

Knowledge about Complications of Diabetes in Diabetic Patients Attending in General Health Checkup, Tribhuvan University Teaching Hospital Nepal

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Abstract

Introduction: The prevalence of diabetes mellitus has risen exponentially over the last three decades, with resultant increase in morbidity and mortality mainly due to its complications. The study aimed to assess the knowledge about the complications of diabetes in diabetic patients.

Methods: A cross-sectional observational study was conducted among 100 diabetic patients who attended general health check-up clinic of Tribhuvan University Teaching Hospital.

Results: Majority of the female patients (78.8%) had the knowledge of diabetes mellitus. Among them, over half had knowledge that diabetes can cause the problem of cardiovascular, kidney failure and retinopathy. Similarly, four-fifths (80%) of the patients above 40 years of age and majority (92.3%) of the patients with more than 5 years duration of diabetes had knowledge about diabetic complications.

Conclusion: Female diabetic patients had slightly more knowledge of complication of diabetes in comparison to their male counterparts. The knowledge of diabetic complication was generally high among the patients above 40 years of age and the patients with more than 5 years duration of diabetes. Even then, sex and age was not associated with the knowledge of the need for annual eye checkup and specific diabetic complications such as, kidney and cardiovascular problem, hypoglycemia, neuropathy, foot problem, retinopathy, diabetic ketoacidosis and stroke. However, duration of patient's diabetes was associated with their knowledge regarding cardiovascular problem, eye check-up annual and retinopathy but was not associated with kidney problem, hypoglycemia, neuropathy, foot problem, diabetic ketoacidosis and stroke. In order to make patient along with their family knowledgeable about the diabetes and its complications, there is need to incorporate diabetes counseling and education activities in General Health Check Up Clinic.

Keywords: Diabetes, Diabetic Complication

Introduction

Diabetes Mellitus appears to be a major global epidemic of non-communicable diseases affecting both affluent and non-affluent society [1, 2]. In 2014; 422 million people in the world had diabetes-a prevalence of 8.5% among the adult population. The prevalence of diabetes has been steadily increasing for the past 3 decades and is growing most rapidly in low and middle-income countries [3]. More than 170 million worldwide have diabetes and if this trend continues, it is projected to be more than double by year 2030 [4]. According to Levin, approximately 171 million people worldwide experienced diabetes mellitus with almost 4 million deaths reported annually from its complications [5]. According to World Health Organization (WHO), people with type 2 diabetes will be mushrooming both in developed and developing countries over the next two decades. In the developing countries, the estimated increase is approximately 150% from 30 million in 2000 to 80 million in 2030 while in developed countries, the estimated increase

is approximately 46% from 55 million in 2000 to 83 million in 2030 [4]. In Nepal, it is estimated to reach 6, 38, 000 by the year 2025 [6]. The prevalence of diabetes mellitus has risen exponentially over the last three decades, with resultant increase in morbidity and mortality mainly due to complications [7]. It has a high impact on the patient's quality of life, productivity and involves enormous health costs for virtually every society [8].

Every year, the increase in severity of diabetes has been associated with the patient's lack of knowledge. Knowledge plays the vital role in disease development and its early prevention and detection [9, 10]. Optimum management of the problem requires an individual to be aware of the nature and consequences of the disease, its risk factors, dimensions of treatment and complications [11, 12]. Research have also shown that expanding patient's knowledge on disease and its complications has sufficiently great benefits with respect to patient compliance to treatment and to reduce complications related with the disease. The main part of diabetic care is an adequate knowledge of diabetes and its complications [13]. A study from Bhaktapur

Nepal on diabetic patients shows lack of awareness about the major complications related to diabetes mellitus [14]. There is limited data available regarding the awareness and knowledge about the complications of diabetes in Nepali Diabetic population. Therefore, the main objective of the study was to assess the knowledge about the complications of diabetes in diabetic patients.

Materials and Methods

This was the cross sectional observational study conducted to assess the knowledge about the complications of diabetes in diabetic patients and identify the association of the knowledge of diabetic complications with sex, age and duration of type 2 diabetes. General health check-up clinic of Tribhuvan University Teaching Hospital had been selected as a study area. All the patients visiting General health checkup clinic in Tribhuvan University Teaching Hospital (TUTH) during the study period with the history of type 2 diabetes were included in the study. Sample size for the study was calculated using the following formula:

$$n = 4pq/d^2$$

Where, n = sample size

p = expected prevalence of the disease

q = 1- p

d = precision

Assuming that 50 percentages of the diabetics had reasonable knowledge about complications. We required a precision of 10 percent, the sample size was calculated as: $N = 4 \times 0.5 \times 0.5 / (0.1 \times 0.1) = 100$. Thus, in this study, 100 diabetic patients were selected using simple random sampling technique.

