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A study on self-care practices among type II diabetes patient attending a rural and urban health training center, Tamilnadu

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Abstract---Background: Diabetes Mellitus is a chronic metabolic and non-communicable disease characterized by high blood glucose levels and has multiple aetiologies. According to the IDF Atlas recent edition, the Global prevalence of diabetes was 9.3% and currently, India holds second position globally with 77 million adults living with diabetes and in 2030 it was expected to cross 101 million. This high prevalence of diabetes was due to the interaction of multiple factors leading to a significant economic burden to the countries health system. Diabetes

over the long term causes micro vascular and macro vascular complications, that were sometimes difficult to manage, necessitating the need for self-care practices to prevent the progression of the disease. Objective: To assess the prevalence of self-care practices among type II diabetes mellitus patients in rural and urban health training canter. Methodology: The study was carried out among Type II diabetes Mellitus patients attending Non-communicable disease (NCD) clinic in Rural and Urban health training center of Sri Ramachandra medical college and research institute, Chennai – 600116. After obtaining the informed consent, socio-demographic details were collected and the information on self-care practices was assessed using the revised Summary of Diabetes self-care Activities (SDSCA) questionnaire. Results: On assessing the self-care components, a good diet plan regularly were followed by 34% of participants, physical activity for 30 minutes was followed by 60.3%, and proper foot care was followed by 33.3% of participants. Regarding the blood sugar testing, 83% were regularly taking their blood sugar test every quarterly and 84.4% were strictly taking their diabetic medication as prescribed by their physician. Conclusion: In this study, we conclude that there is a need for more health programs to improve the awareness regarding the importance of self-care management in preventing the further progression of diabetes thereby we can reduce the financial burden caused by this Non-communicable disease.

Keywords---Knowledge, self-care practices, Diabetes, SDSCA, cross-sectional study.

Introduction

Diabetes Mellitus is a chronic metabolic and non-communicable disease characterized by high blood glucose levels and has multiple etiologies. Diabetes over the long term induces micro and macro vascular changes causing numerous debilitating complications. According to IDF Diabetes Atlas recent edition, the global prevalence of diabetes was 9.3% and currently, India holds 2nd position globally next to china with 77 million adults living with diabetes and in 2030 it was expected to cross 101 million². This high prevalence of diabetes is due to the complex and multiple interactions between genetic, environmental, and socioeconomic factors coupled with lifestyle changes and growing urbanization leading to a significant burden to global health. The treatment goal for diabetes not only aims at controlling glycaemic level but also involves preventing complications, limiting disability, and providing rehabilitation¹².

Self-care practices in diabetes are considered as one of the best steps in ensuring the diseases under control and it was defined as the active role undertaken by the patient himself to successfully manage their disease and thereby, we can prevent the disease progression to complications. It involves various measures such as adopting healthy eating patterns, performing adequate physical activity, adhering to diabetic medications, regular monitoring of blood glucose level, and offering

proper foot care. India being the developing country with the highest diabetic population and limited resources, the treatment cost for diabetes significantly affects its economic development and its health care system.

Therefore, self-care practices are the only way in reducing the countries out-of-pocket expenditure and also ensure better treatment outcomes in managing diabetes. However certain factors such as patient's age, sex, level of education, socio-economic status, social support, and presence of complication seem to affect these self-care practices¹. In recent times, research on Diabetic self-care practices is steadily increasing but there is less local evidence on its prevalence and the role of other factors imparting those practices. By giving a proper picture of the prevalence of self-care practices among the diabetic population and the various factors affecting those practices, we can bring adequate awareness among the public regarding the importance of self-care practices in managing diabetes. In our study, we are concentrating on the prevalence of self-care activities among the diabetic population and various factors affecting those practices.

Objectives

To assess the prevalence of self-care practices among type II diabetes mellitus patients in rural and urban health training centers.

Methods

Study design:

This study was done as a cross-sectional study

Study area and population:

The study was carried out among Type II diabetic patients attending a Non-communicable disease clinic in the Rural and Urban health training center of Sri Ramachandra medical college and research institute, Chennai – 600116.

Inclusion and exclusion criteria:

Type II diabetes patients with a duration of illness more than 1 year and those who gave informed consent. There were no exclusion criteria.

