Assessment of Self-Care Practices among Type 2 Diabetes Patients at a Tertiary Care Hospital - A Cross-Sectional Study

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ABSTRACT

BACKGROUND

Diabetes mellitus is a category of hyperglycaemic metabolic disorders. It is linked with the failure of the synthesis of sugars, fat, and proteins, contributing to medical complications like thinning, macro-vascular, and neuropathic disorders. This study was planned to assess the self-care practices among type 2 diabetes patients at the tertiary care hospital of Wardha city.

METHODS

This cross-sectional study was conducted in a tertiary care rural hospital in Wardha city. Sampling was done by convenient sampling method, and 105 participants were included in this study. Data was collected using a pre-designed and pre-tested questionnaire.

RESULTS

Male were 62 (59.00 %) and females were 43 (41.00 %). Majority was more than 60 years of age (64.70 %). Participants had followed satisfactory self-care practices on diet. Most (61.53 %) of the participants who followed satisfactory self-care practice on exercise, were in the age group of 30 - 60 years. Significant association (p - 0.005) was observed between socio-economic status and self-care practice with regard to foot care.

CONCLUSIONS

This study shows that practices of self-care practices related to diabetic Mellitus in patients were relatively good but health functionaries working in the periphery should conduct regular information education and communication activities for better adoption of all the self-care activities of diabetes for all the seven days in a week for the reduction of diabetic complications.

KEY WORDS

DM, Self-Care Practices, SDSCA

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DOI: 10.14260/jemds/2020/572

How to Cite This Article:
Ashfaque ARM, Khanam N, Khan F, et al. Assessment of self-care practices among type 2 diabetes patients at a tertiary care hospital: a cross-sectional study. J Evolution Med Dent Sci 2020;9(36):2630-2635, DOI: 10.14260/jemds/2020/572

Submission 19-05-2020,
Peer Review 23-07-2020,
Acceptance 29-07-2020,
Published 07-09-2020.

BACKGROUND

Health for all is a mission of the World Health Organization (WHO). Universal declaration (1998), acknowledges the equal and inalienable rights of all members of the human family.[1] According to the International Diabetes Federation, 39.5 million people in India suffer from pre-diabetes and seven million of them develop diabetes per year. The number of diabetes sufferers in India is expected to grow from 51 million in 2010 to 87 million in 2030.[2] Diabetes mellitus (DM) is a chronic condition characterized by elevated levels of blood sugar when insulin is not released adequately by the pancreas or when the body cannot efficiently metabolize insulin. The initial is called Mellitus type 1 diabetes, and the other is called Mellitus type 2 diabetes (T2DM). Diabetes prevalence is more severe due to Type 2 Diabetic Mellitus, and its negative health effects have risen more dramatically in the South Asian region than in any other part of the world.[3] Diabetes mellitus is a category of hyperglycaemic metabolic disorders. It is linked with the failure of the synthesis of sugars, fat, and proteins, contributing to medical complications like thinning, macro-vascular, and neuropathic disorders.[3] This research aimed to assess the self-care activities of diabetics and factors affecting patient self-care practice. India is the second-most populous country in the world and is currently experiencing rapid epidemiological transition. Under-nutrition due to poverty which dominated in the past is being rapidly replaced by obesity, diabetes, and hypertension. Studies from different parts of India have provided evidence of the rising prevalence of Diabetes. Studies also reported diabetic patients to have spending time traveling, consultation, and laboratory investigations along with expenditure for drugs and hospitalization. As protection and promotion of health of diabetes patients are important, to improve the overall quality of life. It is essential to have an awareness and proper self-care practicing among the diabetic population for a better life. Hence this study was planned to assess self-care practices among Type 2 diabetes mellitus patients. To delay or prevent complications, persons with diabetes have adopted lifestyle changes in the form of increased physical activity, quitting tobacco, dietary modifications, and compliance with drug therapy. These parameters need to adhere to the whole and therefore sustained follow-ups are required. Diabetes management involves multiple healthcare providers such as medical professionals (specialists and family/general practitioners), dieticians, and other professionals depending on the course of the disease.[4]

METHODS

This was a cross-sectional was carried out at tertiary care Hospital (Acharya Vinoba Bhave Rural Hospital) of the Wardha district of Maharashtra state in central India using a questionnaire-based interview on 105 diabetic patients. The IEC clearance was taken from the Institutional Ethical Comity of DMIMS University [DMIMS (DU)/IEC/Sept-2019/8319]. The sampling was done by convenient sampling method. Written Inform consent was taken from patients who came in diabetic OPD for its treatment of aged ≥ 20 years diagnosed with type 2 diabetes mellitus for more than 1 year.