Written informed consent was sought before administering the questions. The identity and information of the patients were kept confidential and not disclosed to anyone. The diabetic patients were interviewed by administering the structured questionnaire which was elaborated in Nepali language. The data were entered in Microsoft Excel version 2010. The categorical answers were coded for data entry. Then data were transferred to SPSS version 20 for the analysis. The frequency distribution tables, diagrams were prepared to interpret and present the data. The associations of knowledge of diabetes with other background variables were explored.

Results

More than half (52%) of the respondents were female. Similarly, more than four-fifths of the respondents (85%) were found to be over age 40. Nearly two-fifths of the respondents (39%) had more than 5 year's duration of type 2 diabetes.

Complications	Male		Female		p-value*
	Yes	No	Yes	No	
Diabetes Mellitus	37 (77.1%)	11 (22.9%)	41 (78.8%)	11 (21.2%)	0.832
CVS Problem	27 (56.2%)	21 (43.8%)	27 (51.9%)	25 (56.2%)	0.66
Eye check-up annual	28 (58.3%)	20(41.7%)	30(57.7%)	22(42.3%)	0.948
Kidney problem	34(70.8%)	14(29.2%)	28(53.8%)	24(46.8%)	0.08
Hypoglycaemia	19(39.6%)	29(60.4%)	17(32.7%)	35(67.3%)	0.473
Neuropathy	12(25%)	36(75%)	18(34.6%)	34(65.4%)	0.295
Foot Problem	12(25%)	36(75%)	15(28.8%)	37(71.2%)	0.665
Retinopathy	25(52.1%)	23(47.9%)	30(57.7%)	22(42.3%)	0.573
DKA	9(18.8%)	39(81.2%)	12(23.1%)	40(76.9%)	0.596
Stroke	12(25%)	36(75%)	21(40%)	31(59.6%)	0.102

Table 1: Shows those female patients had slightly more knowledge of complication of diabetes in comparison to their male counterparts. These results are similar with the findings of Lemes Dos Santos et al they found that Brazilian women tended to gain better knowledge about diabetes than males in their study [15].

However, these findings are inconsistent with the findings of Obirikoranget al conducted among the patients visiting the diabetes clinic at the Sampa Government Hospital of Ghana [16].

Similarly, these findings are also not similar with the study of Ntontoloet al [17]. They found that men were more knowledgeable about diabetes than women. Among male patients, nearly three-quarters (70.8%) of them knew that diabetes can cause kidney failure. Only 39.6% of them knew about hypoglycemia as the complication of diabetes mellitus. Just 18.8% of them knew that

DKA is a complication of diabetes. Likewise, among female patients, over half of them (51.9%), (53.8%) and (57.7%) had knowledge that diabetes can cause the problem of CVS, kidney failure and retinopathy respectively. Respectively, only 32.7%, 28.8% and 23.1% of them knew about hypoglycemia, foot problem and DKA as the complication of diabetes mellitus.

Furthermore, there was no significant association between the sex and the knowledge of diabetes complications such as CVS problem, eye check-up annual, kidney problem, neuropathy, foot problem, retinopathy, DKA and stroke. There was also no significant difference between the level of knowledge of hypoglycemia and sex. This is consistent with the study of Shriramet al that the knowledge of hypoglycemia is not associated with sex [18].

Complications	<40 years		>40 years		p-value*
	Yes	No	Yes	No	
Diabetes Mellitus	10(66.7%)	5(33.3%)	68(80%)	17 (20%)	0.25
CVS Problem	6(40%)	9(60%)	48(56.5%)	37(43.5%)	0.238
Eye check-up annual	6(40%)	9(60%)	52(61.2%)	33(38.8%)	0.126
Kidney problem	6(40%)	9(60%)	56(65.9%)	29(34.1%)	0.057
Hypoglycaemia	5(33.3%)	10(66.7%)	31(36.5%)	54(63.5%)	0.815
Neuropathy	6(40%)	9(60%)	24(28.2%)	61(71.8%)	0.359
Foot Problem	2(13.3%)	13(86.7%)	25(29.4%)	60(70.6%)	0.196
Retinopathy	7(46.7%)	8(53.3%)	48(56.5%)	37(43.5%)	0.482
DKA	3(20%)	12(80%)	18(21.2%)	67(78.8%)	0.918
Stroke	5(33.3%)	10(66.7%)	28(32.9%)	57(67.1%)	0.976

*Chi-square test

Table 2: Reveals that about two-thirds (66.7%) of the patients below 40 years and four-fifths (80%) of the patients above 40 years had knowledge about the complication of diabetes mellitus. Among the patients below 40 years, over two-fifths (46.7%) of them had the knowledge of retinopathy as the complication of diabetes. Only 13.3% and 20% of them knew that diabetes can arise the complications such as foot problem and DKA respectively. Similarly, among the patients above 40 years, nearly two-thirds (65.9%) of them had the knowledge that kidney can be affected by diabetes. Only 21.2% of them had the knowledge of DKA complication. Moreover, there was no significant association between the age and the knowledge of diabetes complications. This finding is consistent with the study of Herath et al conducted in Southern Sri Lanka [19].

