

A Cross-Sectional Study on Self-Care Practices among Type 2 Diabetes Mellitus Patients Attending Makkalai Thedi Maruthuvam Clinic in a Tertiary Care Hospital in Chengalpattu District

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Abstract

Introduction: The Prevalence of Type 2 Diabetes mellitus in India is 8.7%. It is crucial for individuals with Diabetes to engage in self-care practices, which include monitoring blood glucose levels regularly, adhering to medication and diet plans, engaging in regular exercise, and getting periodic foot examinations. Numerous studies have demonstrated that maintaining healthy self-care practices can significantly lower blood glucose levels and improve the overall quality of life for people with Diabetes.

Objective: To assess self-care practices and factors influencing the self-care practices among Type 2 Diabetes Mellitus patients attending Makkalai Thedi Maruthuvam Clinic.

Methodology: A Hospital Based Cross-Sectional Study was conducted among 150 patients attending Makkalai Thedi Maruthuvam Clinic in a Tertiary Care Hospital in Chengalpattu during December 2023. 18 years and above Type 2 Diabetes patients who were willing to participate were included. A Semi-structured Questionnaire was administered to the patients to assess socio-demographic details, clinical profile, and the Selfcare practice (SCP) was assessed using revised version of the Summary Diabetes Self-Care Activities questionnaire (SDSCA). Data was collected and entered in Microsoft Excel and analysed using SPSS version 25.

Results: The majority of the patients were female (63.9%), literate (59.4%), unemployed (69.7%), belonged to the nuclear family (82.6%) and were from middle socioeconomic status (83.2%). 75.5% of patients followed good dietary practice, had good compliance to drugs (98.7%) and checked blood glucose every 3 months (87.1%), while 2/3rd of the patients had poor foot care practices and less physical activity. The younger age group had good Self-care practices and this was found to be statistically significant (p-value - 0.05). There was a significant association found between Poor dietary practice with alcohol consumption (p-value – 0.001) and tobacco usage ((p-value – 0.001).

Conclusion: This study concludes that Dietary changes, compliance to medications and blood glucose monitoring are much better than physical activity and foot-care practices. Focused education programs and monitoring during follow-up visits will improve self-care in the less adhered domains.

Keywords: Dietary Practices, Footcare Practices, Self-care Practices, Type 2 Diabetes Mellitus.

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Introduction

In the era of evidence-based medicine, the World is witnessing the transition of mortality rates from communicable to non-communicable diseases[1]. Non-communicable diseases (NCDs), also known as chronic diseases, tend to be long and result from a combination of genetic, physiological, environmental and behavioral factors[2]. Non-communicable diseases are collectively responsible

for almost 70% of deaths worldwide. 82% of premature deaths or deaths before the age of 70 years occurring in low- and middle-income countries are due to non-communicable diseases. Coronary artery disease, Stroke, Cancers, Chronic respiratory diseases such as chronic obstructive pulmonary disease, asthma and Diabetes mellitus are the major non-communicable diseases that are of public health

importance. These 4 groups of diseases account for 80% of all premature death by non-communicable diseases[2]. The rise of NCDs can be attributed mainly to changes in lifestyle. Tobacco usage, physical inactivity, practice of unhealthy diet and harmful use of alcohol are identified as four major risk factors for NCDs. NCDs being a Global Health challenge have also got an impact on the Nation's economic growth and sustainable development. They also pose a major challenge towards achieving the 2030 agenda for Sustainable Development which states a target of reducing premature deaths from NCDs by one-third by 2030[3].

Type 2 Diabetes mellitus, one of the non-communicable diseases has been rising rapidly all over the world. The global Diabetes prevalence in 20-79-year-olds in 2021 was estimated to be 10.5% (536.6 million people), rising to 12.2% (783.2 million) in 2045[4].

