (96.4%) had given responses that uncontrolled diabetes leads to vision impairment. Similarly, more than two third respondents (83.8%) answered that it leads to kidney problem, followed by cardiac problem (78.4%), diabetic foot ulcer (55.9) respectively. Regarding measures to prevent complication, almost all the respondents (96.5%) had given responses on dietary modification followed by regular physical exercise (84.3%) and regular medicine (84.3%), weight control (59.1%) and regular follow up (75.6%) respectively. Level of knowledge and practice of respondents regarding prevention of diabetes complications revealed only few respondents (24.2%) had adequate knowledge and more than half of the respondents (52.4%) had a sufficient practice on prevention of diabetes complications (Table 4). There are the significant relationship between knowledge and practice on prevention of diabetes complications ($p < 0.001$).

Table 5 depicts the association between levels of knowledge on prevention of diabetes complications and socio-demographic characteristics of the respondents in which sex (0.002) and education (0.002) had significant association with level of knowledge. In practice, the findings of the study revealed that area of residence (0.009) and duration of illness (0.031) was found statistically significant with selected variables (Table 6).

DISCUSSION

This study result showed that adequate knowledge score of respondents regarding prevention of diabetes complications was 24.2% and inadequate knowledge score was 75.8%. This result are consistent with a study conducted in Kenya by Maina et al.⁹ which showed that adequate knowledge on diabetes complication was 26.4% and inadequate knowledge was 73.4%. The study was further supported by Gulabani et al.¹⁰ which revealed patients' knowledge

Table 3. Respondents' knowledge on complication of diabetes and preventive measures

Variables	Number	Percentage
Diabetes Complications*		
Vision impairment	107	96.4
Stroke	50	45.0
Cardiac Problem	87	78.4
Renal impairment	93	83.8
Neuropathy	56	50.5
Diabetic foot	62	55.9
Hypertension	49	44.1
Preventive Measures*		
Dietary Modification	111	96.5
Regular Physical exercise	97	84.3
Weight Control	68	59.1
Regular Medicine	97	84.3
Stress Reduction	57	49.6
Foot care	49	42.6
Regular Follow-up	87	75.6

* Multiple responses

regarding the treatment and complications of diabetes showed serious deficiencies. But inconsistent with the present study, the study conducted in India by Mani and Aruna¹¹ showed that 48% had adequate knowledge and 52% had inadequate knowledge on diabetes complications.

The present study reveals 52.4% had sufficient practice and 47.6% had insufficient practice on preventing diabetes complication which was supported by Marian and Joy¹² in which 49% had good practice score and 51% had poor practice on diabetes. Mohammadi et al.¹³ found that majority of the respondent's knowledge on self-care practices were insufficient. Inconsistent to present study conducted in Kenya by Maina et al.,⁹ reported that 41% of all respondents had good practices while the 59% had bad practices in relation to diabetes prevention.

This study result shows statistically significant ($p < 0.001$) interrelationship between knowledge and practice on prevention of diabetes complications and there was a weak positive relationship ($r = 0.605$) between knowledge and practice on prevention of diabetes complication. This study findings was not supported by study conducted in United Arab

Table 4. Levels of knowledge and practice

Level	Number	Percentage
Knowledge		
Adequate (\geq Median)	30	24.2
Inadequate ($<$ Median)	94	75.8
Practice		
Sufficient (\geq Median)	65	52.4
Insufficient ($<$ Median)	59	47.6

Table 5. Association between levels of knowledge on prevention of diabetes complications with selected socio-demographic variables

Variables	Level of knowledge		χ^2	p-value
	Adequate n (%)	Inadequate n (%)		
Age(in Years)				
<60	19(25.3)	56(74.7)	0.134	0.714
≥60	11(22.4)	38(77.6)		
Sex				
Male	19(38.8)	30(61.2)	9.393	0.002*
Female	11(14.7)	64(85.3)		
Education				
Can read and write	27(32.5)	56(67.5)	9.512	0.002*
Can't read and write	3(7.3)**	38(92.7)		
Area of residence				
Municipality	28(27.5)	74(72.5)	3.326	0.068
V.D.C.	2(9.1)***	20(90.8)		
Family Income				
Hardly Enough for 12 months	16(24.6)	49(75.4)	0.013	0.908
Enough for 12 months and more	14(23.7)	45(76.3)		
Duration of illness (Yrs.)				
<10	22(22.9)	74(77.1)	0.515	0.473
≥10	8(29.6)	19(70.4)		

p-significant at <0.05

*Despite observed value <5; expected value is 9.92

**Despite observed value <5; expected value is 5.32

***Despite observed value <5; expected value is 5.91

Table 6. Association between levels of practice on prevention of diabetes complications with selected socio-demographic variables

