Original Research Article

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Study on self care and adherence to therapy among diabetic patients at a tertiary care center in Mysore

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ABSTRACT

Background: Adherence to lifestyle modification and self-care are vital elements in the management of diabetes mellitus and the reason for poor adherence and poor self-care could vary from person to person. The study aimed to assess the level of adherence to therapy, the self-care practices and the barriers preventing adherence among diabetic patients attending a tertiary care hospital in Mysore.

Methods: A mixed methods study was conducted among an estimated sample of 150 patients attending a tertiary care teaching hospital in Mysore, Karnataka. Diabetes self-care activities was assessed using modified Summary of Diabetes Self-Care Activities (SDSCA) questionnaire. An in depth interview was conducted for 20 subjects for understanding the factors contributing to their level of adherence/non-adherence. The quantitative data was analysed with standard statistical methods and qualitative data through content analysis.

Results: The adherence to the drugs was found to be 86.6%. The median number of days during which target diet plan was achieved, at least 30 minutes of physical activity undertaken and foot care was 5.5 and 0 respectively. Lack of awareness and socioeconomic barriers were cited by the patients as the barriers preventing adherence to drug therapy, diet and exercise.

Conclusions: Lack of awareness of the disease and cost of the pharmacological therapy are potentially modifiable reasons of poor adherence. Health education is to be provided by the healthcare providers focusing on the importance of adherence to drugs, diet and exercise.

Keywords: Adherence, Life style modifications, Diabetes

INTRODUCTION

Diabetes is a chronic, progressive disease characterized by elevated levels of blood glucose. According to the World health Organisation. In 2014, 422 million people in the world were suffering from diabetes. The prevalence of diabetes has been steadily increasing for the past 3 decades and is growing most rapidly in lowand middle-income countries.¹

India is infamously called the Diabetes capital of the world with over a population of 60 million suffering from diabetes.² In 2015, the age adjusted prevalence of the disease among 20-79 year olds in the country was 9.3% (range 7.6-11.4) and over 0.9 million deaths were attributed directly or indirectly to diabetes.³

Adherence to lifestyle modification and self-care are vital elements in the management of diabetes. The WHO has

defined adherence as the extent to which a person's behaviour— taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider. Adherence to long-term therapy for chronic illnesses in developed countries averages 50%, the rates being even lower in developing countries. Poor adherence to recognized standards of care is the principal cause of development of complications of diabetes and their associated individual, societal and economic costs.⁴

Different studies have found varying rates of adherence to diabetic treatment and lifestyle modifications. A study by Mahfouz et al reports that adherence to diabetes self-management was reported among 41.7% of adult diabetic patients who show good adherence to diet instructions, but only 21.4% to blood glucose test.⁵ A different study by Kakumani et al reported that more than 70% of the Diabetics and more than 75% of the hypertensive have discontinued the treatment in between.⁶ A study conducted by Manobarathi et al also reported that overall compliance rate was found to be 39.8%.⁷

The reason for poor adherence and lack of self could vary from person to person. However, some of the barriers when identified may be potentially remediable. Hence this study was conducted to assess the level of adherence to therapy, the self-care practices and the barriers preventing adherence among diabetic patients attending a tertiary care hospital in Mysore.

METHODS

The mixed method study (hospital based cross sectional study and qualitative study) was conducted in K.R. Hospital which is one of the teaching hospitals of Mysore medical College and Research Institute. The study was cleared by Institutional ethics board of MMC & RI, Mysore. This study was done form June 2014 to September 2014. Taking the prevalence of self-care among diabetics as 40% and relative precision of 20%, the sample size was estimated to be 150.8

All patients who were known cases of diabetes mellitus attending Medicine and Endocrinology OPD were eligible to participate in the study. Information on the Socio-demographic data, history of diabetes and co morbid conditions, knowledge on the helpfulness of the drug, the level of adherence and the level of compliance was collected. Diabetes self-care activities of the subjects during the past seven days were assessed using modified summary of diabetes self-care activities (SDSCA) questionnaire, which consists of questions on self-care activities in the domains diet, exercise and foot care. 9 The items in the questionnaire under the three different domains are given in Table 4. The questionnaire was modified by removing the blood glucose testing part as it was not relevant to the population under study. The patients were assessed based on the total score obtained in each category i.e., diet, exercise, blood sugar testing

and foot care. The scoring was done by calculating the mean score of items in each section.

An in depth interview was conducted for 20 subjects for understanding the factors contributing to their level of adherence/non-adherence. The operational definition of adherence to drug used in this study was that a person is said to be adherent to drug, if he had not missed any dose in the last one week. Informed consent was taken from the study subjects.