Sampling size and sampling technique:

Based on the intense review of the literature, the prevalence of self-care practices among diabetes patients was found to be 57.1%⁸. Taking it as prevalence, with the limit of accuracy as 15% of prevalence and with the Z value of 1.96, the sample size calculated was 128. About 10% of the sample size⁹ was added to take care of any refusal to participate in the study and the total sample size arrived for the study was 141. Hence 141 diabetes patients who attended the Non-communicable disease clinic of the Rural and Urban health training center of Sri Ramachandra Medical College were taken for the study.

Study instrument:

The information on self-care practices among Type II diabetes patients was collected using the revised Summary of Diabetes self-care Activities (SDSCA) questionnaire¹⁴. It is a self-report questionnaire that includes five activities such as diet, physical activity, and exercise, Blood sugar testing, Foot care, and

smoking. In addition to these activities adherence to diabetic medication was also included in this study. The questionnaire contains questions regarding the participant's self-care activities during the last 7 days. The scores were calculated for each component using 7 – point rating scale. SDSCA questionnaire was already tested for internal – consistency, test-retest reliability, and construct validity during its construction. Along with these self-care activities, information on socio-demographic details such as age, sex, education level, marital status, occupation, and socio-economic status was also collected. The permission for using the study tool was duly obtained.

Statistical analysis:

Data entry and analysis was done using statistical package for social sciences (SPSS) 16 version software. Descriptive statistics were calculated for socio-economic variables and the prevalence of each self-care component was calculated.

Ethical approval and informed consent:

Ethical clearance was obtained from the institutional ethics committee of Sri Ramachandra Medical College and Research Institute (SRIHER) [CSP-MED/19/JUN/53/65] before the commencement of study. Written informed consent from all participants was obtained before the interview.

Results

A total number of 141 Diabetes patients were enrolled in this study out of which 61% (86) were males and 39% (55) were females. The mean age of the participants was found to be 56.02 years (SD $\pm$ 9.9 years). Only 58.2% (82) were literate. More than two-thirds of them were married 77% (108). The majority of the participants 60.3% (85) were dependant on their family members for the finance. Most of the participants 35.5% (50) belong to socio-economic status class IV according to modified BG prasad classification. The socio-economic details of participants were shown in Table No.1

The details of the Prevalence of self-care activities were shown in Figure no.1. Out of 141 participants, 34% (48) with 95% CI (26.2% to 42.4%) were following healthy eating plan, 60.3% (85) with 95% CI (51.7% to 68.4%) were following routine physical activity, 83% (117) with 95% CI (75.7% to 88.7%) were strictly taking blood sugar test for every 3 months, 33.3% (47) with 95% CI (25.6 to 41.7%) were taking adequate foot care and 84.4% (119) with 95% CI (77.3% to 90%) were taking medication regularly. Only 3.5% (5) with 95% CI (1.1% to 8%) of participants were smoking.

Figure No.2 shows the percentage of self-care components among study participants according to the SDSCA questionnaire. Most of the participants 34% (48) were strictly following their healthy eating plan as advised and includes adequate fruits and vegetables on their regular diet. Only 7.1% (10) were taking a high-fat diet daily. The majority of the participants 60.3% (85) were doing daily physical activity for 30 minutes and 27.7% (39) of them were doing specific exercise sessions apart from their routine physical activity. 33.3% (47) were checking their foot on all days of the week and 21.3% (30) were inspecting the

inner surface of their shoes daily. Only 2.8% (4) of the participants were smoking more than 10 cigarettes/beedis per day.

On assessing the association between adherence to diet and socio-demographic factors, the odds of poor adherence to diet for the literate participants was 2.4 times (95% CI: 1.1 to 5.0) than those who were illiterate and the association was statistically significant (P-value < 0.05*). For the participants whose socio-economic status was middle class and lower than that, the odds of poor adherence to diet were 2.6 times than those belonging to upper and upper middle class (95% CI: 1.2 to 5.5) and the association was statistically significant (P-value < 0.05*). The details were shown in Table No.2.

In the present study, the odds of poor adherence to physical activity for the literate participants was 3.8 times (95% CI: 1.8 to 8.4) than those participants who were illiterate and the association was statistically significant (P-value < 0.05*). For those participants who were married, the odds of poor adherence to physical activity were 5.0 times (95% CI: 1.8 – 14.0) than those who were unmarried or single and the association was statistically significant (P-value < 0.05*). For the participants whose socio-economic status was middle class and lower than that, the odds of poor adherence to physical activity were 5.0 times (95% CI: 2.1 to 12.0) than those belonging to upper and upper middle class and the association was statistically significant (P-value < 0.05*). The details were shown in Table No.3.