The sample size was calculated by using the formula,

$$x = \frac{Z\,\alpha\,/\,22\;p\;(1\;-\;p)}{d^2}$$

Z=Level of significance at 5 % i.e. 95 % confidence interval = 1.96
p=Prevalence of diabetes = 7.3 %[5]
d= Error of margin = 5 %
n= 103.96 (105)

The questionnaire was used by portioning into following sections

Section A

Socio-demographic profile: (age, sex, marital status, education, occupation, SES, etc.)

Section B

The expanded version of the SDSCA (Summary of Diabetes Self-Care Activities) questionnaire tools was used. This focuses on diet-related to diabetes, physical exercise, checking for blood pressure, foot care, and smoke. The instrument assesses the actual extent or quality of health-related regimen activities with diabetes (e.g., number of days a week on which respondents participate in physical exercise sessions; the number of days over the past 7 days on which respondents ate five or more fruit and vegetable servings).

The extended SDSCA edition tests conformity and contrasts the actions of the respondent with health or medical advice. Issue validity: The SDSCA has undergone two validity packages, one with three studies (Tolbert & Glasgow, 1994) and the other with seven studies (Toobert, Hampson, & Glasgow, 2000). $p < 0.05$ was considered as a level of significance.

Parameters	Score	
	Satisfactory	Not Satisfactory
Number of days in a week followed the healthful eating plan	5 - 7	0 - 4
On average, over the past month, the number of days / week followed an eating plan.	5 - 7	0 - 4
Several days a week ate five or more servings of fruits and vegetables.	5 -7	0 - 4
Several days in a week ate high-fat foods such as red meat, full-fat dairy products.	> 1	0 - 1
Several days in a week participated at least 30 minutes of physical activity.	5 - 7	0 - 4
Several days in a week participated in specific exercise sessions (swimming, walking, and biking) other than as a part of work.	>1	0 - 1
A number of days in a week checked your feet.	5 - 7	0 - 4
Several days in a week inspected the inside of your shoes.	5 - 7	0 - 4
A number of days in a week washed your feet.	5 - 7	0 - 4
Number of days in a week soaked your feet.	5 - 7	0 - 4
Number of days in a week dried between your toes after washing.	5 - 7	0 - 4
Number of days in a week took diabetes pills as recommended by a healthcare provider.	7	0 - 6

Criteria Adopted for Satisfactory Self-Care Practices among Patients of Type 2 Diabetes Mellitus [6]

Statistical Analysis

Data entry and statistical analysis was done by using SPSS statistical software v 21. Descriptive statistics were used for

obtaining frequency and percentage and Chi-square test was used to compare the self-care practices of study participants. $p<0.05$ was considered as a level of significance.

RESULTS

It was found that maximum participants 52 (49.50 %) belonged to the age group of more than 60 years. It is observed that [male 62 (59.00 %) and female 43 (41.00 %)]. It was found that 34 (32.40 %) participants belonged to education up-to High school followed by 16 (15.20 %) were Illiterate. It was observed that a maximum number of 38 (36.20 %) were Farmer and 17 (16.20 %) were belongs to Services and 17 (16.20 %) were unemployed. No one belonged to Class I. Maximum 52 (49.50 %) participants belonged to Class IV socioeconomic status according to Modified Prasad's classification.

This table shows the distribution of study participants according to their practiced related to diet. It was observed that half 54 (51.4 %) of the patients followed the healthful eating plan for seven days a week and more than one third 39 (37.1 %) did not follow. 58 (55.2 %) of the participants on average, over the past month, followed an eating plan for all seven days in a week. It was found that only 04 (03.8 %) of the patients ate five or more servings of fruits and vegetables for seven days a week and 23 (21.90 %) of the participants did not eat. 25 (23.8 %) of the patients ate high-fat foods such as red meat or full-fat dairy products for seven days a week and 49 (46.7) of the participants did not eat. Similarly, the result is calculated for Exercise, blood sugar testing, and foot care. It was observed that half 58 (55.2 %) of the patients did 30 minutes of physical activity last seven days a week. It was found that about 72 (68.6 %) of the patients not at all participated in any one of the days in a week for specific exercise sessions (swimming, walking, and biking) other than as a part of work.

It was observed that 27 (25.7 %) of the participants checked feet seven days a week while 73 (69.5 %) did not check. 75 (71.4 %) of the participants did not inspect the inside the shoes in the last seven days of a week & 26 (24.8 %) participants inspected. It was found that a maximum number of participants 83 (79.0 %) wash their feet daily in a week. Likewise 82 (79.0 %) of the participants soaked feet in all seven days in a week and maximum number 80 (76.1 %) dried between toes after washing feet.