Variables	Level of practice		χ^2	p-value
	Adequate n (%)	Inadequate n (%)		
Age(in Years)				
<60	36(48.0)	39(52.0)	1.486	0.223
≥60	29(59.2)	20(40.8)		
Sex				
Male	27(55.1)	22(44.9)	0.234	0.629
Female	38(50.7)	37(49.3)		
Education				
Can read and write	59(57.8)	43(42.2)	6.781	0.086
Can't read and write	6(27.3)	16(72.7)		
Area of residence				
Municipality	48(57.8)	35(42.2)	2.948	0.009*
V.D.C.	17(41.5)	24(58.5)		
Family Income				
Hardly Enough for 12 months	37(47.5)	31(52.5)	1.111	0.292
Enough for 12 months and more	28(62.7)	22(37.3)		
Duration of illness (Yrs.)				
<10	45(46.9)	51(53.1)	4.611	0.031*
≥10	19(70.4)	8(29.6)		

*p-significant at <0.05

Emirates by Al-Maskari et al.¹⁴ which revealed that there was a weak, but statistically significant, correlation between the level of knowledge and practice ($r=0.320$, $p<0.001$). Similarly, a study conducted in Egypt by El-Khawaga & Abdel-Wahab revealed negative significant correlation between knowledge and practice ($r= - 0.45$, $p<0.001$).¹⁵ The study's findings of sex ($p = 0.002$), education ($p = 0.002$) was statistically significant to overall level of knowledge. This study was supported by a study Rahamanet al.¹⁶ which showed that sex was significantly associated ($p<0.05$). Hoque et al.¹⁷ mentioned the contradictory findings which is statistically insignificant.

Regarding association between level of knowledge with selected variables showed that only sex and education equally shows statistically significant association with level of knowledge i.e $p=0.002$ where as other variables age, area of residence, family income, duration of illness was not statistically significant as $p \geq 0.05$. This present study's findings on association between age was supported by Javad et al.¹⁸ and contradictory to the study, Rahaman et al.¹⁶ showed that older age had better knowledge and statistically significant to overall level of knowledge ($p \leq 0.001$). Kaur et al.¹⁹ reported that area of residence was not associated with level of knowledge as ($p= 0.613$). Furthermore, this finding was not supported to the study conducted by Rahaman et al.¹⁶ which was significantly associated ($P= 0.022$). Hoque et al.¹⁷ supported that family income was not statistically significant to overall level of knowledge but Obirikorang et al.⁶ mentioned that family income ($p = 0.0023$) and duration of illness ($p=0.0076$) were statistically significant. with level of knowledge.

Regarding practice, this study's findings showed that area of residence and duration of illness were statistically significant where as age ($p=0.223$), sex ($p \geq 0.629$) and education ($p = 0.086$) were not statistically significant to overall level of practice for complication prevention. This study's findings was not supported by Muhammad-Lutfi et al.²⁰ in which practice was not significantly associated with age ($p = 0.246$) and sex ($p \leq 0.001$). Similarly, Rahaman et al.¹⁶ mentioned that patients with older age had better knowledge ($p = 0.246$) but marital status and education were significantly associated with level of practice ($p = 0.017$). The study's findings on area of residence ($p = 0.009$), duration of illness ($p=0.031$) were statistically significant to overall level of practice. Inconsistent to present study conducted by Muhammad-Lutfi et al.²⁰ showed that duration of illness was not significantly associated with level of practice ($p=0.617$).

The limitation of this study was assessment of practice on prevention of complications was based on self-reporting information instead of direct observation so it may affect the practice score.

CONCLUSION

Based on the findings of the study, it can be concluded that though only few respondents had adequate knowledge, more than half of the respondents had a sufficient practice on prevention of diabetes complications but there was an average positive relationship between knowledge and practice on prevention of diabetes complications. Levels of knowledge tend to be significantly associated with sex and education where as area of residence and duration of illness was significantly associated with level of practice.

CONFLICT OF INTEREST

None declared.

ACKNOWLEDGEMENTS

The researchers would like to express heartfelt thanks to Maharajgunj Nursing Campus and also University Grants Commission under the Faculty Research Grant 2072/73 to conduct this study.

