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SELF-CARE PRACTICES AMONG DIABETICS IN DISTRICT NUH, HARYANA-A MIXED METHOD STUDY

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ABSTRACT

Background: Diabetes constitutes a significant public health issue, ranking among the four priority non- communicable diseases (NCDs) designated for intervention. The incidence of diabetes has been progressively rising over recent decades. The objective is to assess the self-care practices among diabetics in district Nuh.

Materials and Methods: This study is a community-based, mixed-method study in which about 854 diabetics from urban and the rural areas of Nuh were assessed for all the domains of self-care practices and the various factors influencing them were explored.

Results: Of 854 study participants, 61.8% were females. The mean age of the study participants was 55.7 ± 11.4 years. In medication adherence domain, overall medication adherence practice was better among the rural participants (70%) compared to the urban participants (66.5%). Optimum adherence (never missed any doses in last 7 days) was highest among participants taking only OHA (69.0%). In the dietary practice domain, majority of the participants (84.8%) restricted high fat food intake, of which 54.9% had controlled glycaemic status. None practiced the recommended fruits and vegetables intake. In physical activity domain, 55.2% of the participants did not practiced the habit of walking for 30 minutes on at least 5 days in a week and 4.7% involved in specific exercise sessions.

Conclusion: Overall, more than two-third of the participants had satisfactory practices in 'Medication adherence', 'Blood glucose monitoring' and 'Healthy Coping Behavior' domains.

Keywords: Self-care practices, Diabetics, Medication adherence.

INTRODUCTION

The rising prevalence of diabetes mellitus is a significant public health concern all over the world. According to the International Diabetes Federation (IDF), the prevalence of diabetes across the globe has reached 10.5% in 2021. This indicates that there are 537 million adults who are living with diabetes, and it is possible that this percentage will increase to 783 million by the year 2045. Of these individuals, more than four out of five (81%) reside in nations with low and moderate incomes.[1,2]

The prevalence of diabetes mellitus has become a significant issue in the field of medicine and for medical fraternity in India. According to the findings of the National NCD Monitoring Survey, the prevalence of diabetes was estimated to be 9.3 percent among the nationally representative sample of persons aged 18–69 years old. In urban regions, the prevalence of diabetes was 14.3%, which was twice as high as the prevalence in rural areas, which was 6.9%.[3] According to the findings of the ICMR-INDIAB study, the prevalence of diabetes in urban regions is higher than in rural areas, with the largest prevalence occurring in the age group of 55–64 years (urban: nearly 25% and rural areas: nearly 10%).[4]

Self-care plays a pivotal role in the management of diabetes, and its impact can be particularly significant in a district like Nuh, where access to healthcare services may be limited. Self-care practices such as monitoring blood glucose levels, adhering to medication regimens, and maintaining a

healthy diet and physical activity level are crucial for achieving optimal glycemic control. These practices help reduce the risk of diabetes-related complications and improve overall health outcomes. By engaging in self-care activities, individuals with diabetes can significantly reduce the risk of long-term complications such as cardiovascular disease, kidney damage, and nerve damage. This is particularly important in areas like Nuh, where access to advanced medical care for complications may be limited. Self-care practices contribute to better management of diabetes, which in turn enhances the quality of life for individuals with the condition. This includes improved physical well-being, reduced symptoms, and better psychological health.

MATERIALS AND METHODS

It was a community-based study. Sequential explanatory mixed method design was adopted for this study. The study was planned in two phases, Phase I quantitative component comprised of a community-based cross-sectional design and Phase II qualitative component included in-depth interviews. The study was carried out at Primary Health Centres (PHC) Nuh & Nagina in district Nuh. These Health Centres also serve as Urban & rural field practice area of department of community medicine, SHKM Government Medical College, Nuh respectively. HWC also report to respective PHCs. The study was conducted for a period of one and half years. The ethical approval for this study was obtained from the Institutional Ethical Review Committee, SHKM Government Medical College, Nuh.

Study population: The diabetic patients listed in the "Diabetic treatment register" of selected PHCs of district Nuh who are more than 18 years of age of either gender.