Discussion

This cross-sectional study was done to find out the prevalence of self-care practices among 141 type II diabetes patients attending Non-communicable disease clinics of Rural and Urban health training center. In this present study, most of the study participants (41.8%) belong to the age group of 51 – 60 years and the majority of them were males (61%). The mean age of the participants was 56.02 years with an SD of ± 9.9 years. Similar to our study, Suguna et.al., done a study among diabetes patients seeking health care in Bangalore, Karnataka where most of the participants belong to the age group of 40 to 60 years and the mean age of the participants were 57.7 years with an SD of ± 11.0 years¹³. The present study also showed half of the study participants (58.2%) were literate and the majority of them (77%) were married. A study done by Uma Maheswari R et.al., among diabetes patients attending primary health centres in the Tiruvallur district showed the majority of the participants were illiterate (61%) and only a few (39%) were literate which is lower than this present study⁸. In this study, it was found the majority of the participants (60.3%) were financially dependent on their family members, and most of them 35.5% belong to the socio-economic class 1V (lower middle class) according to modified BG prasad classification. Similar to our study, the cross-sectional study was done by Sekhar et.al., among the rural community in Parla also showed most of the participants (43.5%) were belong to the lower middle class¹¹.

On assessing self-care activities among diabetes patients, only 34% were following their diet plan as advised by their physician daily and the remaining 66% were not following it strictly. Similar to our study, the study was done by Sasi Sekhar

TVD et al among rural communities also showed 59% of the participants were not following the healthy eating plan¹⁰. Concerning the socio-demographic factors affecting diet adherence, those participants whose education status was literate were likely to have poor adherence to diet by 2.4 times compared to those who were illiterate with a statistically significant p-value ($P < 0.05$). On assessing the association between diet adherence and socio-economic status of the participants, those who belonged to middle and lower socio-economic class were likely to have poor adherence to diet when compared to upper and upper-middle-class with statistically significant p-value ($P < 0.05$). Similar to our findings, Ayele et.al., conducted a study among Diabetic patients in an Ethiopian Hospital which reported people with less monthly Income were 6 times more non-adherent to their dietary recommendations and the association was statistically significant³. Of 141 diabetic patients, 60.3% of participants were practicing physical activity for at least 30 minutes a day and 27.7% of them were doing specific exercise sessions in addition to these physical activities. This was similar to the study conducted by Uma Maheswari et.al., where the majority of the participants (57.1%) were doing physical activity such as walking for at least 30 minutes a day⁸. On assessing the association between adherence to physical activities and socio-demographic factors, literate were 3.8 times more non-adherent to the physical activities compared to the illiterate with a statistically significant P value ($p < 0.05$). On assessing the association between marital status and physical activity adherence, participants who were married were 5 times more non-adherent to their physical activity compared to participants who were unmarried or single. In contrast to our finding, Parajuli et.al., conducted a study among the Diabetic population in Nepal which showed non-adherence level was lower in married compared to a single⁷. Moreover, married people were more engaged in Household chores rather than engaging themselves in physical activities could be the reason.

The present study also showed a significant association between socio-economic class and poor adherence to physical activity. For those who belong to the middle and lower socio-economic class, the odds of having non-adherence to physical activity was 5 times higher than the participants belonging to the upper and upper-middle class. Similar to this finding, the study was done by Aschalew et.al., also reported participants belonging to poor socio-economic status were 2.1 times the risk of non-adherence to their self-care activities and the association was statistically significant¹.

Regarding the blood sugar testing, 83% of participants were taking their blood sugar test every quarterly. This was similar to the study done by Dinesh et.al., where the majority of the participants (65%) were checking their blood sugar level every 3 months⁴. The study was done by Uma Maheswari et al also showed 75.6% were strictly taking their blood sugar test every 3 months which was almost similar to our study⁸. On assessing the foot care component among diabetic patients 33.3% were taking adequate foot care daily and 21.3% checking their inner surface of the foot daily. The Study conducted by Goyal N et.al., among Diabetic patients in Haldwani also showed 41.6% of the study participants were taking adequate foot care, which was almost similar to this study⁵.