Uncontrolled Diabetes results in persistent hyperglycemia which in turn damages the blood vessels resulting in micro and macrovascular complications. Diabetes is the leading cause of Coronary artery disease, Chronic kidney disease, stroke, lower limb amputations and blindness[5]. Diabetes also exacerbates major infectious diseases such as TB, HIV/AIDS and malaria. This again results in an increase in the health expenditure by the patients and also on the health care. Diabetes - a silent killer, is also a global societal catastrophe due to its chronic nature causing devastating personal suffering and pushing families into poverty. The estimates in 2019 showed that 77 million individuals had Diabetes in India, which is expected to rise to over 134 million by 2045[6]. If the current trend continues, India may rank top among all countries by the year 2045. India being a lower middle-income country faces a double burden of disease. While the nation fights against the threats posed by infectious diseases like HIV, Tuberculosis and Malaria it is also on the verge to tackle the rising tide of non-communicable disease. Often people become aware of their diabetic status only after the occurrence of complications related to Diabetes. Management of Diabetes requires a multipronged and comprehensive approach[7]. Both the treating physician and the patient must have an active participation for prompt management. Self-care, a secondary level of prevention, has a major role in the effective management of Diabetes.

Self-care activities are behaviours undertaken by people with or at risk of Diabetes in order to successfully manage the disease on their own. Self-care practices include healthy eating, being physically active, regular monitoring of blood glucose, adherence to drugs as prescribed, problem-solving skills, risk reduction behaviours and healthy coping up skills[8]. All these practices have been found to be positively correlated with good glycaemic

control, delaying and reduction of complications and improvement in quality of life[8]. Diabetes self-care requires the patient to make many lifestyle modifications in addition to the supportive role of healthcare staff for maintaining a higher level of self-confidence leading to a successful behaviour change. Individuals with Diabetes have been shown to make a good impact in delaying the progression and development of their disease by participating in their own care[8]. WHO has also recognized the importance of patients learning to manage their Diabetes. The American Diabetes Association has documented that there was a four-fold increase in diabetic complications among individuals with Diabetes who had not received formal education concerning self-care practices[9]. Good adherence to self-care delays the development of complications, reduces hospital admission rate and thus improves outcomes[10]. India being a developing nation, adopting self-care practices in the management of Diabetes will be a cost-effective approach in reducing the economic burden due to disease and thus fastening the progress towards achieving the sustainable developmental goal. Self-care practices tend to be a promising cost-effective approach to the management of Diabetes.

Though our Government recommends self-care through counselling the patients under the National Program for Non-Communicable Diseases (NP-NCD), various studies showed poor adherence to self-care practices among Diabetic patients[11]. Various factors like gender, illiteracy, socioeconomic status, poor access to drugs, lack of health literacy, poor access to health care, family support, unequal distribution of health care providers, and preference for health care system tend to influence self-care practices. As there is very little research regarding self-care practices in Type 2 Diabetes mellitus patients, this study was undertaken to minimize the gap and to help in planning self-care education activities that suit people residing in different localities.

Methodology

Study Settings

Design and Period: A Hospital-Based Cross-Sectional Study was conducted among 150 patients attending Makkalai Thedi Maruthuvam Clinic in a Tertiary Care Hospital in Chengalpattu to assess self-care practices and factors influencing the self-care practices among Type 2 Diabetes Mellitus patients. The study period was December 2023.

Inclusion and Exclusion Criteria: Both men and women aged 18 years and above with Type 2 Diabetes mellitus for at least 1 year were included in the study. Patients who were unwilling to participate in the study were excluded from the study.

Sample Size Calculation and Sampling Method:

Based on the study done by Kalusivalingam et al in the Kancheepuram district in 2020(12), 1.5% of participants examined the inner surface of their footwear for blood or other discharges (one of the self-care practices) on all days of the week. Taking the prevalence of foot care from this literature 1.5% and considering 95% confidence levels and the maximum allowable error to be 2%, with 5% excess sampling to account for non-response, the sample size was calculated and worked out to be 150. Convenience sampling was done.

Data Collection Procedure: The information regarding the study was explained in local language to the study subjects. After their understanding and willingness to participate in the study, written informed consent was obtained. Then study participant was interviewed using the questionnaire by face-to-face interview method using a semi-structured questionnaire. The interview was conducted privately and assured of the confidentiality of the interview. Persons with poor self-care were educated about various self-care practices and its advantages and encouraged to follow it regularly.

Data Collection Tool: The information regarding self-care activities among patients with type 2 Diabetes was collected using the revised version of the Summary Diabetes Self-Care Activities questionnaire (SDSCA)(13). The Questionnaire was prepared in English, translated into the local Tamil language, and back-translated again to ensure the appropriateness of translation. Finally, a semi-structured pretested questionnaire in the regional language (Tamil) was used for data collection which has the following sections

Section 1: Socio-demographic profile & Personal habits.

