Awareness Regarding Diabetes Mellitus among General Population of Banepa Municipality

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ABSTRACT

Background

Diabetes is a silent disease and many people with diabetes may become aware of it only after life-threatening complications. The presence of knowledge of diabetes could contribute in early diagnosis and minimize the occurrence of complications. Hence, healthcare and public policy makers are putting extensive efforts to aware them on diabetes.

Objective

To assess the level of diabetes knowledge and its risk among the general public of Banepa municipality.

Method

A Cross sectional study was conducted to assess the awareness about diabetes among the general public of Banepa municipality. During the period of November 2019 to January 2020, 273 respondents of Banepa municipality were included with informed consent. Data was collected using a pre-tested structured questionnaire through one-to-one interviews. Indian Diabetes risk score (IDRS) was used to identify the risk of diabetes among them that consists of four elements i.e. age, abdominal obesity, physical activity, and family history. Data entry and analysis was done using SPSS version 20.

Result

It was found that 61.9% had a higher level of knowledge of diabetes. IDRS score shows more than half percent (53.5%) of respondents were in high risk, 39.2% were in medium risk and 7.3% were in low risk.

Conclusion

This study implies that there was good knowledge about diabetes among people. However, the majority of them are at risk for developing diabetes in future which may be due to lack of practical implication of knowledge. It reflects the necessity to educate and reinforce the public regarding prevention of diabetes which further postpones its complications.

KEY WORDS

Awareness, Diabetes, IDRS, Knowledge, Risk factors

INTRODUCTION

Diabetes Mellitus (DM) is one of the emerging public health concerns across the globe leading to morbidity and premature mortality.[1] The reason behind increasing prevalence of diabetes may include unhealthy lifestyle, modernization, poor knowledge, and practices. The appropriate knowledge and practices are core elements in reduction of prevalence and morbidity related to DM.[2] However, there are fewer studies focused in this area lacking data of knowledge and its risk among Nepalese population.

The prevalence of Diabetes Mellitus shows an increasing trend and raising the public health concern and evolving as a leading cause of death and disability in the current world.[3] It has been estimated by International Diabetes Federation (IDF, 2017) that 451 millions people aged 18-99 years are living with diabetes in the world and almost half of the people with diabetes are underdiagnosed while approximately 5 million deaths were related to diabetes in 20-99 age groups. Similarly, around 4% of population among age group of 20-79 years in Nepal is living with DM and incidence is higher among the urban population (IDF, 2017).[4,5]

In order to reduce rate of DM, proper knowledge, appropriate attitudes and practices play the vital role.[6] The presence of knowledge of diabetes and the identification of its risk factors among public could contribute to early diagnosis, minimize the occurrence of complications as well as preventing the condition by lifestyle modification of them, which leads a healthy life. Therefore, this study aims to assess general knowledge about diabetes and find out diabetes risk among them.

METHODS

The descriptive cross-sectional quantitative study design was used. The study was carried out in Banepa Municipality from 14th November, 2019 to 30th January, 2020. The general people of aged 18 years and above with and without diabetes were included after getting ethical approval and patient consent, while those with hearing and visual impairment as well as pregnant women were excluded in the study Non-probability convenience sampling technique was used. The data was collected using one-to-one interview method.

A pretested, translated in Nepalese version (Cronbach Alpha is 0.91) of diabetic knowledge questionnaire from Wee et al. was used to 273 respondents.[6] The questionnaire comprises of six sections including demographic, general knowledge of diabetes (9 questions), risk factors (4 questions), symptoms and complications (11 questions), treatment and management (13 questions) and monitoring (4 questions) where each question consists three options i.e. Yes, No and Unsure that the participants are needed to answer on the selected items. A point was awarded for right response while zero for wrong/unsure responses. The total score for those five sections was 41. Similarly, Indian Diabetes risk score (IDRS) was used to identify the risk of diabetes among them that consists of four elements i.e. age, abdominal obesity, physical activity, and family history. IDRS of < 30 is categorized as low risk, 30-50 as medium risk and those with > 60 as high risk for diabetes. The raw data collected was analyzed in SPSS 20 version for both descriptive (Mean, standard deviation) and inferential (chi square test) statistics.