Complications	<1 years		1 – 5 years		>5 years		p-value*
	Yes	No	Yes	No	Yes	No	
Diabetes Mellitus	18(60%)	12(40%)	24(77.4%)	7(22.6%)	36(92.3%)	3(7.7%)	0.006
CVS Problem	12(40%)	18(60%)	15(48.4%)	16(51.6%)	27(69.2%)	12(30.8%)	0.04
Eye check-up annual	11(36.7%)	19(63.3%)	15(48.4%)	16(51.6%)	32(82.1%)	7(17.9%)	<0.001
Kidney problem	14(46.7%)	16(53.3%)	20(64.5%)	11(35.5%)	28(71.8%)	11(28.2%)	0.097
Hypoglycaemia	9(30%)	21(70%)	10(32.3%)	21(67.7%)	17(43.6%)	22(56.4%)	0.442
Neuropathy	6(20%)	24(80%)	11(35.5%)	20(64.5%)	13(33.3%)	26(66.7%)	0.354
Foot Problem	6(20%)	24(80%)	7(22.6%)	24(77.4%)	14(35.9%)	25(64.1%)	0.27
Retinopathy	12(40%)	18(60%)	15(48.4%)	16(51.6%)	28(71.8%)	11(28.2%)	0.021
DKA	4(13.3%)	26(86.7%)	6(19.4%)	25(80.6%)	11(28.2%)	28(71.8%)	0.311
Stroke	6(20%)	24(80%)	11(35.5%)	20(64.5%)	16(41%)	23(59%)	0.172

*Chi-square test

Table 3: Presents that majority (92.3%) of the patients with more than 5 years duration of diabetes had knowledge about diabetic complications followed by the patients with less than 1 year duration of diabetes (60%) and the patients with 1-5 years duration of diabetes. Among the patients with less than 1 year duration of diabetes, approximately forty seven percent (46.7%) of them knew that kidney can be damaged due to the diabetes. Furthermore, among the patients with 1-5 years duration of diabetes, over three-fifths (64.5%) of them had the knowledge that kidney can be failed by diabetes. Among the patients with more than 5 years duration of diabetes, slightly over four-fifths (82.1%) of them had the knowledge that the diabetic patient have to do eye check-up annually. Further, duration of patient's diabetes was significantly associated with the knowledge of diabetes complications such as CVS prob-

lem, eye check-up annual and retinopathy. Similarly, there was no significant association between the duration of patient's diabetes and the knowledge of diabetes complications such as kidney problem, hypoglycemia, neuropathy, foot problem, DKA and stroke.

Conclusion

Female diabetic patients had slightly more knowledge of complication of diabetes in comparison to their male counterparts. The knowledge of diabetes complication was generally high among the patients above 40 years of age and the patients with more than 5 years duration of diabetes. Sex and age was not associated with the knowledge of diabetic complications such as eye check-up annual, kidney and CVS problem, hypoglycemia, neuropathy, foot problem, retinopathy, DKA and stroke. However, duration of patient's

diabetes was associated with CVS problem, eye check-up annual and retinopathy but was not associated with kidney problem, hypoglycemia, neuropathy, foot problem, DKA and stroke.

It is a high time to reduce the diabetic complication for the quality of life. The patients, who were unknown with the complications of diabetes, are needed to be aware. Self-care management and patient's adherence to the prescribed medication and lifestyle modification is also very necessary. For all these things, various counseling and diabetic programs should be organized. Various method, approaches and instructional materials such as anatomical models, charts, demonstration materials, displays, food models, graphs, handouts, pamphlets, posters, puzzles and videos and other audio-visual aids should be used in such kind of programs so that the diabetic people along with their family can easily understand the diabetic complications and its impact in the life. The other careful thought could be instructing and counseling the patient's family members so that they can excellently describe and give effective advice on diabetic care practices at home. In this way, the people in the society can be made knowledgeable about the diabetes and its complication on life and enhance the quality of life.

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