Section 2: Disease-related Characteristics of Study Participants

Section 3: Self-care practices focusing on 8 domains such as

1. Diet (The questions under the dietary domain were, 1.Reduced the serving size of Cereal-based food like idly, dosa and cooked rice 2.Consumed Vegetables 3.Avoided high fat-containing foods (fried items, red meat) 4.Avoided sugar-rich foods 5.Followed splitting of meals)
2. Physical activity (Following moderate physical activity like brisk walking, swimming etc. for at least 30 mins per day)
3. Foot care (Questions were 1.Examined foot for cracks, blisters, wounds 2.Washed foot with soap and water 3.Dried the skin between the toes 4.Applied oil to the feet 5.Examined the

footwear for discharge 6.Used footwear inside the house.)

4. Dental care (Brushing teeth twice daily)
5. No Tobacco usage(Did not use tobacco in any form)
6. Adherence to drugs (Taking oral hypoglycemic agents or insulin in a dosage as prescribed by the treating physician)
7. Blood glucose monitoring (Monitoring venous blood glucose concentration at least once in 3 months) and
8. Screening for complications(Checked Blood pressure at least once in 3 months and all the following examinations to be done at least once in a year. 1. Fundus examination 2. Dental check-up 3. Renal function test 4. Electrocardiogram 5. Lipid profile).

A pilot study was conducted with 10% of the sample size with the translated version of the questionnaire.

Scoring of SDSCA Instrument: The SDSCA questionnaire contains numbers 0 to 7 indicating several days of performance of self-care in a week by the participant. A number (0-7) was ticked against each question item in the questionnaire that showed the number of days they performed self-care in a week. To determine performance for each domain, the responses on each domain were summed up, it was divided by the number of items in that domain. This gives the mean score for each domain. The mean score was rated and ranked as follows:

A mean score of 0 to 3.99 was ranked 1-Poor practice

A mean score of 4 - 7 was ranked 2- Good Practice

Data Analysis: The data was entered in MS Excel and analyzed using SPSS Version 25. Appropriate descriptive and inferential statistics like Chi square test, Fishers Exact Test done and p value of < 0.05 was taken as significant.

Operational Definition

Self-Care Practices: Self-care practices are behaviours undertaken by people with Diabetes in order to successfully manage the disease of their own(8). In this study, a healthy eating plan, increasing physical activity, foot care, dental care, regular monitoring of blood glucose level, adherence to prescribed drugs, screening for complications and life free from tobacco usage are the 8 domains considered under self-care.

Results

In this study 150 Type 2 Diabetes Mellitus patients participated. The majority of the study participants were more than 60 years of age and the mean age of the participants was 56 (± 10.897) years. Of them, two-thirds (64%) were female.

Most of the study participants (58.7%) were educated and most (70%) were employed. 80.7% of the study participants belonged to the nuclear family. Table 1. shows most of the study participants 36.1% belonged to middle socioeconomic status followed by the lower middle class (32.9%), upper

middle class(14.2%), upper class(9.7%) and lower class(7.1%) according to Modified BG Prasad classification 2024 [14]. The socio-demographic characteristics of the study participants are given in Table 1.

Table 1: Socio-demographic characteristics of the study participants

Variables		Frequency(n=150)	Percentage (%)
Age Group	< 40 years	16	10.7
	41 - 50 years	34	22.7
	51 – 60 years	47	31.3
	> 60 years	53	35.3
Gender	Male	54	36
	Female	96	64
Educational status	Literate	88	58.7
	Illiterate	62	41.3
Occupation	Working	105	70
	Not working	45	30
Type of family	Nuclear family	121	80.7
	Joint family	18	12
	Three generation family	11	7.3
Socio economic status	Upper class	15	10
	Upper middle class	22	14.6
	Middle class	55	36.7
	Lower middle	49	32.7
	Lower class	9	6

Personal habits of study participants (n = 150)