Variables	Participants	n (%)
Age in Years	30 – 40	07 (06.80)
	> 40 – 50	18 (17.10)
	>50 – 60	28 (26.70)
	>60	52 (49.50)
Sex	Male	62 (59.00)
	Female	43 (41.00)
Education	Professional degree	08 (07.60)
	Graduate or postgraduate	06 (15.20)
	Post high school diploma	16 (05.70)
	High school certificate	34 (32.40)
	Middle school certificate	17 (16.50)
	Primary school certificate	08 (07.60)
	Illiterate	16 (15.20)
Occupation	Services	17 (16.20)
	Business /shop	11 (10.50)
	Farmer	38 (36.20)
	Daily wages worker /Labour	22 (17.10)
	Unemployed	17 (16.20)
Socio-Economic Status	Class II	17 (16.20)
	Class III	28 (26.70)
	Class IV	52 (49.50)
	Class V	08 (07.60)

Table 1. Socio-Demographic Profile of Participants

Parameter	Satisfactory	Unsatisfactory
Diet	51 (48.57 %)	54 (51.43 %)
Exercise	65 (61.91 %)	40 (38.09 %)
Foot care	57 (54.28 %)	48 (45.72 %)
Medication	98 (93.34 %)	07 (06.66 %)

Table 2. Satisfactory Self-Care Practices by Participants

Parameters	Zero n (%)	One n (%)	Two n (%)	Three n (%)	Four n (%)	Five n (%)	Six n (%)	Seven n (%)
Self-Care Activities (Diet) Practiced by Participants								
A number of days in a week followed a healthful eating plan.	39 (37.1)	00	00	08 (07.6)	02 (01.9)	02 (01.9)	00	54 (51.4)
On average, over the past month, Number of days / week followed the eating plan.	35 (33.3)	01 (01.0)	02 (01.9)	01 (01.9)	01 (01.9)	06 (05.7)	01 (01.0)	58 (55.2)
Number of days in a week ate five or more servings of fruits and vegetables.	23 (21.90)	60 (57.2)	04 (03.8)	02 (01.9)	05 (04.8)	04 (03.8)	03 (02.8)	04 (03.8)
Number of days in a week ate high-fat foods such as red meat or full-fat dairy products.	49 (46.7)	02 (01.9)	04 (03.8)	02 (01.9)	04 (03.8)	11 (10.5)	08 (07.6)	25 (23.8)
Self-Care Activities (Exercise) Practiced by Participants								
Number of days in a week participated at least 30 minutes of physical activity.	32 (30.5)	02 (01.9)	02 (01.9)	03 (02.9)	02 (01.9)	03 (02.9)	03 (02.9)	58 (55.2)
Number of days in a week participated in specific exercise sessions (swimming, walking, and biking) other than as a part of work.	72 (68.6)	02 (01.9)	05 (04.8)	03 (02.9)	02 (01.9)	00	01 (01.0)	20 (19.0)
Self-Care Activities (Foot Care) Practiced by Participants								
Number of days in a week checked your feet	73 (69.5)	00	02 (01.9)	01 (01.0)	00	02 (01.9)	00	27 (25.7)
Number of days in a week inspected the inside of your shoes	75 (71.4)	00	02 (01.9)	01 (01.0)	00	01 (01.0)	00	26 (24.8)
Number of days in a week washed your feet	01 (01.0)	03 (02.9)	02 (01.9)	03 (02.9)	04 (03.8)	03 (02.9)	06 (05.7)	83 (79.0)
Number of days in a week soaked your feet	01 (01.0)	03 (02.9)	02 (01.9)	03 (02.9)	04 (03.8)	02 (01.9)	08 (07.6)	82 (79.0)
Number of days in a week dried between your toes after washing	01 (01.0)	04 (03.8)	01 (01.0)	01 (01.0)	06 (05.7)	05 (04.7)	07 (06.6)	80 (76.1)
Self-Care Activities (Medication) Practiced by Participants								
Number of days in a week took a recommended number of diabetes pills.	00	00	00	00	00	05 (04.7)	12 (11.4)	88 (83.8)