RESULTS

There were a total 273 respondents among them 45.8% were in the age group of greater or equal to 50 years, 27.1% were 35-49 years and less than 35 years, respectively. Among them 57.9% were female and 42.1% were male. These are listed in table 1. We had also asked about diabetic history among the respondents and 10.3% of them were diabetic.

Table 1. Demographics of respondents (n=273)

Characteristics	Frequency	Percentage
Age		
Less than 35 years	74	27.1
35-49 years	74	27.1
Greater or equal to 50 years	125	45.8
Sex		
Female	158	57.9
Male	115	42.1

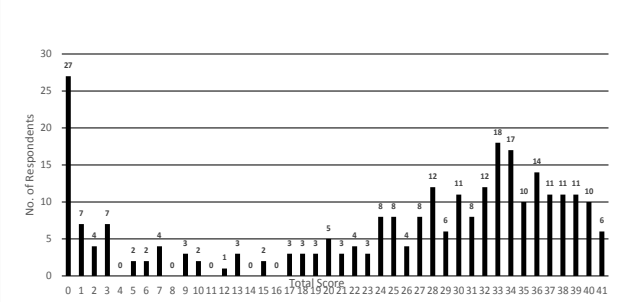

Figure 1. Distribution of total score

There were altogether 41 questions related to knowledge regarding diabetes. The total score was 41 and the distribution of total score obtained by the respondents has been shown in figure 1. Nearly two third of the respondents (61.9%) had higher level of knowledge and 38.1% had lower level of knowledge as shown in table 2. The mean score was 24.93 with SD±13.273 which has been shown in table 3. Table 4 depicts the knowledge of diabetes mellitus where respondents had answered about the general knowledge, risk factors, symptoms, complications, treatment, management and monitoring of diabetic condition. Respondents of 35-49 years (71.6%) and male

Table 2. Level of knowledge of the Respondents (n=273)

Level of Knowledge	Frequency	Percent
Low	104	38.1
High	169	61.9
Total	273	100

Table 3. Maximum possible score, average score and its standard deviation (n=273)

Section	Maximum possible score	Mean score and SD	Standard Deviation
General knowledge	9	3.8±2.83	±2.83
Risk factors	4	2.5±1.55	±1.55
Symptoms and Complications	11	7.35±4.15	±4.15
Treatment and Management	13	8.22±4.69	±4.69
Monitoring	4	3.07±1.48	±1.48
Total	41	24.93±13.273	±13.273

(61.9%) had higher levels of knowledge. Based on IDRS score more than half percent (53.5%) of respondents were in high risk, 39.2% were in medium risk and 7.3% were in low risk (table 5). Similarly, 34.80% had more than 90 cm waist circumference, 44% had no exercise and parents of 85% respondents had no diabetes. Those who had higher (61%) and medium risk (61.7%) of developing diabetes had slightly lower knowledge of diabetes compared to lower risk score (70%). However, there was no significant relationship between level of knowledge on diabetes and IDRS with p value 0.736.

DISCUSSION

The result revealed that only 37.84% of the respondents gave correct answers on general knowledge on diabetes mellitus. There was the lowest response (19%) on 'diabetes is a condition of body not responding to insulin' while 68.50% gave correct response on 'diabetes is a condition of high blood sugar'. Though the people know the condition of diabetes, there is a lack of knowledge on other portions like pathophysiology, its types, insulin, and its use in diabetes mellitus. The reason might be due to lack of awareness and giving less priority to it. Similarly, the insufficient exposure to diabetes among the respondents may also have led to low scores on this. Comparable to present study, Wee et al. found 77.9% did not know its types, 67.6% had poor knowledge of pathophysiology, as high as a quarter of the respondents thought that diabetes is curable.[6] Lack of exposure in caring diabetic patients and awareness may be the reason for the lower scores.