Sample size: 850 subjects (425 subjects each in Rural and Urban areas respectively) were taken up for this study.

Inclusion criteria-

1. Diabetics who are more than or equal to 18 years of age of either gender included in the NCD register of selected PHCs.
2. Persons who are known diabetic and taking medication for more than six months
3. Persons who are residing in field practice area of that selected PHC for more than six months.

Exclusion criteria-

1. Persons who are not available in the house after 3 consecutive visits.
2. Persons who are bed ridden, not able to communicate.

Sampling method: A complete line listing of all the eligible study subjects of past 6 months was done through NCD register available at selected urban and rural PHC as well as NCD registers available with HWCs reporting to these PHCs.

Study subjects were chosen from the line listing by Systematic random sampling. After selecting study subjects, house visit was made for collection of data.

Data Collection: A representative sample fulfilling the inclusion criteria was enrolled for the study. The study was done in two phases. In phase I, Quantitative data collection was done by house-to-house visit of selected respondents in both urban and rural areas by the principal investigator. After providing participant information sheet and explaining about the study, written informed consent was obtained. This was followed by the administration of pre tested semi-structured questionnaire, this was used for the face-to-face interview.

Initially socio-demographic information was collected, followed by questions on adherence to diabetic medication measured using a four items questionnaire 'Morisky, Green, and Levine (MGL) Adherence Scale'. The total score was 4, with a minimum score of zero, and maximum of 4. Participants who score 4 were considered as High adherence, 2 and 3 as medium adherence and ≤ 1 was poor adherence.5 The reasons for non-adherence was also collected. The participants with high adherence are considered satisfactory and participants with medium and poor adherence are considered unsatisfactory. Participants taking both oral hypoglycaemic drugs and injectable medicines were assessed for medication adherence separately and scored based on their responses. Then, Summary of Diabetes Self-Care Activities measure (SDSCA) was used to assess the dietary practice, physical activity, blood glucose monitoring and risk reducing behaviour domains of 'self-care' practices. It was composed of 12 questions about the diet (5 items), physical activity (2 items), glucose monitoring (2 items), foot care (2 items) and smoking (1 item). The scale includes the diabetes self-care activities of the patients during the past 7 days. If patients were sick during the past 7 days, then they were asked to recall the last 7 days when they were not sick. Self- care practices under each item were scored between 0 (none of the days in a week) to 7 (all 7 days of a week). The responses for different items were recorded by interviewer according to number of days in previous week a particular self-care activity of a domain was followed. All the items were positively scored except consumption of fat-rich items in the dietary domain, hence reverse scoring was done.6 A score of less than five7 is considered unsatisfactory for dietary practices, physical activity, glucose monitoring and foot care. A score of 1 is considered unsatisfactory for smoking. The alpha reliability of this scale in General diet was 0.89, Exercise was 0.74, Blood-glucose testing was 0.78 and Foot care was 0.72.8

Subsequently, two item Patient Health Questionnaire (PHQ 2),9 was used to assess the Healthy coping behaviours. The total score was 6. Participants who score less than or equal to 2 was

considered satisfactory. Then Problem solving questionnaire10 was used to assess the problem solving skills of the participant. It comprised of two questions on carrying medical alert identification card and carrying sugar rich foods for responding to hypoglycaemic episodes over the past one week. The total score was 6 and the participants who score equal to or greater than 4 was considered satisfactory.

Data were collected using semi-structured interviews as it permitted a certain structure in terms of questions which were of interest but always allowed the interviewer to vary the structure of the interview guide according to the interview situation.

Statistical analysis: Data entry was done in MS Excel 2007. The data analysis was done using SPSS Version 22. Results are presented in the form of descriptive and inferential statistics. Numerical variables were represented in Mean ± SD and categorical variables were represented in percentage and proportions. Chi-square test and students test were used for comparison of categorical and numerical variables respectively. A p value of less than 0.05 was considered as significant.