Table 3. Self-Care Activities Practiced by Participants

Variable		Self-Care Practice (Diet) Satisfactory (n)	Not Satisfactory (n)	χ2	P-Value
Age (in Years)	30 <60	18 (35.29 %)	35 (64.81 %)	8.00	0.0046*
	≥ 60	33 (64.70 %)	19 (35.18 %)		
Sex	Male	32 (56.14 %)	30 (62.50 %)	0.30	0.58
	Female	19 (43.85 %)	24 (37.50 %)		
Education	Illiterate to Middle School Certificate	21 (34.14 %)	12 (29.68 %)	3.53	0.06
	High School Certificate to Professional Degree	30 (65.85 %)	42 (70.31 %)		
Occupation	Unemployed, Daily Wages Worker & Farmer	37 (69.23 %)	40 (74.68 %)	0. 96	0.001
	Services, Business & shop	14 (30.76 %)	14 (25.31 %)		
Socio-Economic Status	Class II & Class III	25 (40.44 %)	20 (56.25 %)	1.08	0.29
	Class IV & Class V	26 (59.55%)	34 (43.75%)		
Association of Socio-Demographic Factors and Self-Care Practice (Exercise).					
Age (in years)	30 < 60	40 (61.54 %)	13 (32.50 %)	7.23	0.003*
	≥ 60	25 (38.46 %)	27 (67.50 %)		
Sex	Male	35 (53.85 %)	27 (67.50 %)	1.38	0.23
	Female	30 (46.15 %)	13 (32.50 %)		
Education	Illiterate to Middle School Certificate	23 (35.38 %)	10 (25.00 %)	0.80	0.36
	High School Certificate to Professional Degree	42 (64.62 %)	30 (75.00 %)		
Occupation	Unemployed, Daily Wages Worker & Farmer	44 (67.69 %)	33 (82.50 %)	2.07	0.15
	Services, Business & Shop	21 (32.31 %)	07 (17.50 %)		
Socio-economic status	Class II & Class III	37 (56.93%)	08 (20.00 %)	12.32	0.004*
	Class IV & Class V	28 (43.07 %)	32 (80.00 %)		
Association of Socio-Demographic Factors and Self-Care Practice (Footcare)					
Age (in years)	30 < 60	32 (56.15 %)	21 (43.75 %)	1.143	0.28
	≥ 60	25 (43.85 %)	27 (56.25 %)		
Sex	Male	33 (57.89 %)	29 (60.42 %)	0. 95	0.003
	Female	24 (42.11 %)	19 (39.58 %)		
Education	Illiterate to Middle School Certificate	16 (28.07 %)	17 (35.42 %)	0.35	0.55
	High School Certificate to Professional Degree	41 (71.93 %)	31 (64.58 %)		
Occupation	Unemployed, Daily Wages Worker & Farmer	35 (61.41 %)	23 (79.32 %)	2.05	0.19
	Services, Business & shop	22 (38.59 %)	06 (20.68 %)		
Socio-economic status	Class II & Class III	32 (56.15 %)	13 (27.08 %)	7.83	0.004*
	Class IV & Class V	25 (43.85 %)	35 (72.92 %)		
Association of Socio-Demographic Factors and Self-Care Practice (Medication).					
Age (in years)	30 < 60	48 (48.97 %)	05 (71.43 %)	0.57	0.22
	≥ 60	50 (51.03 %)	02 (28.57 %)		
Sex	Male	58 (59.18 %)	04 (57.15 %)	0.08	0.77
	Female	40 (40.82 %)	03 (42.85 %)		
Education	Illiterate to Middle School Certificate	30 (30.62 %)	03 (42.85 %)	0.06	0.80
	High School Certificate to Professional Degree	68 (69.38 %)	04 (57.15 %)		
Occupation	Unemployed, Daily Wages Worker & Farmer	74 (75.52 %)	03 (42.85 %)	2.08	0.14
	Services, Business & Shop	24 (24.48 %)	04 (57.15 %)		
Socio-economic status	Class II & Class III	43 (43.87 %)	02 (28.57 %)	0.15	0.69
	Class I & Class V	55 (56.13 %)	05 (71.43 %)		

Table 4. Association of Socio-Demographic Factors and Self-Care Practice

Table 2 shows Participants followed satisfactory self-care practice on diet (48.57 %), exercise (61.91 %)**,** foot care (54.28 %), and medication (93.34 %).

Table 4 shows the association of socio-demographic factors of diabetic patients and their self-care practice on diet. Significant association (p - 0.004) observed in their age distribution and self-care practice on diet. Maximum (64.70 %) Participants followed satisfactory self-care practice on diet, having age ≥ 60 years. The non-significant association observed among socio-demographic factors like sex, education, occupation, and socioeconomic status with their self-care practice on Diet.