In the present study, nearly two third of respondents were aware of the risk factors of diabetes. Though 71% of the respondents gave the correct answer on obesity increases the risk of diabetes, it was not found in the practice. While measuring waist circumference, only 42.10% had less than 80 cm and in case of physical activity, only 1% used to perform regular exercises. The causes of diabetes are not completely understood but are widely believed to be the result from a combination of genetic and lifestyle factors (IDF, 2017). Moreover, this may be due to their minimal health concern to diabetes. Thus, encouragement in modifying factors like obesity and physical inactivity may contribute to reduction in disease burden. However, more than half of the participants (52.1%) were unaware that pregnancy may increase risk of diabetes. This reflects that general people have less education on gestational diabetes mellitus who should also be focused on educational programs. Thus, by encouraging physical activity and maintaining weight, we can reduce risk among the public. On the contrary, Alanazi et al. study shows only 48.7% knew that lack of exercise and obesity were risk factors of DM.[7]

Among the study respondents, more than two third of them were aware of symptoms and complications of diabetes. It was found that they knew constant feeling of thirst (74.4%), frequent urination (71.4%), weight loss (65.2%), blurred vision (70%), slow healing of cuts and wounds (72.2%) and tiredness and weakness (73.6%) occurs in diabetes. The findings are higher in the study of Aljin et al. where 91.5% were aware of the symptoms of T2DM.[8] The participants have good knowledge on symptoms of diabetes which is vital in early diagnosis and treatment. Those who are unaware of the symptoms of diabetes may not be able to seek the health care services in a timely manner and may suffer from complications of diabetes.

In the complications portion, 68.9%, 68.1%, 57.1%, 58.2% and 55.7% of the respondents knew decaying limbs, eye problems, kidney problems, high blood pressure and loss of sensation in arms and legs are the complication of diabetes, respectively. This implies that the respondents were well informed about the complications of diabetes. Early recognition of these conditions contribute in maintaining good quality of life among the people with diabetes which help in reducing burden to the individual as well as society. According to the study conducted by Alanazi et al. only few participants knew the complications of DM like retinopathy (24.5%) and loss of vision, retinopathy (8.3%) loss of vision, low sensation and numbness in extremities.[7]

Among the study respondents 63.23% had good understanding on treatment and management of diabetes. Among them, 53.1% and 59% were aware about insulin injections and the tablets and capsules are available for the control of diabetes, respectively. Nearly half of the respondents knew diabetics should carry sweets and jellybeans when they are out, and more than half of them (56.4%) had knowledge on diabetics should care for their toes and feet. Only 54.20% knew that diabetics should not wear tight shoes and 59.70% knew that diabetics should not skip meals when busy. On the study done by Foma et al. in Gambia, 50% of the respondents had no idea on preventive management.[9]

Table 4. Knowledge of Diabetes Mellitus (n=273)