RESULTS

Of total 854 study participants, 424 (49.7%) were from the urban and 430 (50.3%) were from the rural areas.

Among 854 study participants, a majority (61.8%) were females. The ratio of female to male participants was equal in both urban and rural groups. The mean age of the study population was 55.7 ± 11.4 years with the minimum age and maximum age of 28 years and 91 years respectively. The elderly (≥ 60 years) population was less than one-third of the total participants (32.5%) in urban areas and less than half (48.4%) in rural areas. More than one- third (35.9%) of study participants were illiterate. The proportion of illiterates was more among the rural population (43.5%) compared to the urban (28.3%) areas. Only 3.5% of the study population were graduates and about one-third (33%) of the study participants were working currently, whereas, majority (59.3%) of them were homemakers. The proportion of homemakers was higher in rural population compared to the urban (63% vs. 55.4%).

Out of 854 study participants, about 99.5% were married. Currently, out of 99.5% of the married individuals, 82.4% were in marital relationship, 16.6% were widowed and 0.5% was separated. The proportion of individuals who were single (not married) were higher among urban (7%) compared to rural (0.2%) areas. Majority of the study participants (73.3% in urban and 68.8% in rural) were living with their family but about 5.5% were living alone. As per the Modified B.G. Prasad classification, around 41.7% in the urban area belonged to the Middle socio-economic status (Class III), whereas, in the rural areas, about 46.7% belonged to the Lower middle (Class IV) socio-economic status. Only 7% and 0.9% of the study participants in the urban and rural areas belonged to the Upper (Class I) socio- economic class respectively.

Among 854 diabetics, 36.1% reported that they are suffering from a co-morbid condition. In the urban areas, 3 out of 10 diabetics was suffering from a co-morbid condition. Whereas, in the rural areas 4 out of 10 diabetics was found to be suffering from a co-morbid condition.

The various co-morbidities that our participants had were listed. The most common co-morbid condition noted was hypertension (77.9%) followed by dyslipidaemia (12.0%) and coronary artery disease (9.7%).

It was note that majority of our study participants were diagnosed (90.7%) and treated (98.7%) in Government health facility. For few participants (1%) the diabetes status was diagnosed incidentally either at health camps or at private laboratory.

Among all the study participants, the proportion of participants diagnosed (8.4%) and treated (1.3%) for diabetics in private hospital were slightly higher among rural population when compared to the urban population (6.4% and 0.9% respectively). Of 854 participants, 92.9% took oral hypoglycaemic agents and 5% took both oral hypoglycaemic agents and insulin. More than half of the study population (54.3%) had good control of diabetes. The proportion of participants with poor glycaemic control was more in the rural area (49.5%) when compared to the urban (41.7%) area. About 15.3% of the study participants reported to be suffering from diabetes related complications. Around two-third of the study participants (61.8%) had not undergone any periodic screening to detect the complications of diabetes.

The proportion of these participants (who did not undergo any screening to detect the complications of diabetes) was higher in the urban areas (68.9%) when compared to the rural (54.9%) areas.

Self-Care Practices

Among all the domains of Self-care Practice, the 'Medication adherence' domain had more than about two-third 583 (68.3%) showing 'optimum adherence' and less than one-third 271 (31.7%) were showing either medium or low adherence. The optimum adherence was higher (69 %) among the 'OHA only users' followed by 'insulin only users' (61%) and lowest (58.1%) among participants taking both.

Table 1: Optimum Self-care Practices' Across Various Self Care Domains (n=854)

