

A Self Care Management Awareness Study among Diabetes Mellitus Patients in Rural Nepal

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Abstract Diabetes has emerged as one of the world's biggest health problem. Diabetes is traditionally known as a "silent disease," exhibiting no symptoms until progression to target organ damage. Diabetes self-care is suboptimal across a continuum from home based activities example as healthy eating, exercise and medication adherence to use of preventive care. There is a need for assessment of patient's knowledge regarding diabetes, its complications and self care which has a significant benefit with regard to patient's compliance to the treatment and in decreasing complications associated with disease and its consequences. The study was conducted to know self care management of diabetes mellitus among diabetic patients from a cohort of 192 diabetic patients picked up by convenience sampling technique. Data were collected, by administering a structured validated questionnaire, during March 2014 during community diagnosis program. Out of 192 patients (aged ≥ 18 years), mean score of knowledge of self care was 5.406 ± 1.709 . Among them, 61 (31.77%) had poor knowledge, 110 (57.29%) had average score and 21 (10.93%) had good knowledge of diabetes mellitus. Most of diabetic patients knew that self care can decrease the complications. The most of them practiced self care (hand and foot care, physical activity, general health check up) but were irregular in day to day practices. More than two third subjects had uncontrolled blood sugar level.

Keywords: diabetes mellitus, self care management

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1. Introduction

Diabetes mellitus is a disease that was recognized in antiquity, but its history has been characterized by numerous cycles of discovery. The history can be divided in four major period i) Ancient period (description of diabetes) ii) Diagnostic period (16th- 18th centuries) iii) Experimental period (19th century) iv) Knowledge about diabetes and its metabolism (20th century and onward) [1].

Diabetes mellitus (DM) is a metabolic syndrome characterized by chronic hyperglycemia and disturbances of carbohydrate, protein and fat metabolism associated with absolute or relative deficiency in insulin secretion and/or insulin action [2].

Two-thirds of the global diabetes population lives in the developing world. The number of persons with diabetes is expected to increase in developed countries by 41% (from 51 to 72 million) and 170% in developing countries (from 84 to 228 million) by the year 2025 [3]. The current diabetes pandemic threatens to be a rapidly expanding burden in future for both developed and developing countries.

World Health Organization (WHO) estimates that more than 346 million people worldwide have DM. This number is likely to more than double by 2030 without any

intervention. Keeping in the view the alarming increase in the incidence and prevalence of diabetes in India, the WHO has declared India as the "diabetes capital" of the world [4].

Almost 80% of diabetes deaths occur in low and middle-income countries. At least one in ten deaths among adults between 35 and 64 year is attributed to diabetes [5]. According to WHO report, India today heads the world with over 32 million diabetic patients and this number is projected to increase to 79.4 million by the year 2030 [6]. Recent surveys indicate that diabetes now affects a staggering 10-16% of urban population and 5-8% of rural population in India, Sri Lanka and Nepal [7].

Diabetes has emerged as one of the world's biggest health problem. Diabetes is traditionally known as a "silent disease," exhibiting no symptoms until progression to target organ damage. Diabetes is associated with complications such as cardiovascular diseases, nephropathy, retinopathy and neuropathy, which can lead to chronic morbidities and mortality [5,6].

In the low and middle income countries, the impact of diabetes is largely unrecognized. At international and national level, awareness about the public health and clinical important of diabetes remains low. Diabetes self-care was suboptimal across a continuum from home based activities example as healthy eating, exercise and medication adherence to use of preventive care.

In the absence of adequate public health program, diabetes will pose a severe burden on the national health system in near future. There is a need for assessment of patient's knowledge regarding diabetes, its complications and self-care which has a significant benefit with regard to patient's compliance to the treatment and in decreasing complications associated with disease and its consequences.

2. Material and Methodology

The community based descriptive cross sectional study was conducted among 192 individuals, using a convenience sampling technique in village development committee of Lakhantari situated at south-west part of Morang district of eastern Nepal. Lakhantari VDC is situated 16 Km from Biratnagar, a rural village with a population of 4067 (M:F 2037:2030), as per the 2011 census. Data were collected, using a structured questionnaire during March 2014 during community diagnosis program. Reliability analysis of the questionnaire showed a Cronbach alpha of 0.61 for the questionnaire validation.

2.1. Sample Size

Assuming that 50% of diabetic had reasonable knowledge about self care management of diabetes. We require the precision 15 %, the sample size is calculated as: $N = 4pq/d^2 = (4 \times 50 \times 50 / 7 \times 7) = 178$. Where p is the proportion of estimated population and q = (1-q), d representing the absolute precision. During study period March 2014, the consent of 192 patients was obtained. Hence the cohort of study consisted of 192 diabetic cases.