Significant association (p - 0.003) observed in their age distribution and self-care practice on exercise. Most (61.53 %) of the Participants followed satisfactory self-care practice on exercise, having age 30 to < 60 years. Significant association (p - 0.004). Significant association (p - 0.005) observed in their socio-economic status with self-care practice on foot care. The majority (56.14 %) of the Participants followed satisfactory self-care practice on foot care, belongs to socio-economical class II & III.

DISCUSSION

The chronicity of diabetes along with its associated complications and changeability in health status and discomfort level often make the patients feel that they have lost control over their lives. Patients must be able to set targets and every day makes choices that are equally effective and suit their lifestyles, to manage diabetes successfully. Therefore this study was conducted to understand the self-care practices among type 2 diabetes mellitus patients at Tertiary care hospital of Sawangi (Meghe) Wardha district, with the objectives to assess study socio-demographic profile of type 2 diabetes mellitus patient, assess various practices of self-care among type 2 diabetes mellitus patients and association of socio-demographic factors with various practices of self-care of type 2 diabetes mellitus. In the present study, the total number of participants was 105.

The distribution of study participants according to age group and gender and participants in the age group of 30 - 40 was 06.80 %, in > 40 – 50 age group were 17.10 % and > 50 - 60 age group was 26.70 %. A similar study was found by Shrivastava PS et al. in 2015[7] participants' age group 30 - 40

were 9.2 %, 25.8 % were 41 – 50 age group, and 26.5 % were in the 51 - 60 age group Rural areas of Tamil Nadu. A study conducted by Maheshwari R et al 2017.[8] Men 47.1 % and Women 52.9 % respectively. In the present study numbers of participants male 59.00 % and females were 41.00 % conducted in Tamil Nadu. And the other study conducted by Shrivastava PS et al. in 2015[8] 43.3 %were male, 56.7 % female, and respectively. In the present study literate was 85 % and Illiterate was 15.20 % Whereas the study conducted in Thiruvallar district by Maheshwari R et al 2017 [8] more were illiterate 61 % and literate were 39 %and Mohammad A et al. in 2018 [9] study illiterate was 41.7 %. Graduation and above in the present study 15.20 %.In the present study occupation, the wise majority of participants are farmers 36.20 %. Sigal RJ et al. 2015[10] study found that also the majority of participants 39.40 were a farmer. In the present study, it was observed that a maximum of 83(79.04 %) participants were advised by the health care team about less consumption of sweets. 80(76.19 %) were advised by the health care team about lots (at least 5 servings/day) of fruits & vegetable consumption. Only 23(21.9 %) were advised to follow a low-fat eating plan. In contrast, results have been described in a community-based study using the SDSCA questionnaire in urban Vellore which noted good dietary behaviour present in only 29 % of patients. The even lower level of self-care activity regarding a specific diet (2.8 %) has been reported in a community-based study in Pune. In the present study satisfactory diet (48.57 %), satisfactory exercise (61.90 %), satisfactory blood sugar testing (55.23 %), satisfactory foot care (54.23 %), satisfactory smoking (44.76 %) and medication, while Garg S et al. 2017 found 25.6% of study participants had satisfactory self-care activities. 35.4 % had satisfactory diet, 62.6 % had satisfactory exercise, 72.3 % followed proper drug regimen, 61.5 % had satisfactory blood sugar monitoring, 84.1 % were non-smokers, and 37.4 % had satisfactory foot care activities and glycaemic control were significant predictors of satisfactory self-care activities.[11] In this study found 72 % of diabetics with satisfactory drug intake which is lower than 79.8 % as found in a study in South India and 88.1 % [12] as found in a study of this major difference may be attributed to the urban setting of the other studies. Our finding is more than that found in studies done in tertiary care centers as more non-compliant diabetic are referred to such centers for complications.[13] In this study, satisfactory diet practice was found in only 35.4 % of study participants, which is less when compared with other studies 45.9 % conducted in South India which may be attributed to the inclusion of sweets in local dietary practice in our setting.[14]

Limitations

This is a Hospital-based study and it is difficult to generalize the results; however, with this, we obtain significant results which will boost the researcher to go further step with more socio-demographic variables with Community based study. Insulin-dependent diabetes mellitus (type 1) did not include in the study.

CONCLUSIONS

Self-care practices related to diabetic mellitus in patients were relatively good but health functionaries working in the periphery should conduct regular education and communication activities for better adoption of all the self-care activities of diabetes for all the seven days in a week for the reduction of complications of diabetes.

This study would not be possible without the cooperation and generosity of the study participants, who actively participated and answered our questionnaires. We wish to acknowledge our teachers for all their help and guidance.

Financial or Other Competing Interests: None.

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