DOMAINS OF 'SELF-CARE' PRACTICES	OPTIMUM SELF-CARE59	n (%)
1. Medication adherence (MGLS)#		
OHA* only (n=793)	High adherence **	547 (69.0)
Insulin only (n=18)	High adherence	11 (61.1)
Both (OHA & Insulin) (n=43)	High adherence	25 (58.1)
2. Compliance to Diet Plan (SDSCA) †		
Follow a Healthy eating plan	5 days a week	18 (2.1)
Following eating plan in the last month	5 days a week	18 (2.1)
5 or more fruit servings	5 days a week	0 (0)
5 or more vegetable servings	5 days a week	0 (0)
High fat intake	Nil or once a week	724 (84.8)
3. Compliance to Exercise (SDSCA)		
Physical activity of 30 mins	5 days a week	471 (55.2)
Specific exercise	5 days a week	40 (4.7)
4. Self-Monitoring of Blood Sugar (SDSCA)		
Blood sugar testing	7 days a week	0 (0)
Recommendation by physician	7 days a week	818 (95.8)
5. Risk reducing Practices (SDSCA)		
Check their feet	5 days a week	398 (46.6)
Check inside their shoes	5 days a week	183 (21.4)
Not Smoking	Nil	848 (99.3)
6. Psychosocial adjustment (PHQ) ##	Score ≤ 2 in PHQ	594 (69.6)
7. Problem solving skills (PSQ) ††	Score ≥ 4 in PSQ	47 (5.5)

In dietary practice domain, optimum practice of healthy eating plan is followed by only 2.1% of study participants and none fulfilled the optimum practice criteria for fruits and Vegetables intake. But, majority 84.8% followed the optimum practice of restricting high fat food items in their diet. The median (IQR) number of days in a week the recommended dietary practice followed were 1.2 (1.2-1.4) days.

In physical exercise domain, 471(55.2%) did not practice physical exercise for optimum duration and only a few 40 (4.7%) of the diabetics participated in specific exercise sessions like cycling, gardening, yoga etc. The median (IQR) number of days in a week the recommended physical exercise followed were 0 (0-3.5) days.

In blood glucose monitoring domain, majority (95.8%) of the participants followed the recommendation of the treating physician for testing blood glucose. But none of them, tested blood glucose daily as recommended in SDSCA scale.

In the risk reducing domain, the foot care practice of checking one's feet daily was followed by 398 (46.6%) study participants. Only one in five (21.4%) checked their footwear. The median (IQR) number of days in a week the recommended foot care practices followed was 1.0 (0-3.5) day. Almost 99.3% of the study participants did not smoke in last 7 days.

In healthy coping behaviour domain assessed by their psychosocial adjustment showed that more than two-third of the study participants (69.6%) had optimum practice.

In the problem-solving domain, only 5.5% were practicing optimum problem-solving skills such as possessing a health ID card and carrying chocolates or sweets to tackle the hypoglycaemic episodes.

Medication Adherence practices

In MGLS (Morisky Green Levine) Scale, the participants who scored 4 were considered 'high adherence' which indicates optimum self-care practice in 'Medication adherence domain' and those who scored less than 4 were considered non-adherent to the treatment plan. On comparison between both these groups, the diabetics taking only OHA`s in the rural group were highly adherent to treatment plan compared to the urban (70.1% vs. 67.8%). Among participants taking only insulin, the proportion of high adherence was more participants taking both, the adherence was higher in rural areas compared to the urban areas (70.8% vs. 42.1%).

Table 2: Distribution of Level of 'Medication Adherence' among study participants (n=854)

Medication adherence		Total n (%)	Urban n (%)	Rural n (%)
Oral only*	High	547 (68.9)	265 (67.8)	282 (70.1)
	Medium	239 (30.1)	121 (30.9)	118 (29.4)
	Low	7 (0.9)	5 (1.3)	2 (0.5)
Insulin only#	High	11 (61.1)	9 (64.3)	2 (50)
	Medium	7 (38.9)	5 (35.7)	2 (50)
	Low	0 (0)	0 (0)	0 (0)
Both†	High	25 (58.1)	8 (42.1)	17 (70.8)
	Medium	17 (39.5)	11 (57.9)	6 (25.0)
	Low	1 (2.3)	0 (0)	1 (4.2%)

*Total users- 793, Urban- 391, Rural- 402, # Total users- 18, Urban- 14, Rural-4, †Total users- 43, Urban- 19, Rural-24