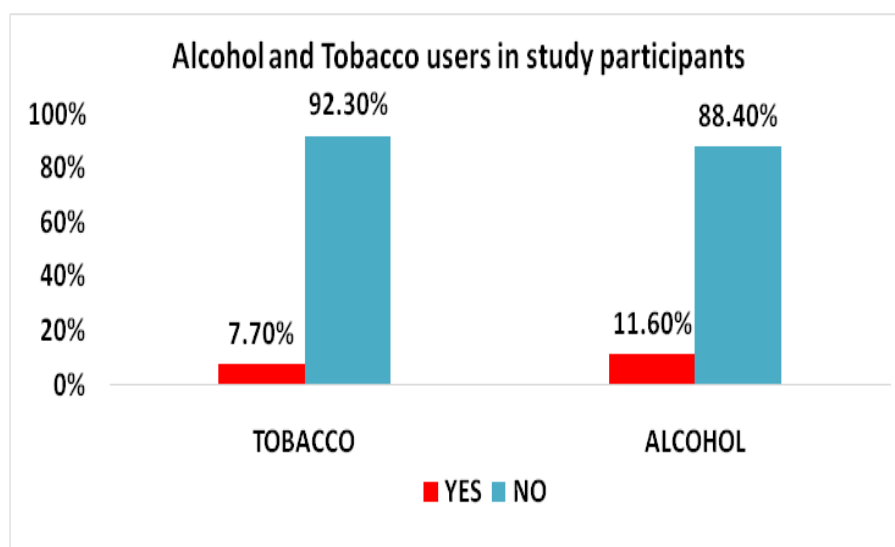


Figure 1: Personal habits of study participants

As seen in Figure.1, 11.6% of the study participants were Alcohol consumers and 7.7% were Tobacco users of which cigarette smokers were more than chewable tobacco users.

Table 2: Disease related Characteristics of study participants

S. no.	Characteristics	Frequency (n = 150)	Percentage(%)
1.	Diagnosed after developing symptoms and complications	81	52.3%
2.	Family history of Diabetes	58	37.4%
3.	On oral hypoglycemic agents	142	91.6%
4.	Used government facility for treatment	133	85.8%
5.	Had comorbidities	69	44.5%

The mean age at diagnosis of study participants was 47 ± 10.240 years. Table 2. Shows that 52.3% were diagnosed with Type 2 Diabetes Mellitus only after developing symptoms and complications. 37.4% had a family history of Type 2 Diabetes Mellitus.

The majority of the study participants (n=142, 91.6%) were on oral hypoglycemic drugs and used government facilities for treatment (n=133, 85.8%). 44.5% had comorbidities of which Hypertension was the most common comorbidity among them.

Self care practices of study participants (n=150)

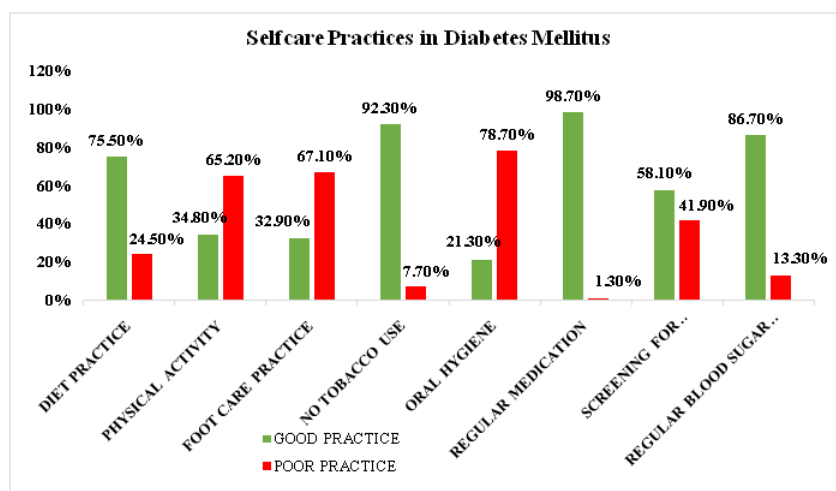


Figure 2: Self care practices of study participants

From Figure 2. We can see that, among all the practices, medication adherence was the highest practiced self-care domain. The least practiced self-care domain was maintaining oral hygiene. Physical activity, oral hygiene and foot care practices were

poor among study participants while dietary practices, absence of tobacco usage, medication adherence, regular blood sugar monitoring and screening for complications were good practices.