The data was entered in MS excel and the summary statistics was done through proportions with 95% Confidence interval, mean, standard deviation; inferential statistics was done using chi-square test. The measurements were done using SPSS version 21.0((IBM Corp., Armonk, NY, USA). The qualitative data was analysed through content analysis.

RESULTS

A total of 157 known cases of Diabetes Mellitus who attended the Medicine and Endocrinology OPD of K.R. Hospital were interviewed for the study. Amongst them, 58 (36.95%) were males and 99 (63.05%) were females. The age distribution of the study participants is as given in Table 1.

Table 1: The age distribution of study subjects.

Age	Number	Percentage (%)
<30	2	1.2
31-40	9	5.7
41-50	32	20.38
51-60	48	30.57
61-70	49	31.21
>71	17	10.82
Total	157	100

More than 80% study subjects were in the 40-70 yr age group. Among the subjects, 76 (48.4%) of patients were diabetics since more than 5 years, 74 (47.1%) since 1-5 years and 7 (4.45%) were known to have diabetes since less than one year.

The pharmacological therapy included Metformin in 140 (89%) of patients, Glibenclamide 55 (35%) and insulin in 7 (9.5%). 98 (62.4%) patients were on one medication while the rest (n=59, 37.6% where on two medications).

Adherence to medication

8 out of 157 patients reported that they missed the medication on one day during the past week while 5 (3.18%) missed it on two days. The number of patients who missed the drug three times in the past week was 4 and more than thrice was in the past week was 4. Hence the adherence to the drug was 86.6%. However, 19.1% (n=30) of the patients said that they had stopped the medication during the past 6 months.

Table 2: Pattern of adherence to drugs among study subjects.

Number of days with missed dose	Number	Percentage (%)	
0	136	86.62	
1	8	5.09	
2	5	3.18	
3	4	2.54	
>3	4	2.54	
Total	157	100	

Table 3: Reasons for non-adherence to drugs.

	it is har remental the do	nber all	it is ha pay fo drug		How hard is it to refill		I worry about the long term effects of this drug		this drug causes other concerns or problems		I still get unwanted side effects from this drug	
Response	N	%	N	%	N	%	N	%	N	%	N	%
None	127	80.9	136	86.62	102	64.97	149	94.9	152	96.82	145	92.36
A little	13	8.3	13	8.28	34	21.65	6	3.82	1	0.64	10	6.37
A lot	17	10.8	8	5.1	21	13.38	2	1.27	4	2.54	2	1.27
Total	157	100	157	100	157	100	157	100	157	100	157	100

Table 4: Practice of self-care activities week before the interview (SDCA).

			No. of days			
	Activities	Median	Percentile 25	Percentile 75		
Followed self-diet plan		5.00	4.00	7.00		
	Ate 5 or more servings of fruits and vegetables	3	1	6		
Diet	Ate high fat foods	2.00	1.00	4.00		
	Spacing of meals evenly through the day	4.00	.00	6.00		
	Followed healthy eating plan	4.00	1.00	7.00		
	Participated at least 30 minutes of physical activity	5.00	1.00	7.00		
Exercise	Participated in specific exercise (swimming, walking, cycling, heavy work)	1.00	.00	3.00		
Foot care	Checking feet	.00	.00	2.00		
root care	Inspection inside the shoes	.00	.00	1.00		

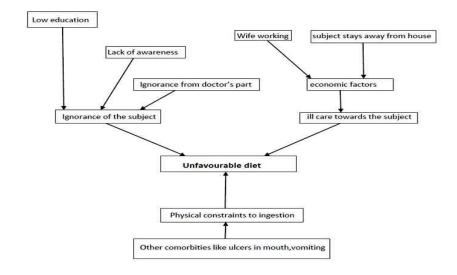


Figure 1: Content analysis of qualitative data showing factors leading to unfavourable diet.

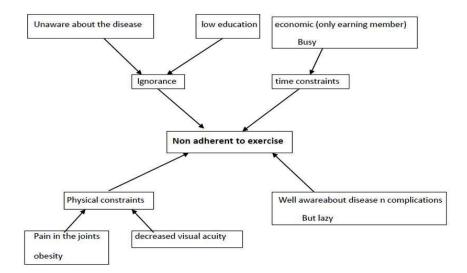


Figure 2: Content analysis of qualitative data showing factors leading to poor adherence to physical exercise.

According to the subjects, the main reason for skipping drug was polypharmacy, i.e., they should take too many drugs, during which they will forget some. The other reasons for non-adherence are given in Table 3.

Diabetes self care activities

The diabetes self care activities of study subjects was moderate. The median number of days during which target diet plan was achieved was 5 (IQR 4-7) out of 7 days. However, it is 4/7 (IQR 1-7) for following healthy diet plan, which is less than targeted.