Self-reported reasons for Medication non-adherence: The most common self-reported reason for 'medication non-adherence' was poor memory (35.4%) followed by the scare for the anticipated side-effects of medicines (29.9%). Few reported missing medications due to their work schedule (12.9%) such as reporting to farm land early in the morning, those involved in dairy farming, those on shift-based work in industries etc. Few others missed medication either they felt better (12.5%) or they felt worse (3.0%) after consuming medications. Some also reported that due to stock–out of medicines (3.7%) because they could not attend the clinic on the scheduled day as the reason for their non-adherence. The fear of recent pandemic and with lockdown being imposed, some restricted themselves from attending hospital on scheduled days which also contributed to medication non-adherence. The 'others' category (5.2%) included too complicated treatment plan (according to some), the practice of fasting on auspicious days, none being available at home to assist in injecting insulin. Few in the same category intentionally skipped allopathic medicines on few days to try alternate system of medicines as the allopathic medicines were believed to have side effects.

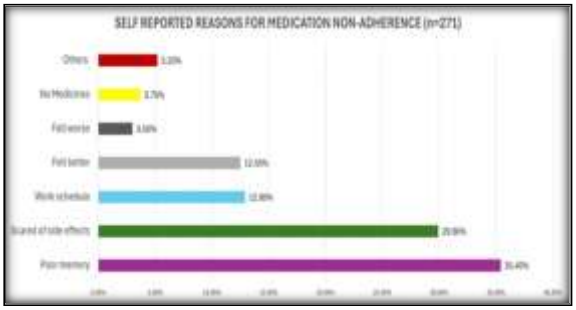

Figure 1: Self-Reported Reasons for Medication Non-Adherence (n = 271)

Self-care practices measured by SDSCA scale: SDSCA scale was used to assess the 'Dietary practice', 'Physical exercise', 'Blood glucose monitoring' and 'Risk reducing' domains. Based on number of days in a week the participants adhere to the self-care practices were classified as 'optimum' and 'non-optimum' adherence.7 In 'Dietary practice' domain, most of the participants (97.9%) had not adhered to the healthful eating plan and none practiced the intake of fruits and vegetables for 5 or more servings in a day. But the restriction of high fat food items was followed by 84.8% of the participants. The adherence to this practice was slightly better in the rural areas compared to the urban areas (88.4% vs 81.1%). In 'Physical exercise' domain, more than half of the of the participants (53.9%) had not involved in any physical activity. This proportion was higher in the urban areas compared to the rural areas (56.1% vs 51.6%). Only few (4.7%) involved in specific exercise session. In 'Blood glucose monitoring' domain none tested their blood glucose daily but the adherence (95.8%) was higher to the recommendations of the physicians. About 96.9% of the urban participants adhered to this practice compared to the 94.7% of the rural participants.

In 'Risk reducing' domain, majority had not adhered to the foot care practices of checking their foot and footwear (53.4% and 78.6% respectively). The practice of adherence to check their foot was higher among the urban participants (51.7% vs 41.6%) Almost 99.3% did not smoke in the last 7 days before they were interviewed.

Table 3: Distribution of Level of Adherence among study participants in the Dietary Domain, Physical Exercise Domain, Blood Glucose Monitoring and Risk Reducing Behaviour Domain (n=854)

elf-care Domains (SDSCA tool)	Adherence level7	Total participants n (%)	Urban areas (n=424) Ru n (%)	ral areas (n= 430) n (%)
1. Dietary practices				
	≥ 5 days a week	18 (2.1)	11 (2.6)	7 (1.6)
Follow a Healthy eating plan	< 5 days a week	836 (97.9)	413 (97.4)	423 (98.4)
Following eating plan in the last month	≥ 5 days a week < 5 days a week	18 (2.1) 836 (97.9)	11 (2.6) 413 (97.4)	7 (1.6) 423 (98.4)
5 or more fruit & vegetable servings	≥ 5 days a week < 5 days a week	0 (0) 854 (100)	0 (0) 424 (100)	0 (0) 430 (100)
High fat intake	Nil or once a week	724 (84.8)	344 (81.1)	380 (88.4)
	> once a week	130 (15.2)	80 (18.9)	50 (11.6)
2. Physical Exercise				
Physical activity of 30 minutes	≥ 5 days a week	383 (44.8)	180 (42.5)	203 (47.2)
	< 5 days/once a week	11 (1.3)	6 (1.4)	4 (1.2)
	Nil	460 (53.9)	238 (56.1)	222 (51.6)
Specific exercise	≥ 5 days a week	40 (4.7)	9 (2.1)	31 (7.2)
	< 5 days a week	814 (95.3)	415 (97.9)	399 (92.8)
3. Blood Glucose monitoring Practice				
Blood sugar testing	All days in a week	0 (0)	0 (0)	0 (0)
	< 7 days in a week	854 (100)	424 (100)	430 (100)