2.2. Data Entry and Analysis

Epi Info and SPSS version 16 software were used to analyze DATA. The analysis was done by calculating percentages, proportions, mean and standard deviation. The association between level of knowledge of diabetes, self care, practices, education, occupation etc. was tested by using Pearson's Chi-square test.

Table 1. Socio-demographic profiles of diabetes patients

Gender	Numbers	Percentage
Male	107	55.73
Female	85	44.27
Educational status	Numbers	Percentage
Illiterate	73	38.00
Primary school level	63	32.81
Secondary school level	36	18.74
SLC/Diploma pass	15	7.81
Graduate	6	3.12
Post Graduate	2	1.02
Occupation	Numbers	Percentage
Govt. employee	7	3.64
Non Govt. employee	24	12.5
Business	63	32.81
Other	98	51.05
Socio economic class	Numbers	Percentage
I	7	3.62
II	15	7.81
III	55	28.64
IV	71	36.97
V	44	22.91

3. Results

One ninety two (192) subjects (aged ≥ 18 years) were selected for the study. The study included 107 (55.73%) males and 85 (44.27%) females. The mean age of the participants was 58.38 years. In the study 73 (38%) patients were illiterates. Only 7 (3.64%) were government employees. According to socioeconomic status majority 71 (37%) belong to class IV, 55 (28.64%) belong to class III, 44 (22.91%) class V, 7 (3.62%) to class I and 15 (7.81%) belong to class II (Table 1).

108 (Only 56.25%) said they know about diabetes mellitus and among them only 11 (10.18%) had knowledge about the types of diabetes mellitus. The results revealed 109 (56.77%) respondents knew that incidence of diabetes is rapidly rising.

More than three fourth of diabetic patients 151 (78.64%) had knowledge of self care and one fourth 38 (25.16%) of patients knew about all aspects of self care. Among them, 14 (9.27%) had knowledge regarding regular health check up, 31 (20.52%) had knowledge of exercise and 33 (21.85%) about hand and foot care (Table 2).

Table 2. Distribution of diabetic patients according to knowledge on self care

Knowledge of self-care	Number	Percentage
Yes	151	78.65
Don't know	41	21.35
Total	192	100
various aspects of self care knowledge		
Hand and foot care practices	33	21.86
Restricted diet	35	23.17
Exercise	31	20.53
Regular health check up	14	9.27
All	38	25.17
Total	151	100

In the study, mean score of knowledge of self care was 5.406 ± 1.709 . Among them, 61 (31.77%) had poor knowledge, 110 (57.29%) had average score and 21 (10.93%) had good knowledge of diabetes mellitus. In the study 118 (61.45%) diabetic patients have good practices towards hand and foot care. Among them 41 (34.75%) wore soft foot wear and 80 (67.79%) cleaned feet before sleep. But only 9 (21.97%) wore soft foot wear daily and 20 (25%) used to clean feet daily.

In the study two third 121 (63.02%) patients said that they used to follow diabetic diet. Among them, only 37 (30.51%) had followed correct diet and rest (69.42%) non diabetic diet (Table 3).

Table 3. Practices regarding diabetic diet among diabetic patients

Diabetic Diet	Numbers	Percentage
Yes	121	63.02
No	71	36.97
Diabetic diet practices		
Correct	37	30.51
Incorrect	84	69.42

Among the patients, 115 (59.89%) involved in various type of physical activities /exercise. Among them 52 (27.08%) walking, 18 (15.65%) yoga, 15 (13.04%) house hold activities and 11 (9.56%) cycling were the most common activities. Few of them i.e. 8 (6.95%) used to practice walking & cycling, 6 (5.21%) walking & yoga and 5 (4.34%) used to go for walking & involved themselves in house hold activities. Only 44 (38.26%) were regular in their daily activities (Table 4).

Table 4. Practices regarding Physical activities / Exercise by diabetic patients

Physical activities / Exercise	Number	Percentage
Yes	115	59.89
No	77	40.11
Total	192	100
Practices of various physical activities		
Walking	52	27.08
Yoga	18	15.65
House hold works	15	13.04
Cycling	11	9.56
Walking & cycling	8	6.95
Walking & yoga	6	5.21
Walking & House hold works	5	4.34
How often		
Rarely	33	28.69
2-3 times in week	38	33.04
Daily	44	38.26

In present study 123 (64.06%) got their general health checkups done by physicians. Of them only 11 (8.94%) visited physician once in six months and 10 (8.19%) once in year and many 102 (83.60%) visited physician whenever there is a problem. Most of them 178 (92.70%) didn't visit dentist and 14 (7.9%) used to visit dentist but not regularly. Majority of patients 111 (57.81%) didn't check their B.P during their health checkups. Among them some 42 (51.85%) got it done when ever problem, some 12 (14.81%) once in year and 27 (32.74%) once in six months.