The present study showed 84.4% strictly adhered to the diabetic medications they had prescribed and 14.1% were taking insulin regularly without fail. This was similar to the study conducted by SJ Raithatha et.al., among diabetic patients in Anand district in Gujarat where 88.1% were taking their diabetic medications daily as prescribed by their physician⁹. Of the study participants 3.5% were smoking regularly and 2.8% of them were smoking more than 10 cigarettes per day. This was in contrast to the study done by Mutyambizi et.al., among diabetic patients in the Tshwane district of South Africa, where 14.7% of participants were smoking regularly⁶.

Conclusion

In this study, the prevalence of self-care practices was high among Diabetic patients in case of blood sugar testing and adherence to their diabetic medication. But it was poor in the case of Diet plan and physical activity indicating the need for better awareness in these two practices. For improving the awareness regarding self-care management among diabetes patients, our country needs better health care programs thereby we can reduce the economic burden caused by this Non-communicable disease.

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Table 1: Socio-demographic details of the participants

Characteristics	Frequency (n)	Percentage (%)
Age		
< 30 Years	2	1.4
31 to 40 Years	8	5.7
41 to 50 Years	31	22.0
51 to 60 Years	59	41.8
61 to 70 Years	34	24.1
>70 Years	7	5.0
Sex		
Male	86	61.0
Female	55	39.0
Education		
Illiterate	59	41.8
Primary/Middle School	52	37.1
High/Higher Secondary	23	16.1
Graduate/Post-Graduate	7	5.0
Marital Status		
Married	108	77.0
Unmarried	30	21.0
Others	3	2.0
Occupation		
Employed	56	39.7
Unemployed	85	60.3
Socio-economic Status (Modified BG prasad classification)		
Class I	6	4.2
Class II	41	29.1
Class III	39	27.7
Class IV	50	35.5
Class V	5	3.5

Table 2: Association between Socio-demographic factors and Diet adherence among study participants

Particulars	Diet adherence			Odds Ratio	95% CI	P-value
	Poor adherence	Good adherence	Total			
Age						
>40 years	87	44	131	1.3	0.3 – 4.9	0.68
≤40 years	6	4	10			
Sex						
Male	37	18	55	1.1	0.5 – 2.2	0.79
Female	56	30	86			
Educational Status						

Literate	61	21	59	2.4	1.1 – 5.0	0.01*
Illiterate	32	27	82			
Occupation						
Unemployed	55	30	85	0.7	0.3 – 1.6	0.54
Employed	39	17	56			
Marital Status						
Married	74	34	108	1.4	0.6 – 3.1	0.4
Single	20	13	33			
Socio-Economic Class						
Middle and Below	69	25	94	2.6	1.2 – 5.5	0.008*
Upper and Upper-middle	24	23	47			

Table 3: Association between Socio-demographic factors and Physical activity adherence among study participants

Particulars	Physical activity adherence			Odds Ratio	95% CI	P-value
	Poor adherence	Good adherence	Total			
Age						
>40 years	53	78	131	1.6	0.4 – 6.4	0.51
≤40 years	3	7	10			
Sex						
Male	17	38	55	0.5	0.3 – 1.0	0.08
Female	39	47	86			
Educational status						
Literate	43	39	82	3.8	1.8 – 8.4	0.000*
Illiterate	13	46	59			
Occupation						
Unemployed	29	56	85	0.5	0.2 – 1.1	0.09
Employed	27	29	56			
Marital status						
Married	51	57	108	5.0	1.8 – 14.0	0.001*
Single	5	28	33			
Socio-economic class						
Middle and Below	48	46	94	5.0	2.1 – 12.0	0.000*
Upper and upper-middle	8	39	47			

