

Original Article**Self Management among Diabetes Patients**

Nyamika K.C., Pammi Shah, Kabita Dhama, Khushi Pokhrel, Nisha Kumari Shah, Mamta K.C

Department of Nursing, Nobel Medical College and Teaching Hospital, Biratnagar, Nepal

Article Received: 16th August, 2023; Accepted: 24th October, 2023; Published: 31st December, 2023DOI: <https://doi.org/10.3126/jonmc.v12i2.61116>**Abstract****Background**

In the management of diabetes mellitus, the role of self-care has been pivotal. Individuals with diabetes have been shown to make a dramatic impact on the progression and development of disease by participating in their care. This study aimed to assess self-management among diabetes patients.

Materials and Methods

Analytical cross-sectional study was conducted among 232 patients with diabetes selected by convenience sampling. Diabetes Self Management Questionnaire-Revised was used to assess self-management among diabetes patients. Data were analyzed using descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (bivariate logistic regression).


Results

Findings of the study revealed that out of 232 respondents, 48.7% had suboptimal diabetes self-management practices. The global score for diabetes self-management was 5.28 ± 1.34 . The mean score for subscale cooperation with the diabetes team was highest i.e., 7.50 ± 1.94 followed by medication taking subscale (6.94 ± 3.14), physical activity subscale (5.37 ± 3.09), eating behavior subscale (5.35 ± 1.71) and glucose monitoring subscale (0.83 ± 2.19) respectively. The results further indicated a significant association between diabetes self-management and religion, type of diabetes medication, glycemic control, and diabetes complications at $p < 0.05$.

Conclusion

The present study showed that almost half of the respondents had suboptimal diabetes self-management. Therefore, healthcare providers should further design and implement interventions to improve self-management behavior among diabetes patients.

Keywords: *Diabetes mellitus, Patients, Self-management*

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Introduction

Diabetes self-care activities are complex and many people fail to meet self-management goals [1]. In the management of Diabetes Mellitus (DM), the role of self-care has been pivotal and it is an essential component of holistic approach towards the management of diabetes [2].

Individuals with diabetes have been shown to make a dramatic impact on the progression and development of disease by participating in their care [3]. Proper management of diabetes can delay disease progression and significantly reduce the risk of complications [4]. Patients' self-management is probably the most important factor in controlling blood glucose levels and establishing euglycemia in diabetes [5]. To prevent diabetes-related morbidity and mortality, there is an immense need for dedicated self-care behaviors in multiple domains, including food choices, physical activity, proper medication intake, and blood glucose monitoring from the patients [3].

The objective of this study was to assess self-management among diabetes patients and to find out the association between diabetes self-management and socio-demographic and clinical variables.

Materials and Methods

Analytical cross-sectional study was conducted at medicine and endocrine outpatient department of Nobel Medical College and Teaching Hospital, Biratnagar from 12th February 2023 to 24th April 2023 after receiving ethical approval from the institutional review committee (IRC) of Nobel Medical College and Teaching Hospital. Informed consent was obtained from each respondents before data collection. Diabetes patients aged 20-65 years visiting medicine and endocrine OPD for routine follow-up and willing to participate were included in the study whereas patients who had diabetes for less than 6 months and who were not under any diabetes medications were excluded from the study.

The sample size was calculated using the formula z^2pq/d^2 at 95% confidence interval, maximum tolerable error was taken at 5%, and prevalence 39.4% [2]. The calculated sample size was then adjusted for finite population using the formula $n = n_0/1 + (n_0 - 1)/N$ therefore, the calculated sample size was 232. Respondents

were selected using convenience sampling technique and data was collected using a face-to-face interview technique using a questionnaire which consisted of three parts; the first part of the questionnaire included socio-demographic profile, the second part included clinical profile of the respondents and the third part of the questionnaire was diabetes self-management questionnaire- revised (DSMQ-R) which is a self-reported 4 point Likert scale. The questionnaire was used after getting permission via e-provide. DSMQ-R has high internal and retest reliability (Cronbach's α 0.92) [6]. The questionnaire was translated into Nepali language and pretested in 10% of the sample i.e., 24 respondents who were excluded from the main study. The obtained internal consistency was acceptable (Cronbach's α 0.70)

The collected data was analyzed using SPSS version 20. For descriptive statistics, frequency, percentage, mean, and standard deviation were calculated, and for inferential statistics bivariate logistic regression analysis was calculated

Results

Table 1: Sociodemographic Characteristics of the Respondents (n=232)

Variables	N	%
Age in years		
<40	37	15.9
40-50	73	31.5
>50	122	52.6
Mean \pm SD: 51.34 \pm 9.92		
Sex		
Male	129	55.6
Female	103	44.4
Religion		
Hindu	197	84.9
Others (Islam, Kirat, Christian)	35	15.1
Educational level		
Illiterate/noformal education	95	40.9
<Secondary level	44	19.0
Secondary and above	93	40.1
Employment status		
Unemployed	73	31.5
Employed	159	68.5
Family monthly income (RS)		
>20000	75	32.5
20000-30000	86	37.2
<30000	70	30.3
Marital Status		
Married	218	94.0
Others (Unmarried, widow/widower)	14	6.0
Residence		
Rural	156	67.2
Urban	76	32.8