More than two third 134(69.79%) subjects monitored various blood sugar levels. In same study only 14 (7.29%) patients got their ECG done during routine checkups and rest 178 (92.70%) didn't do any such test. Among 192 diabetic patients 18 (9.37%) got investigated for RFT (Renal Function Test) (Table 5).

Table 5. Practices regarding self care by diabetic patients

Sr. No	Practices	Yes	If yes, Regularities			No
			Whenever problem	Once a year	Once in 6 months	
1	Health check ups	123	102 (83.60%)	10 (8.19%)	11 (8.94%)	69
2	Visit dentist	14	6 (42.85%)	5 (35.71%)	3 (21.42%)	178
3	B.P. check ups	81	42 (51.85%)	12 (14.81%)	27 (32.74%)	111
4	Blood sugar monitoring	134	48 (25%)	50 (26.04%)	36 (18.75%)	58
5.	ECG check ups	14	6 (3.125)	4 (2.08%)	4 (2.08%)	178
6	RFT check ups	18	8 (44.44%)	6 (33.33%)	4 (22.22%)	174

In the study mean score of practices regarding self-care of patients was 2.413 ± 1.244 (mean \pm S.D.). Among them 46 (23.95%) had poor practices, 111 (57.81%) had good practices and 35 (18.22%) had better practices regarding self-care of their condition.

Out of 192 patients, 38 had poor knowledge on diabetes among them 23 (37.70%) had poor knowledge regarding self-care, 15 (13.63%) had average and none of them had good knowledge about self-care. Among diabetic patients 121 had average knowledge on diabetes, among them 73 (66.36%) had average knowledge on self-care, 33 had poor knowledge, 15 (71.42%) had good knowledge on self-care. Thirty three subjects had good knowledge on diabetes, of them 22 (20.00%) had average knowledge on self-care, 6 (28.57%) had good and 5 (8.19%) had poor knowledge on self-care. However, an association between level of knowledge on diabetes and level of knowledge on self-care was found to be statistically significant $\chi^2 = 22.321$, $df = 4$, $P = .001$ (Table 6).

Table 6. Association between level of knowledge on diabetes mellitus and level knowledge of self care

Level of knowledge on DM \ Knowledge of self care	Level of knowledge on DM			Total
	Poor	Average	Good	
Poor	23 (37.70%)	33 (54.09%)	5 (8.19%)	61
Average	15 (13.63%)	73 (66.36%)	22 (20.00%)	110
Good	0 (0.00%)	15 (71.42%)	6 (28.57%)	21

Only 38 respondents had poor knowledge on diabetes mellitus among them, 19 (17.11%) had good practices, 17 (36.95%) had poor and 2 (5.71%) had better practices. Among 121 subjects who had average knowledge on diabetes, 72 (64.86%) had good practices, 25 (71.42%) had better and 5 (71.42%) had poor practices. Similarly among 35 respondents who had good knowledge on diabetes 20 (18.01%) had good practices, 8 (22.85%) had

better and 5 (10.86%) had poor practices. The association between level of knowledge on self-care and level of practices of self-care was statistically significant $\chi^2 = 13.832$, $df = 4$, $P = .008$ (Table 7).

Table 7. Association between level of knowledge on self care and practice of self care among diabetics patients

Knowledge of self care \ Practice of self care	Knowledge of self care			Total
	Poor	Average	Good	
Poor	17 (36.95%)	24 (52.17%)	5 (10.86%)	46
Good	19 (17.11%)	72 (64.86%)	20 (18.01%)	111
Better	2(5.71%)	25 (71.42%)	8 (22.85%)	35

4. Discussions

The information on demographic factors such as gender, age, socioeconomic status and educational status was collected. Our study revealed that 38% patients were illiterates and more than 50% used to work in unorganized sector. Majority (88.52%) of participants belong to class III, IV, and V socioeconomic status according to B.G. Prasad scale [8].

In the study 56% had correct knowledge of diabetes and 90% didn't know about its types. A study conducted in BPKIHS Dharan, Nepal revealed that 82% knew the disease suffering [9]. A study conducted at Chennai revealed that 75% knew about diabetes [10]. The knowledge of diabetes varied from place to place, comparatively fewer patients knew about diabetes in our study.

When asked about self-care, 78.64% patients said they had knowledge of self-care. Among them, 9.27% knew about regular health checkup, 20.52% exercise, 21.85% had knowledge of hand and foot care. Over all one fourth (25.16%) patients knew many aspects of self-care.