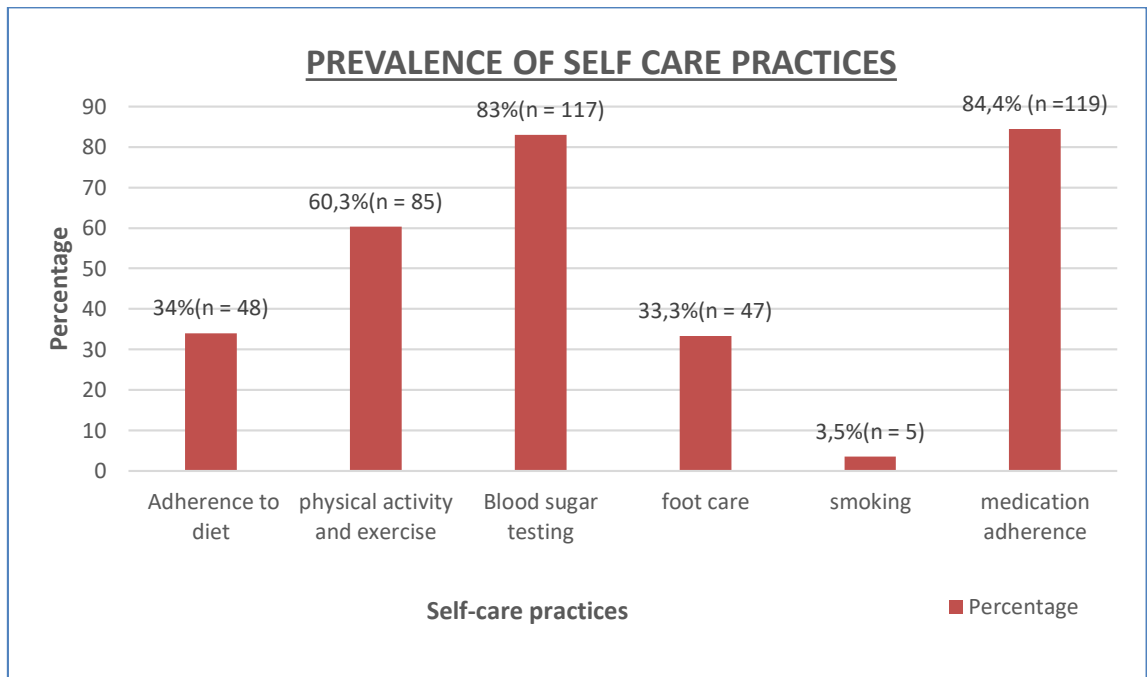


Figure 1: Prevalence of self-care practices

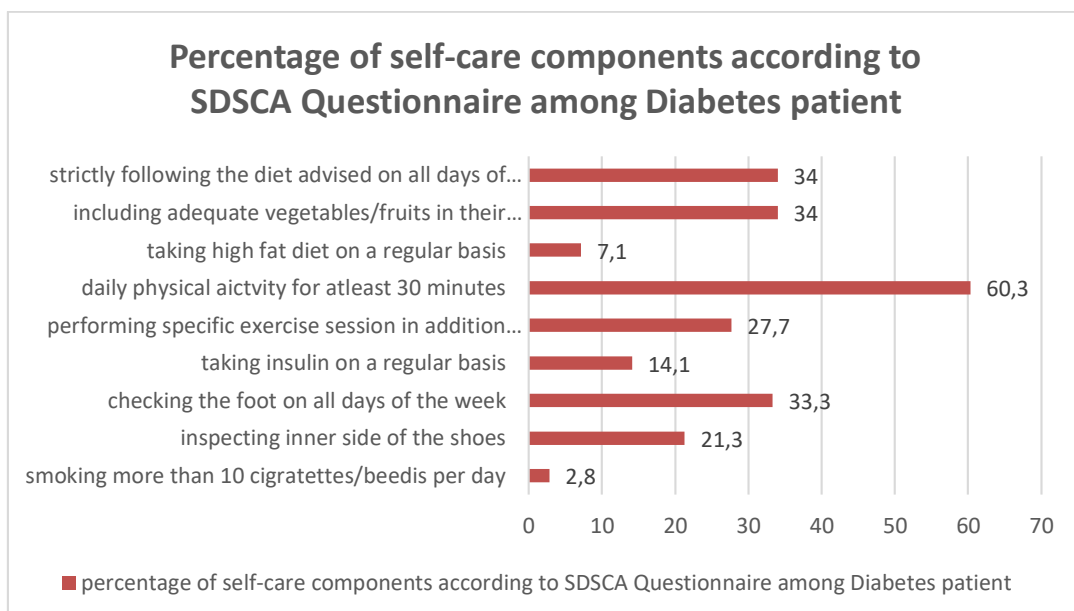


Figure no 2: Percentage of self-care components among study participants according to the SDSCA questionnaire