Details	Correct		Wrong		Unsure	
	f	%	f	%	f	%
A) General Knowledge of Diabetes						
Diabetes is a condition of high blood sugar	187	68.5	7	2.60	79	28.90
Diabetes is a condition of insufficient insulin	82	30.00	24	8.80	167	61.20
Diabetes is a condition of the body not responding to insulin	52	19.00	42	15.40	179	65.60
Diabetes is non-contagious	130	47.60	48	17.60	95	34.80
There are different types of diabetes	100	36.60	32	11.70	141	51.60
Diabetes is not curable	87	31.90	84	30.80	102	37.40
Insulin is a hormone	86	31.50	14	5.10	173	63.40
Insulin controls blood sugar	104	38.10	11	4.00	158	57.90
Insulin is required for some diabetic patients	102	37.40	12	4.40	159	58.20
Average	103	37.84	30	11.16	139	51.00
B) Risk Factors of Diabetes						
Family history of diabetes increases the risk of diabetes	165	60.40	20	7.30	88	32.20
Age above 40 years old increases the risk of diabetes	189	69.20	7	2.60	77	28.20
Obesity increases the risk of diabetes	195	71.40	9	3.30	69	25.30
Pregnancy increases the risk of diabetes	131	48.00	22	8.10	120	44.00
Average	170	62.25	15	5.33	89	32.43
C) Symptoms and Complications of Diabetes						
Symptoms						
Constant feeling of thirst occurs in diabetes	203	74.40	9	3.30	61	22.30
Frequent urination occurs in diabetes	195	71.40	11	4.00	67	24.50
Weight loss despite normal appetite occurs in diabetes	178	65.20	12	4.40	83	30.40
Blurred vision occurs in diabetes	191	70.00	7	2.60	75	27.50
Slow healing of cuts and wounds occurs in diabetes	197	72.20	9	3.30	67	24.50
Tiredness and weakness occurs in diabetes	201	73.60	4	1.50	68	24.90
Complications						
Decaying limbs is the complication of diabetes	188	68.90	5	1.80	80	29.30
Eye problems is the complication of diabetes	186	68.10	7	2.60	80	29.30
Kidney problems is the complication of diabetes	156	57.10	12	4.40	105	38.50
High blood pressure is the complication of diabetes	159	58.20	10	3.70	104	38.10
Loss of sensation in arms and legs is the complication of diabetes	152	55.70	6	2.20	115	42.10
Average	182	66.80	8	3.07	82	30.13
D) Treatment and Management of Diabetes						
Medications Available						
Insulin injections are available for the control of diabetes	145	53.10	9	3.30	119	43.60
Tablets and capsules are available for the control of diabetes	161	59.00	9	3.30	103	37.70
Lifestyle and non-medical measures						
Diabetics should carry sweets and jellybeans when they are out	134	49.10	49	17.90	90	33.00
Diabetics should exercise regularly	192	70.30	3	1.10	78	28.60
Diabetics should have good weight control	196	71.80	1	0.40	76	27.80
Diabetics should go for regular eye check-up	177	64.80	6	2.20	90	33.00
Diabetics should have a low fat and high fiber diet	185	67.80	9	3.30	79	28.90
Diabetics should care for their toes and feet	154	56.40	13	4.80	106	38.80
Things diabetics should not do						
Diabetics should not consume alcohol	213	78.00	7	2.60	53	19.40
Diabetics should not donate blood	164	60.10	17	6.20	92	33.70
Diabetics should not smoke	212	77.70	7	2.60	54	19.80
Diabetics should not wear tight shoes	148	54.20	17	6.20	108	39.60
Diabetics should not skip meals when busy	163	59.70	15	5.50	95	34.80
Average	173	63.23	12	4.57	88	32.21
E) Monitoring of Diabetic Conditions						
Diabetics should test for blood glucose	208	76.20	3	1.10	62	22.70
Diabetics should test for sugar in the urine	207	75.80	5	1.80	61	22.30
Diabetics should make regular visits to the eye doctor	195	71.40	4	1.50	74	27.10
Diabetics should go for regular medical check-ups	229	83.90	-	0.00	44	16.10
Average	210	76.83	4	1.10	60	22.05

Table 5. Risk of development of diabetes based on IDRS score (n=273)

Risk Classification	Frequency	Percentage
Low Risk	20	7.3
Medium Risk	107	39.2
High Risk	146	53.5

These results can predict that people could be in danger of developing acute and chronic complications of Diabetes Mellitus like hypoglycemia, diabetic foot, retinopathy, cardiac diseases, etc. if they were unaware of measures for preventing them.

More than 3/4th of the respondents had good knowledge on monitoring of diabetic conditions where the majority of respondents (83.90%) were aware about regular medical check-ups. Similarly, the study done in Singapore by Wee et al. had also the best response in this section.[6] This might be due to obtaining information from different sources such as friends/relatives, books or magazines. There is conflicting evidence on the study done in Western Nepal by Upadhyay et al. where only 6.59% of the respondents were aware of the importance of regular monitoring.[10]

Single center (Banepa Municipality), study may limit generalizability of the study.

CONCLUSION

Diabetes disease can impact the quality life of a person as well as family. This study shows that there was a good level of knowledge on diabetes among people except for a few aspects of diabetes. Despite this, the majority of them are at risk for developing diabetes in future. So, it reflects an urgent need to educate, screen, diagnose and provide appropriate care to the public and further postpones its complications. Risk respondents were counseled about further management of diabetes and were referred to Dhulikhel Hospital.

Recommendation

Based on findings, in the future we should focus on the physical, social, and economical impact of diabetes in our educational programs. We recommend health policy makers should plan more effective health education sessions to increase knowledge. This study also gives priority to regular screening programs and follow-up for preventing complications.