The median scores for Intake of fruits and vegetables was 3 and that for spacing of meals and high fat intake was 4 and 2 respectively. The median score for undertaking specific physical activity by study population was low (median 1, IQR 0-3). However, the median score for undertaking at least 30 minutes of physical activity was 5 (median 5, IQR 1-7). Foot care activities was almost nil among the study participants with a median score of 0 on the modified SDCA questionnaire (Table 4).

Qualitative data-content analysis

Reasons for good adherence

On asking for reasons that led to adherence to medications, Male patients told that 'Education by doctor', 'worried about after effects of not taking drugs' and 'awareness of complication' lead to adherence to drugs. Female patients mentioned 'Awareness of disease', 'Concern for self', 'Being cared for by educated children' and 'Children being economically well off' being the reasons for adhering to drugs.

According to the study subjects, Adherence to diet was facilitated by having other co morbidities like

hypertension, which lead to more visits to the healthcare provider and regular health education, leading to an increased concern towards one's health. Adherence to exercise occurred secondary to aawareness regarding the disease and its complications and Education by doctor

Reasons for non-adherence to drugs as mentioned by male and female patients are given in Table 5.

Table 5: Non adherence for drugs among males and females.

Males	Female		
Living away from home	Lack of care from		
Living away from home	children		
No body to take care	Ignorance		
Partner is employed	Scared of taking too		
rarther is employed	many tablets		
Economic factor	Economic factor		
Time			
Ignorance			
Following advice of			
unqualified practitioners			
Physical constraints			

Non-adherence to diet

Among female patients, being a Working woman leading to time constraints, Lack of care by family members and Economic reasons where the reasons of poor adherence to diet.

Non adherence to diet in male subjects is as given in Figure 1.

Non adherence to exercise in both males and females is as given in Figure 2. The major reasons for not following exercise regimen is ignorance about the disease, lack of time, lack of motivation and physical constraints like joint pains and poor vision.

DISCUSSION

In our study 86.6% of the patients had not missed any dose in the past week. Santhanakrishnan et al reported that 76.3% of the study subjects had not missed more than two doses in the last 15 days. ¹⁰ In our study, 21 (13.4%) patients had missed at least one dose of the medication during the past week. A study by Manobarathi et al reports that in their study, 26.1% (N=17) of patients had missed at least one dose in last one week. ⁷

In the content analysis, we noted that economic and social issues were the major barriers to adherence to lifestyle modification as well as drug therapy. In our study, nearly 13% of the subjects mentioned that they find it hard to pay for the prescribed drugs. Similar results were found by Vijan et al who reports that the major barrier for adhering to diets was the cost implications. Their study also reported lack of family support was cited as a major factor in difficulty with maintaining diet, while those with strong family support found it easier to adhere to dietary recommendations. ¹¹

A major strategy in reducing the burden of NCDs is the provision of affordable and effective medicines. Where people have limited access to insurance coverage, the attendant out-of-pocket expenditures for essential medicines may discourage appropriate use of medicines, and generally reduce the potential for adherence to treatment. Increasing the availability of free oral hypoglycaemic agents by will improve patient's adherence to drugs and is an important secondary prevention modality measure in tackling a chronic disease like diabetes.

The most frequent reason cited by our patients leading to good adherence to medication was being aware of the disease and its complications. A study published by Mumu et al found statistically significant association between poor adherence to exercise and non-attendance to diabetes education class and attendance to such classes with adherence to diet. This underlines the fact that patient health education regarding the natural history of the disease, the possible complications and treatment modalities are of paramount importance in management of lifestyle diseases like diabetes.

We found that regular exercise to be poor in the study. The American Diabetes Association recommends that adults with diabetes should engage in 150 min or more of moderate-to-vigorous intensity activity weekly, spread over at least 3 days/week, with no more than 2 consecutive days without activity. ¹⁴ In this study we have found that the exercise habits of the subjects are suboptimal in both duration as well as in specific activity type, due to poor awareness and other constraints as

found during the qualitative interview. We also noted that the frequency of eating fruits and vegetables was also less in study subjects when compared to the WHO recommendation of 400 grams of vegetables and fruits per day, excluding tubers — or five servings of 80 grams each. The awareness of foot care also is needs to be increased through appropriate educational measures.

CONCLUSION

Lack of awareness of the disease and cost of the pharmacological therapy are potentially modifiable reasons of poor adherence. Apt measures has to be taken to increase the awareness among the lay public, patients as well as their care givers about the disease progression and lifestyle modifications needed in diabetes. Health education is to be provided by the healthcare providers focusing on the importance of adherence to drugs, diet and exercise. The major limitation of Our study is that it has relied on self-reporting of adherence and hence may have recall bias.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee of MMC&RI, Mysore

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