Out of 232 respondents, 129 (55.6%) were male and 103 (44.4%) were female. More than half (52.6%) of the respondents were over 50 years with a mean age of 51.34 years. A majority (84.9%) of the respondents followed Hinduism. Two-fifths (40.9%) of the respondents were illiterate or had non-formal education. More than two third (68.5%) of the respondents were employed. Less than two-fifths (37.2%) of the respondents had a family income of Rs.20,000-30,000 per month. Most of the respondents (94%) of the respondents were married. More than two third (67.2%) of the respondents were from rural areas (table 1)

Table 2: Clinical Characteristics of the Respondents (n=232)

Variables	N	%
Duration of diabetes		
≤5year	141	60.8
6-10year	55	23.7
>10year	36	15.5
Diabetes treatment		
Oral hypoglycemics	201	86.6
Insulin	13	5.6
Insulin and oral hypoglycemics	18	7.8
Duration of diabetes treatment		
≤5year	153	65.9
6-10years	50	21.6
>10years	29	12.5
Glycemic Control		
Good	76	32.8
Poor	156	67.2
Comorbid conditions		
Yes	123	53
No	109	47
Type of comorbidity		
Dyslipidemia	56	24.1
Hypertension	95	40.9
Cardiac diseases	7	3.0
Hypothyroidism	17	7.3
Pulmonary diseases	7	3.0
Liver/GI diseases	14	6.0
Diabetes complication		
Yes	128	55.2
No	104	44.8
Hypoglycemic episode		
None	122	52.6
1-2 times/month	82	35.3
>2 times/month	28	12.1
Smoking		
Yes	18	7.8
No	214	92.2
Alcoholism		
Yes	18	7.8
No	214	92.2
Tobacco use		
Yes	39	16.8
No	193	83.2
Family history of diabetes		
Yes	86	37.1
No	146	62.9

Regarding clinical characteristics, Less than two third (60.8%) of the respondents had diabetes for ≤ 5 years. A majority (86.6%) of the respondents were taking oral hypoglycemic agents only. Nearly two third (65.9%) of the respondents were under diabetes medication for ≤ 5 years. More than two third (67.2%) of the respondents had poor glycemic control. Among 53% of the respondents that reported having comorbid conditions, two-fifths (40.9%) had hypertension, and nearly a quarter (24.1%) of the respondents had dyslipidemia. Other comorbidities reported among respondents were hypothyroidism (7.3%), liver/GI diseases (6%), pulmonary diseases (3%), and cardiac diseases (3%). More than half (55.2%) had complications due to diabetes. More than half (52.6%) of the respondents reported no hypoglycemic episodes. A small number of respondents (7.8%) had a habit of smoking, 7.8% of the respondents had a habit of alcohol intake and 15% of the respondents had a habit of tobacco use. Less than two-fifths (37.1%) of the respondents had a family history of diabetes (table 2)

Table 3: Mean and Standard Deviation of Diabetes Self Management Subscales (n=232)

DSMQ-R Subscales	No. of Items	Mean	Standard Deviation
Eating Behavior	6	5.35	1.71
Medication Taking	6	6.94	3.14
Glucose Monitoring	4	0.83	2.19
Physical Activity	3	5.37	3.09
Cooperation with Diabetes Team	4	7.50	1.94
Total Score	27	5.28	1.34

The total score of diabetes self-management was 5.28 ± 1.34 . The mean score for subscale cooperation with the diabetes team was highest i.e., 7.50 ± 1.94 followed by medication taking subscale (6.94 ± 3.14), physical activity subscale (5.37 ± 3.09), eating behavior subscale (5.35 ± 1.71) and glucose monitoring (0.83 ± 2.19) respectively (table 3).

Table 4: Level of Diabetes Self Management (n=232)

Level of Self Management	N	%
Suboptimal	113	48.7
Optimal	119	51.3

More than half (51.3%) of the respondents had optimal self-management behavior and less than half (48.7%) of the respondents had suboptimal self-management behavior (table 4).



Table 5: Association between Diabetes Self Management and Sociodemographic Variables (n=232)

Variables	Odds ratio	95% CI	p-value
Age			
<40	1	1	0.22
40-50	0.44 (0.17, 1.18)	0.17- 1.18	
>50	0.45 (0.17,1.18)	0.17- 1.18	
Sex			
Male	1	1	0.49
Female	1.32	0.59- 2.94	
Religion			
Hindu	1	1	0.02
Others	2.84	1.16- 6.96	
Education			
Illiterate/non formal education	1	1	0.25
Secondary level	0.53	0.22- 1.27	
Secondary and above	0.57	0.26- 1.25	
Occupation			
Employed	1	1	0.82
Unemployed	1.09	0.49-2.42	
Family Monthly Income			
<20000	1	1	0.36
20000-30000	1.53	0.71- 3.27	
>30000	0.91	0.42- 1.98	
Marital Status			
Married	1	1	0.53
Others	1.47	0.42- 5.61	
Residence			
Rural	1	1	0.48
Urban	0.78	0.39- 1.55	

The findings of the present study showed a significant association between religion and self-management behavior. Respondents who followed other religions (Islam, Christianity, and Kirat) were more likely to have suboptimal self-management behavior compared to respondents who followed Hinduism (OR=2.84, 95% CI= 1.16-6.96, p value=0.02) (table 5).