Total Self care practices of study participants (n=150)

Selfcare practice in the study participants

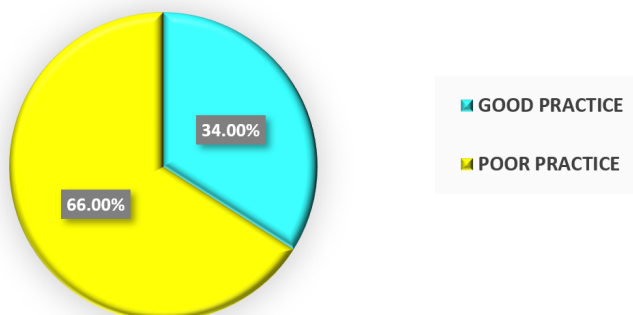


Figure 3: Total Self-care practices of study participants (n=150)

The mean score on each domain was summed up, it was divided by the number of domains. This gives

the mean score. The mean score was rated and ranked as follows:

A mean score of 0 to 3.99 was ranked 1-Poor practice

A mean score of 4-7 was ranked 2-Good Practice

Figure 3 shows that, among 150 study participants, only 51 (34%) had Good self-care practices while a majority of participants (n=99, 66%) had Poor self-care practices.

Table 3: Association between various self-care practice domains and influencing factors (n = 150)

Self-Care Practice Domains	Variable	Good Practice	Poor Practice	Statistical Test, Value, Degree of Freedom	P-Value
Dietary Practices	Alcohol Consumption (n=18)	6 (33.3%)	12 (66.7%)	Chi-Square test 19.552, df - 1	0.001*
	No Alcohol Consumption (n=137)	111 (81.0%)	26 (19%)		
	Tobacco Use (n=14)	5 (35.7%)	9 (64.3%)	Chi-Square test 13.153, df - 1	0.001*
	No Tobacco Use (n=141)	112 (79.4%)	29 (20.6%)		
Physical Activity	Male (n=56)	26 (46.4%)	30 (53.6%)	Chi-Square test 5.188, df - 1	0.023*
	Female (n=99)	28 (28.3%)	71 (71.7%)		
	Employed (n=47)	25 (53.2%)	22 (46.8%)	Chi-Square test 10.008, df - 1	0.002*
	Unemployed (n=108)	29 (26.9%)	79 (73.1%)		
Foot care Practices	Age At Diagnosis <40 Years (n=40)	19 (47.5%)	21 (52.5%)	Chi-Square test 5.203, df - 1	0.023*
	Age At Diagnosis >40 Years (n=115)	32 (27.8%)	83 (72.2%)		
Regular Drug Intake	Alcohol Consumption (n=18)	16 (88.9%)	2 (11.1%)	Fischer Exact test 15.421, df - 1	0.013*
	No Alcohol Consumption (n=137)	137 (100%)	0 (0.0%)		

1. Dietary practices of study participants

Various demographic details like age, sex, educational status, employment status, socioeconomic status, tobacco usage, alcohol consumption and duration of Diabetes were cross-tabulated with Dietary practices. Among them, an association between alcohol and tobacco usage was found to be statistically significant (p value 0.001) as shown in Table 3.

2. Physical activity of study participant

Table 3 shows that physical activity was significantly poor among female study participants (p value 0.023) and among participants who were unemployed (p value 0.002).

3. Foot care practices of study participant

From Table 3, it is evident that patients who were diagnosed with Type 2 Diabetes Mellitus at more than 40 years of age had poor practice compared to those who were diagnosed at an earlier age and this association was found to be statistically significant (p value 0.023).

4. Regular drug intake domain of study participants

Table 3 shows that 100% of study participants who did not consume alcohol had regular drug intake compared to alcohol users and this association was found to be statistically significant (p value 0.013).

Table 4: Association between Total Self-Care Practices and Influencing factors (n=150)

Self-Care Practices	Variable	Good Practice	Poor Practice	Statistical Test, Value, Degree of Freedom	P-Value
Total Self-Care Practices	age at diagnosis <40 years (n=40)	19 (47.5%)	21 (52.5%)	Chi-Square test 3.807, df - 1	0.050*
	age at diagnosis >40 years (n=115)	35 (30.4%)	80 (69.6%)		

From Table 4, it is evident that Total self-care practices was significantly poorer in study participants who were diagnosed with Type 2 Diabetes Mellitus at more than 40 years of age and this was found to be statistically significant (p value 0.05)

Discussion

The current study was a hospital-based cross-sectional study conducted to assess the self-care practices among 150 Type 2 Diabetes Mellitus patients attending Makkalai Thedi Maruthuvam Clinic and to determine factors influencing the self-care practices among the study participants.