Recommendation by physician	All days in a week	818 (95.8)	411 (96.9)	407 (94.7)
	< 7 days in a week	36 (4.2)	13 (3.1)	23 (5.3)
4. Risk reducing Practices				
Check their feet	≥ 5 days a week	398 (46.6)	219 (51.7)	179 (41.6)
	< 5 days a week	456 (53.4)	205 (48.3)	251 (58.4)
Check inside their shoes	≥ 5 days a week	183 (21.4)	90 (21.2)	93 (21.6)
	< 5 days a week	671 (78.6)	334 (78.8)	337 (78.4)
Not Smoking	Nil in last week	848 (99.3)	422 (99.5)	426 (99.1)
	≥ 1 day in a week	6 (0.7)	2 (0.5)	4 (0.9)

More than two-third (69.6%) of the participants adhered to the 'Healthy coping behaviour' and adherence to this practice was higher among the urban participants (72.9% vs 66.3%) compared to the rural participants. In 'Problem-solving skills' domain, majority (96.5%) had unsatisfactory practice. On comparison between the urban and rural areas, satisfactory practice was higher among the participants in the rural areas compared to the urban areas.

Table 4: Distribution of Level of Adherence among study participants in the Healthy Coping Behaviour and Problem-Solving Skills Domain (n=854)

Self-care Domains	Adherence level	Total participants n (%)	Urban areas (n=424), n (%)	Rural areas (n= 430), n (%)
1. Health Coping Behaviour (PHQ)				
Satisfactory	Score ≤ 2	594 (69.6)	309 (72.9)	285 (66.3)
Unsatisfactory	Score > 2	260 (30.4)	115 (27.1)	139 (33.7)
2. Problem Solving Skills (PSQ)				
Satisfactory	Score ≥ 4	47 (5.5)	15 (3.5)	32 (7.4)
Unsatisfactory	Score < 4	807 (94.5)	409 (96.5)	398 (92.6)

DISCUSSION

Among the 854 study participants interviewed, about 61.8% were females. In studies documented by Selvaraj K et al,[4] the proportion of females enrolled were higher than males.

In our study, nearly a half of the study participants (40.5%) belonged to the geriatric group and their level of illiteracy was 35.9%. The same level of illiteracy was reported among the elderly in India was 42.4% as documented by Ministry of Statistics and Programme Implementation.[11] The most common co- morbid condition was hypertension followed by dyslipidaemia. Similarly, in other studies also, the most common co-morbid conditions among diabetics was hypertension followed by dyslipidaemia.[10]

Majority of the study participants were diagnosed (91%) and were treated (99%) in the Government health facility as the participants registered in the 'Diabetic Treatment Register' of selected PHCs were included in the study. A study conducted by Srinivas G et al in a rural area of South India, also found that majority of the diabetic individuals were utilizing government health facility for screening of diabetes.[12]

About 54.3% of our participants have good glycaemic control (Random Blood Sugar <200mg/dl). In few of the other studies the proportion of subjects with good glycaemic status varied from 15%50 to 55.3%.[13] This could be because different criteria were used for classification of glycaemic control such as HbA1C ≤ 7 mmol/L or random blood glucose levels <180mg/dl.[14]