Results showed a significant association between diabetes self-management and clinical variables like type of medication, glycemic control, and diabetes complications. Respondents who were on both insulin and oral glycaemic agents were less likely to have suboptimal self-management behavior compared to respondents who were taking oral hypoglycaemic agents only. (OR=0.48, 95% CI= 0.15-1.52, p value=0.02). Likewise, respondents who had poor glycemic control were more likely to have suboptimal self-management behavior than respondents who had good glycemic control (OR=2.26, 95% CI= 1.14-4.50, p value=0.01). Similarly, respondents who reported no diabetes complications were less likely to have suboptimal self-management compared to respondents who had diabetes complications (OR=0.43, 95% CI= 0.25-0.74, p value=0.02) (table 6).

Table 6: Association between Clinical Profile and Diabetes Self Management (n=232)

Variables	Odds Ratio	95% CI	p value
Duration of diabetes			
≤5years	1	1	0.80
5-10 years	1.54	0.42- 5.61	
>10 years	1.50	0.15-14.32	
Diabetes medication			
Oral hypoglycemics	1	1	0.02
Insulin	0.13	0.02- 0.65	
Both	0.48	0.48 (0.15, 1.52)	
Duration of medication			
≤5years	1	1	0.61
5-10 years	0.50	0.12- 1.97	
>10 years	0.71	0.69- 7.44	
Glycemic control			
Good	1	1	0.01
Poor	2.26	1.14- 4.50	
Comorbid conditions			
Yes	1	1	0.26
No	1.45	0.75- 2.80	
Diabetes complications			
Yes	1	1	0.02
No	0.43	0.25- 0.74	
Hypoglycemic episodes			
None	1	1	0.72
1-2 times/month	1.30	0.67- 2.49	
>2 times/months	1.02	0.40- 2.61	
Smoking			
Yes	1	1	0.16
No	0.42	0.12- 1.43	
Alcoholism			
Yes	1	1	0.47
No	1.59	0.44- 5.80	
Tobacco use			
Yes	1	1	0.05
No	0.41	0.17- 0.99	
Family history			
Yes	1	1	0.39
No	0.79	0.46- 1.35	

Discussion

The present study showed that the mean total score of diabetes self-management was 5.28 ± 1.34 whereas a study conducted in Iran showed that respondents had higher diabetes self-management scores compared to the present study (6.92 ± 1.17) [7].

The present study revealed that the respondents scored higher in cooperation with the diabetes team subscale (7.50 ± 1.94) which is in contrast to the finding of a study conducted in Tehran, which showed that the respondents scored lowest in the healthcare use subscale (2.61 ± 1.42), however, respondents scored higher in glucose management subscale compared to the respondents of the present study (4.62 ± 1.04 vs 0.83 ± 2.19). This could be due to differences in individual and family characteristics, and access to health care [8].

A study conducted in Oman showed that the



respondents had inadequate diabetes self-management similarly the present study showed that almost half of the respondents had suboptimal self-management [9]. A study conducted in Jordan showed that the respondents demonstrated a low level of self-management behavior which is consistent with the finding of the present study which showed that nearly half of the respondents had suboptimal self-management behavior [10].

Findings of the study conducted in Iran showed that socio-demographic variables like education level, job category, and monthly income were significantly associated with diabetes self-management which contradicts the findings of the present study which showed a statistically significant association between religion and diabetes self-management. Likewise, clinical variables associated with diabetes self-management were the type of medication and, diabetes complication which was similar to the findings of the present study which also showed a statistically significant association between diabetes self-management and clinical variables like type of diabetes medication and diabetes complication [7].

A study conducted in the United States showed that age, sex, education and income were significantly associated with diabetes self-management whereas the present study showed no association between diabetes self-management and variables like age, sex, education, and income. Likewise, the clinical variable associated with diabetes self-management was insulin use which is similar to the finding of the present study which also showed that the type of diabetes medication was associated with diabetes self-management [11].

A study conducted in South Africa showed that race and marital status were significantly associated with diabetes self-management whereas the present study showed a statistically significant association between religion and diabetes self-management. Similarly, clinical variables associated with diabetes self-management included diabetes complications, type of medications, and history of hospitalization which was similar to the present study findings which also showed a significant association between diabetes self-management and clinical variables like type of diabetes medication and diabetes complication [12].

Conclusion

The present study showed that almost half of the respondents had suboptimal diabetes self-management. Respondents scored the highest

mean score in cooperation with the healthcare team subscale and scored the lowest mean score in the glucose monitoring subscale. The study revealed a statistically significant association between diabetes self-management and variables like religion, type of diabetes medication, glycemic control, and diabetes complications. Therefore, healthcare providers should further design and implement interventions to improve self-management behavior among diabetes patients.

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Conflict of interest: No conflict of interest

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