This study is important as self-care practices becomes an integral part in the management of type 2 Diabetes. A statistically significant association was found between most of the domains of the study participants except for oral hygiene, tobacco usage, screening for complications and regular blood glucose monitoring.

In this study, the majority of the study participants were more than 60 years of age and the mean age of the participants was 56 (± 10.897) years. Of them, 64% were female. These findings were similar to the facility-based study conducted in Pondicherry to assess self-care among Diabetic patients[15]. The results of this study showed that most of the study participants belonged to nuclear type of family.

This finding reflects the rising trend of nuclear family in our state. It was evident from this study that, half of study participants were diagnosed with Diabetes only when they were symptomatic or after development of complications. Though screening was carried out among adults aged 18 years and above for early detection of Noncommunicable disease under NP-NCD, these people were missed diagnosing the disease at an earlier stage due to lack of awareness. So, awareness about screening and community level screening of individuals should be strengthened. Good dietary self-care was practiced by 75.5% of the study participants. Similar results were seen in a study done in a Tertiary care hospital in Nigeria[16]. On comparing with this study, the current study showed 10% increased prevalence of good dietary self-care practices. This could be due to the fact that majority of study participants are literate and employed, thus increasing the chance of awareness about dietary modification.

As dietary modification forms an important process in management of blood sugar level in diabetic patients healthy eating habits should be promoted among patients while counselling them and through health education sessions. In this study, alcohol users had poorer dietary practices compared to non-users and this difference was statistically significant (p value 0.001). This could be due to the fact that alcohol can increase the desire for junk foods which

are high in salt, sugar and fat. Cravings for junk food can occur when drinking and also when 'hangover' the following day. Study participants who used tobacco also had poorer dietary practices compared to non-users and this difference was statistically significant (p value 0.001). This might be because tobacco users' (smoking or chewable tobacco) taste sensitivity is potentially altered and suppressed by nicotine and other chemicals found in cigarettes, leading to a heightened preference for high-energy and high-fat foods.

The physical activity component of self-care practices appeared to be poor in this study. Only 34.8% of the study participants did 30 minutes of moderate physical activity for more than 4 days in a week regularly. This finding was similar to the camp-based study conducted by Shrivastava et al in Kancheepuram in 2014 which reported only 30% of study participants had a satisfactory level of physical activity[17].

This level of poor physical activity was also consistent with the results of a community-based cross-sectional study conducted in urban areas of Vellore in 2009[18]. This study showed only 20% of participants had good practice of physical activity. This could be due to long working hours, computerization, distraction by mobile phones or television for long time and mostly use of passive mode of transport.

In this study it was found that physical activity was significantly poor among female study participants (p-value 0.023). This could be due to women participating in light-intensity chores and routine timely television watching compared to males.

Physical activity was found to be significantly poor among participants who were unemployed (p value 0.002) and this could be due to lack of self-motivation. As engaging in regular physical activity by diabetic patients will be beneficial for them in maintaining blood glucose, reducing insulin resistance and better control of blood pressure, more stress should be given to this domain while educating diabetic patients. In the domain of foot care practices, washing feet with soap and water was practiced by almost all participants. This could be attributed to the cultural practices prevailing in our society. Other practices like checking the foot for ulcers, checking inside of the footwear for discharges, applying oil to prevent dryness, drying the skin between the toes, and using footwear inside the house were unsatisfactory as only 32.9% of study participants followed the advice. As foot care was the most neglected domain of self-care in most of the studies conducted in India and Tamil Nadu [12,13,15,16]. this study also reflects the same. Patients who were diagnosed with Type 2 Diabetes Mellitus at more than 40 years of age had poor practice compared to those who were diagnosed at

an earlier age. This could be due to neglect by a caregiver, vision impairment and other medical illnesses that limit their ability to inspect and protect their feet properly.