The present study observed that the overall 'optimum adherence' to medication consumption practice was 68.3%. Similar finding (68%i) was noted in the study conducted in the Anand district of Gujarat by Raithatha SJ et al.[10]

In the present study, the optimum adherence to medication was highest for participants who were using OHA only, followed by those who were using insulin only and the least among the participants taking both; 68.9%, 61.1% and 58.1% respectively. Similarly, adherence to oral hypoglycemic agents was better than insulin (86.5% vs 78%) in the study in Nepal by Thapa D.[15] It was a facility-based study with non-probability sampling and smaller sample size (n=141). But in the study conducted by Rajasekharan D et al in Mangalore and Uma MR et al in Thiruvallur district of Tamilnadu, the proportion of adherence to insulin was better than OHA`s.[16] Both these studies were conducted at health facility by employing convenient sampling technique and also repeated health education messages were given by heath care professionals to insulin users.

The proportion of participants who had been diagnosed and treated for diabetes of less than 5 years duration was noted to be 68.3%. Similar finding was revealed in the study conducted at health care facility in Nepal by Thapa D, which included nearly equal proportion of participants from both the urban and rural areas and 69% of the participants had been diagnosed and treated for diabetes of less than 5 years duration.15 But the adherence to oral hypoglycemic agents was better than insulin (86.5% vs 78%). Also, in the study by Padma K et al it was found that majority (59%) of the study participants enrolled in the study had diabetes of less than 5 years duration.[17]

In the quantitative phase of the study, one third of the study participants reported poor memory as the

reason for 'medication non-adherence' followed by the scare of anticipated side- effects of medicines. During in-depth interviews, the barriers for non-adherence were identified at various levels that included clinic only on specific days, belief in alternate system of medicines, non-availability of medicines in Government pharmacy, experience of side effects, cultural barriers etc., Similar reasons for non-adherence were shared by the participants during the free listing exercise conducted by Venkatesan M et al in geographically closer region that included inaccessible PHC timings, cost of drugs in private hospitals, side effects, patient's own myths about disease and exploring other systems of medicine.[18]

Very few participants (2.1%) followed the healthful eating plan for optimum duration of 5 days in a week and none followed the practice of intake of fruits or vegetables 5 or more times in a day. This can be substantiated from the finding in our qualitative phase of the study that though few study participants are aware of the diet to be followed by the diabetics they couldn't adhere to it because of the various self-perceived barriers at individual and family level.

The restriction of high fat food items such as red meat, full-fat dairy products was followed by majority (84.8%) of our study participants on all days or at least 6 days in a week. Similar results were also found in the studies by Gopal N et al and Gopichandran V et al.[19,20] They reported that around three-fourth of their study participants avoided the high fat food items. These were community-based studies and SDSCA tool was used to assess the dietary practice which is similar to our study.

In the present study, 55.2% of the participants were following the recommended practice of physical activity of 30 minutes for 5 days in a week. The extent of adherence to physical activity was varied. Similarly, in the studies conducted by Thapa D, Gopal N et al, it was found that nearly equal proportion of participants (55%) seems to practice the habit of physical activity.[15,19] In all these studies, SDSCA tool was used to assess the physical activity practice and used the same criteria of 30 minutes of physical exercise for at least 5 days in a week. Contrast to our study, it was found that 61% of the participants in urban community of Pune had achieved the level of exercise recommended to them. This could be because that the study subjects were advised by their health care staff to exercise on a daily basis.[21]

CONCLUSION

Overall, more than two-third of the participants had satisfactory practices in 'Medication adherence', 'Blood glucose monitoring' and 'Healthy Coping Behavior' domains. Most of the participants never smoked cigarettes in last 7 days. There were differences in the adherence level to all the domains of self-care practices between the urban and rural areas. The level of awareness for optimum self-care practice was found to be low among the diabetics in the community. Sensitization of diabetic individuals by health care providers about self-care practices by conducting health education session during every visit to the health centre and at all possible contacts with them. Counselling at primary care level to make the individuals understand the relevance, identify the roadblocks and assist in promoting the good practices among those with poor compliance and uncontrolled disease.

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