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REFERENCES

1. Imtiaz KS, Chowdhury M, Nazneen H, Begum N, Tamanna N, Alam F, et al. Knowledge Regarding Diabetes Mellitus among Rural People in a Selected Area of Bangladesh. *Northern International Medical College Journal*. 2016;7 (2):131-4.
2. Yasobant S, Thube N, Saxena D, Patel S, Patel M. Improving knowledge about diabetes among diabetic population of Gujarat, India: A community based Interventional study. *Integrative Obesity and Diabetes Journal*. 2016; 2(5):271-5.
3. Qamar M, Lau WH, Ahmed A, Ahmed F, Khan J, Ahmad M. Knowledge of Diabetes Mellitus risk factors and complications among the general public in Kaula Lumpur. *World Journal of Pharmaceutical Research.* 2015;4(12):154-70.
4. Sunny AK, Khanal VK, Sah RB, Ghimire A. Depression among people living with type 2 diabetes in an urbanizing community of Nepal. *PLoS One*. 2019; 14(6): e0218119. Published online 2019 Jun 10. doi: 10.1371
5. IDF Diabetes Atlas, 8th ed. Brussels, Belgium, 2017, (cited 2019 November 5). Available from: http://www.diabetesatlas.org
6. Wee HL, Ho HK and Li SC. Public Awareness of Diabetes Mellitus in Singapore. *Singapore Medical Journal*. 2002;43 (3):128-34.
7. Alanazi AM, Abo el-Fetoh NM, Alotaibi HK. Survey of awareness of diabetes mellitus among the Arar population, Northern Border Region of Saudi Arabia, Electronic Physician (ISSN: 2008-5842) 2017;9:5.
8. Aljin V, Umadevi R, Anantha Eashwar VM. Awareness of diabetes among patients with type 2 diabetes mellitus attending a rural health and training center. *International Journal of Community Medicine and Public Health*. 2018 Oct;5(10):4597-602. http://www.ijcmph.com
9. Foma MA, Saidu Y, Omoleke SA, James J. Awareness of diabetes mellitus among diabetic patients in the Gambia: A strong case for health education and promotion, BMC Public Health December 2013;13:1124. http://www.biomedcentral.com/1471-2458/13/1124
10. Upadhyay DK, Palaian SP, Shankar PR, Mishra P. Knowledge, Attitude and Practice about Diabetes among Diabetes Patients in Western Nepal, Nov 26, 2007. Available from: https://ejmanager.com/mnstemps/27/27-1303661134.pdf
11. World Diabetes Foundation [Internet]. 2019 [cited on 7th November]. Available from: https://www.worlddiabetesfoundation.org/
12. Sharma S. Diabetes Prevention in Nepal: Assessment of Knowledge and Attitude of the 40+ Patients. *Journal of Advanced Academic Research.* 2014;1 (1):46-52.
13. Sapkota Y, Knowledge. Attitude and Practice of Type 2 Diabetic Patients Visiting Diabetic OPD of TUTH and Non-Diabetic Population of Kathmandu. *Journal of Diabetes and Endocrine Association of Nepal.* 2018; 2 (1):17-23.
14. Agrawal KK. Patients' Awareness about the Complications of Diabetes Mellitus and its Co relation with the Glycemic Status. *Journal of Nepal Medical Association.* 2015;53(200):284-7.
15. Deepa M, Bhansali A, Anjana RM, Pradeepa R, Joshi SR, Joshi PP, et al. Knowledge and awareness of diabetes in urban and rural India: The Indian Council of Medical Research India Diabetes Study (Phase I): Indian Council of Medical Research India Diabetes 4. *Indian Journal of Endocrinology and metabolism*. 2014;18(3):379-85.
16. Mohan V, Sandeep S, Deepa M, Gokulakrishnan K, Datta M, Deepa R. A diabetes risk score helps identify metabolic syndrome and cardiovascular risk in Indians - the Chennai Urban Rural Epidemiology Study (CURES-38). *Diabetes, obesity & metabolism.* May 2007;9(3):337-43.
17. Joshi SR. Indian Diabetes Risk Score. *The Journal of the Association of Physicians of India.* 2005;53.755-8.