REFERENCES

1. World Health Organization. Global health risks: mortality and burden of disease attributable to selected major risks. 2009. Retrieved from <http://apps.who.int/iris/handle/10665/44203>
2. Gyawali B, Sharma R, Neupane D, Mishra SR, Van Teijlingen E, Kallestrup P. Prevalence of type 2 diabetes in Nepal: a systematic review and meta-analysis from 2000 to 2014. *Global Health Action*. 2015; Dec; 1;8(1):29088.
3. Zhang P, Zhang X, Brown J, Vistisen D, Sicree R, Shaw J, Nichols G. Global healthcare expenditure on diabetes for 2010 and 2030. *Diabetes Research and Clinical Practice*. 2010; Mar ; 1;87(3):293-301.
4. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Medicine*. 2006; Nov; 28;3(11):e442.
5. Chaurasia N, Mishra R, Ling H, Thapa B, Pokhrel A, Kumar S, De A. A self care management awareness study among diabetes mellitus patients in rural Nepal. *American Journal of Public Health Research*. 2015; 3(5A):67-71.
6. Obirikorang Y, Obirikorang C, Anto EO, Acheampong E, Batu EN, Stella AD, Constance O, Brenya PK. Knowledge of complications of diabetes mellitus among patients visiting the diabetes clinic at Sampa Government Hospital, Ghana: a descriptive study. *BMC Public Health*. 2016; Dec ; 16(1):637.
7. Saleh F, Mumu SJ, Ara F, Hafez MA, Ali L. Non-adherence to self-care practices & medication and health related quality of life among patients with type 2 diabetes: a cross-sectional study. *BMC Public Health*. 2014; Dec;14(1):431.

8. Shrestha P, Ghimire L. A review about the effect of life style modification on diabetes and quality of life. *Global Journal of Health Science*. 2012; Nov; 4(6):185.
9. Maina WK, Ndegwa ZM, Njenga EW, Muchemi EW. Knowledge, attitude and practices related to diabetes among community members in four provinces in Kenya: a cross-sectional study. *Pan African Medical Journal*. 2010; 7(1).
10. Gulabani M, John M, Isaac R. Knowledge of diabetes, its treatment and complications amongst diabetic patients in a tertiary care hospital. *Indian Journal of Community Medicine: official publication of Indian Association of Preventive & Social Medicine*. 2008; Jul; 33(3):204.
11. Mani K, & Aruna S, Knowledge on complications of diabetes mellitus among patients with diabetes mellitus. *International Journal of Comprehensive Nursing*. 2014;1(1), 18-20
12. Marian AO, Joy IO. Knowledge, attitudes and practices of people with type 2 diabetes mellitus in a tertiary health care centre, Umuahia, Nigeria. *Journal of Diabetes & Metabolism*.2012 ; 3,187.
13. Mohammadi S, Karim NA, Talib RA, Amani R. Knowledge, attitude and practices on diabetes among type 2 diabetic patients in Iran: a cross-sectional study. *Science*. 2015;3(4):520
14. Al-Maskari F, El-Sadig M., Al-Kaabi ,J. M., Afandi B, Nagelkerke N, & Yeatts, K. B. Knowledge, attitude and practices of diabetic patients in the United Arab Emirates. *PLoS*
15. El-Khawaga G, Abdel-Wahab F. Knowledge, attitudes, practice and compliance of diabetic patients in Dakahlia, Egypt. *European Journal of Respiratory Medicine Science*. 2015;3(1).
16. Rahaman KS, Majdzadeh R, Naieni KH, Raza O. Knowledge, Attitude and Practices (KAP) Regarding Chronic Complications of Diabetes among Patients with Type 2 Diabetes in Dhaka. *International Journal of Endocrinology and Metabolism*. 2017; Jul; 15(3).
17. Hoque MA, Islam MS, Khan MA, Ahasan HN. Knowledge of diabetic complications in a diabetic population. *Journal of Medicine*. 2009; 10(2):90-3.
18. Javed SF, Sarab AD, & Rabbni SI. Awareness of diabetes risk factor and complications among diabetic population at a tertiary care teaching hospital. *World Journal of Pharmacy and Pharmaceutical Sciences*.2014; 3(8), 549-560.
19. Kaur G, Mohammad I, & Kaur D. Knowledge regarding prevention of complications of diabetes mellitus. *International Journal of Science and Research*. 2015; 4(2), 2285-2287.
20. Muhammad-Lutfi AR, Zaraiyah MR, Anuar-Ramdhan IM. Knowledge and practice of diabetic foot care in an in-patient setting at a tertiary medical center. *Malaysian Orthopaedic Journal*. 2014 Nov; 8(3):22.