Brushing the teeth twice daily was followed only by 21% of study participants. Although this practice has been emphasized since the school days, it still remains at an unsatisfactory level. Though there exists inherent knowledge of other practices of self-care like diet, physical activity among diabetic patients, dental hygiene remains a grey area in the field of self-care for diabetics in our sociocultural settings. A study conducted to assess oral health knowledge, attitude, and practices among diabetics in a Northern Union Territory of India by S Gupta et al [19] in 2017, showed almost three-fourths of study participants had a lack of awareness about the relationship between Diabetes and oral health. Oral health knowledge, attitudes and self-care practices of people with Diabetes, a systematic review done by Poudel et al[20], showed diabetics had inadequate oral health knowledge, poor oral health attitudes, and fewer dental visits. They poorly received oral health education and dental referrals from their care providers. So, the provision of oral health education by Diabetes care providers should be emphasized.

Blood glucose monitoring at least once in 3 months was the 2nd highly practiced self-care in this study. This satisfactory level of results was consistent with the other studies done in Tamil Nadu [12,13,15,16]. In spite of the patients being involved, the role of the healthcare provider in emphasizing regular monitoring of blood glucose during health visit, plays a vital role in this domain and this would have contributed to the satisfactory level in all the studies. This hospital-based cross-sectional study on self-care practices among Diabetics showed highest level of adherence to medications as nearly 98.7% of the study participants had good adherence. This finding was consistent with the results obtained from a community-based cross-sectional study conducted in Vellore in 2009 [18], which showed that 80% of the study participants had good adherence to medication. A facility-based cross-sectional study conducted in Tiruvallur[21], also showed 90% adherence to medications by diabetic patients. These findings could be because the perception that taking drugs regularly would control Diabetes in the long term, prevails in our cultural settings. 100% of study participants who did not consume alcohol had regular drug intake compared to alcohol users and this association was found to be statistically significant (p-value 0.013). This could be because of forgetfulness to take medication and the belief that alcohol interacts with medications which might lead to death or ill effects.

Under the Screening for complications domain, 6 screening tests were assessed. Among them

monitoring blood pressure once in 3 months was under satisfactory level but screening of the other 5 tests was poor. Further investigation for early identification and treatment of people with Diabetes to reduce the associated morbidity and mortality is needed. Screening for complications at the time of diagnosis should become routine practice to provide the opportunity for timely intervention. The current study showed that the usage of tobacco products by study participants was 7.7% and 11.6% of study participants were consuming alcohol at present. Special care must be provided by the treating physician in identifying these people and deaddiction should be initiated among them at the earliest.

In this study it was found that patients who were diagnosed with Type 2 Diabetes Mellitus at more than 40 years of age had poor total self-care practice compared to those who were diagnosed at an earlier age and this association was found to be statistically significant (p-value 0.023). Barriers to self-care include reduced physical capacity, psychological problems, such as depression and anxiety, cognitive impairment, improper self-care experiences, financial constraints, lack of family/caregiver support, poor neighborhoods, and adverse environmental factors. Shrivastava et al[8], also stated attitude, beliefs, knowledge about Diabetes, culture and language capabilities, health literacy, financial resources and social support as factors responsible for poor self-care among Diabetic patients.

Conclusion

From this study, we conclude that the self-care practices of diabetic patients in the current setting are poor (34%). Most of the patients had poor oral hygiene (78.7%), poor foot care practice (67.1%) and inadequate physical activity (65.2%). Medication adherence (98.70%) and blood glucose monitoring within the past 3 months (86.7%) were found to be followed by almost all patients.

Limitation: This study was done in a single center, in future a multicentric study would give a larger insight on the selfcare practices of Diabetic patients.

Recommendation

- The health care personnel should identify the people with the risk of poor compliance at the earliest and provide special attention to them at the grassroots level.
- As this study showed poor foot care practices among participants, IEC & Behavioral Change Communication sessions on foot care for both patients and their caregivers and demonstration sessions on foot care practice by a separate healthcare staff, can improve the foot care practices among patients with Diabetes.

- Periodic screening for complications can be strengthened at the primary health care level.
- As our out-patients services are utilized by a huge number of people daily, existing healthcare staff will be overburdened to provide advice on self-care individually. So, Diabetes education program by a Nutritionist on diet management and other self-care practices help in assisting people with Diabetes, their families and care givers to gain the knowledge, skills, motivation and confidence to manage their condition.
- Self-help groups can be created at each village level with active participation of people with Diabetes under the guidance of the Village Health Nurse.
- Patients with Diabetes can be encouraged to meet on a monthly basis to identify the enablers and barriers for self-care practices.
- More exploratory studies are recommended at the grassroots level to identify the barriers to practicing self-care to plan for effective management.

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