In a study conducted in Egypt, almost all had an excellent Knowledge about self-care as 97.5% were aware with testing blood sugar regularly and following special diet. And 82% used to do exercise regularly [11]. Compared to this study Egyptians had very good knowledge regarding self-care of their condition.

In our study 61.45% diabetic patients practiced hand and foot care. Among them 34.75% wore soft foot wear and 67.79% cleaned feet before sleep. But only 21.97% wore soft foot wear daily and 25% used to clean feet daily.

Similar study conducted in Jamaica revealed that median foot inspection score was 75%. The majority had clean feet and free of cracks, calluses, toe nail cut appropriately and wore protective foot wear [11]. In the study patients were irregular in their practice which was one of the unhealthy practice toward prevention of ulcer /gangrene of foot.

In the study two third (63.02%) patients used to follow diabetic diet. Among them, only 30.51% had practiced correct diet and many 69.42% followed non diabetic diet. In Jamaican study 85% had consulted a dietitian but only 56.4% reported that they followed a special diet (diabetic diet) [12]. Eighty-five per cent were on a diabetic diet in study conducted in BPKIHS Dharan Nepal [9]. The diet patterns varied from place to place depending on dietician's / physician's advice and patients' compliance.

Among our participants 59.89% involved in various type of physical activities /exercise like walking (27.08%), yoga (15.65%), house hold activities (13.04%) and cycling (9.56%). Only 38.26% who used to do exercise were regular in their daily activities.

A study conducted in Egypt 30.5% practiced exercise as their doctor's suggestion [12] and in Jamaican study 75% did exercise (< 3.5 hr/ week) and rest didn't do any exercise [11]. Studies revealed that only one third of patients do exercise regularly.

In present study 64.06% subjects got their general health checkups done by physician. Of them only 8.94% visited physicians once in six months and 8.19% once in year. Very few patients 7.9% used to visit dentist but not regularly as only 21.42% visited once in six months. In a study at Delhi 41.4% diabetic patients had not visited their health care provider in the past one year [13] which was more compared to practices of the present study patients.

All most all patients didn't know how to check their blood pressure by themselves and none of them had B.P. monitor. Only 42.18% patients got measured their B.P by physician during their health checkups. A KAP study in Western Nepal, 6.59% patients were aware of the importance of regular checking of B.P [14]. According to "Global policy: aspects of diabetes in India" 43.4% patients got their BP checked at the time of diagnosis [15]. Compared to western Nepal study, our patients had good practices regarding blood pressure monitoring.

In same study 7.29% patients got their ECG done during routine checkups and rest 92.70% didn't do any such test. Among them 3.12% got it checked whenever problem and 2.08% got checked once in a year or once in six months. Among 192 diabetic patients 9.37% got investigated for RFT (Renal Function Test). Among them 44.44% got it checked when they had a problem and one third got it checked yearly and 22.22% once in six months. In a study conducted in Delhi 5.6% diabetic patients got their kidney function test done [15]. The self-care

practices regarding ECG, RFT, were poor in our subjects. The other study have shown the similar results.

Out of 192 subjects 38 had poor knowledge on diabetes among them 37.70% had poor knowledge regarding self-care, and none of them had good knowledge about self-care. 66.36% had average knowledge on self-care. Thirty three subjects had good knowledge on diabetes, of them 6 had good knowledge self-care. As level of knowledge on diabetes increased, the knowledge on self-care also increased. An association between level of knowledge on diabetes and level of knowledge on self-care was directly proportional and statistically significant.

Only 38 respondents had poor knowledge on diabetes mellitus among them, 17 had poor practices and only 2 had better practices. Practices improved with decreasing rate of poor knowledge of diabetes. Among respondents who had good knowledge on diabetes 10.86% had poor practices, 18.01% had good practices and 22.85% had better. As the rate of knowledge increased, practices also improved. The association between level of knowledge on diabetes and level of practices of self-care was statically significant.

5. Conclusion

All most all the diabetic patients in the cohort knew that self-care could decrease the complications. The most of them practiced self-care (hand and foot care, physical activity, and general health checkup) but were irregular in day to day practices. More than two third subjects had uncontrolled sugar levels.

6. Recommendations

- i. There is a need for health education on all aspect on diabetes like risk factors, complications, self-care and treatment for diabetic patients.
- ii. There is need for individualized care and specific advice regarding self-care and its practices by medical practitioners at hospital level as well as community level.

Abbreviations

- VDC:** Village Development Committee
CDP: Community Diagnosis Program
BPKIHS: Bisheshwor Prasad Koirala Institute of Health Science
RFT: Renal Function Test
SPSS: Statistical Package for the Social Science

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