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Original Article

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Self Care and Medication Adherence among Type 2 Diabetics in Puducherry, Southern India: A Hospital Based Study

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ABSTRACT

Background: Micro and macro-vascular complications of Type 2 Diabetes mellitus (DM) could be decreased by maintaining a good glycaemic control, which is dependent on adherence to medication and self care.

Aim: (1) To assess medication adherence and adherence to self care among type 2 diabetics who were admitted to a tertiary care hospital (2) To identify factors which were associated with medication adherence.

Materials and Methods: This descriptive study involved 150 in-patients of Sri Manakula Vinayagar Medical College and Hospital (SMVMCH), a teaching hospital in Puducherry, southern India. Subjects who had type 2 DM for more than 1 month were included in the study, irrespective of their diagnoses at admission. They were interviewed within 24 hours of their admissions by using a pre-designed, pre-tested, structured questionnaire. The questionnaire included Morisky Medication Adherence Scale (MMAS) and questions for assessing adherence to self care activities. The factors which were associated with medication adherence were identified by Chi-square test and logistic regression.

Results: The mean age of the subjects was 54 years. Only 49.3% (95% CI: 41% to 57%) of the diabetics had high medication adherence (MMAS score = 8). Only 22.7% of the diabetics were involved in physical exercise for at least 30 minutes, for at least 4 days in a week. Only 16.7% of them regularly inspected their feet. Around 67.3% of the subjects reported about consuming a diabetic diet for at least 4 days/week. Poor family support showed a significant association with low medication adherence.

Conclusion: Only 49.3% of the subjects adhered to anti-diabetic medications. Less than 25% of the diabetics adhered to self care activities such as exercising/walking for 30 minutes on at least 4 days in a week, regularly inspected their feet and provided feet care. Family support played a vital role in medication adherence among the diabetic subjects. Hence, it is important to regularly assess patients for medication adherence and include their families also in counseling sessions.

Keywords: Diabetes Mellitus type II, Adherence, Medication, Self-care, Family support

INTRODUCTION

Diabetes Mellitus (DM) has emerged as a major health care problem in India [1]. Prevalence of diabetes mellitus in India varies from 5.6% in rural areas to 12.1% in major cities [2,3]. It has been projected that the greatest absolute increase which will occur in number of people with diabetes, will be in India [4]. Due to sheer numbers, the economic burden caused by diabetes in India is among the highest in the world. The real burden of the disease is mostly caused by its micro and macro-vascular complications, which lead to increased morbidity and mortality [1]. The risk of these complications can be reduced by maintaining a good glycaemic control. Non-adherence to medication declines the efficacy of the medication and in turn, the glycaemic control [5]. Self care also plays a major role in the management of DM [6]. There is also a continuing need to assess the level of adherence to medication/self care activities and the factors which are related to non-adherence to medication and self care among diabetics in the local setting [7]. This would facilitate health care professionals to identify subjects with low medication adherence and thereby aid them in planning interventions to improve medication and self care adherence.

The objectives of the present study were:

1. to assess medication adherence and adherence to self care among type 2 diabetics who were admitted to a tertiary care hospital
2. to identify factors which were associated with medication adherence

MATERIALS AND METHODS

This descriptive study involving 150 subjects was conducted at Sri Manakula Vinayagar Medical College and Hospital (SMVMCH), a teaching hospital located in Puducherry, South India, in July-August 2010. SMVMCH is a 750 bedded rural tertiary care hospital. It caters to a rural population with a geographical distribution of about 50-60 km, which surrounds the hospital. In-patients who had type 2 DM for more than 1 month were included in the study, irrespective of their diagnoses at admission. After obtaining their written informed consents, a trained final year medical student interviewed the subjects within 24 hours of their admissions by using a pre-designed, pre-tested, structured questionnaire. Information regarding patient characteristics, diabetes medication adherence, adherence to self care measures and family support was collected. Medication adherence was measured by using Morisky's Medication Adherence Scale (MMAS). Permission was obtained to use this 8-item, structured, medication adherence scale. Each item in the scale measures a specific medication-taking behaviour. Response categories were yes/no for each item with a dichotomous response and for the last item, it was a 5 -point likert scale. The Alpha reliability of the scale was 0.83 [8]. Adherence to self care activity, such as consuming a recommended diabetic diet, having physical activity for at least 30 minutes a day, inspection of feet and feet care were also measured. Subjects were asked to comment on number of days on which they followed these self care activities in the previous week. Social support that they received from their family members was evaluated by using a 6 item, 5-point Likert scale. The scale evaluated emotional support, tangible aids and appraisal that they received from their families and it was adapted from Chronic Illness Resources Survey and the Diabetes Family Behaviour Checklist [9]. The English version of the structured questionnaire was translated into the local language, Tamil, by using translation-back translation method. Institutional ethics committee approved the study protocol.

Adherence characteristics	Frequency (%)	95% CI Percentage
Medication adherence (MMAS score)		
High adherence (8)	74 (49.3)	41, 57
Medium adherence (6 - <8)	37 (24.7)	18, 32
Low adherence (<6)	39 (26.0)	16, 33
Diet		
Consumed recommended diet for at least 4 days/ week	101 (67.3)	59, 74
Physical activity		
Physical exercise for at least 30 minutes for at least 4 days/week	34 (22.7)	16, 30
Inspection of foot		
Inspected foot at least 4 days/week	25 (16.7)	11, 23
Foot care (drying between toes after wash)		
Foot care at least 4 days/week	36 (24.0)	18, 31

[Table/Fig-1]: Self reported adherence to self care among the subjects, n=150

Characteristics	Low & medium adherence (n=76)	High adherence (n=74)	Odds Ratio (95% CI)	p-value
Age				
< 60 years	56 (57.1)	42 (42.9)	2.1 (1.1, 4.2)	0.03
≥ 60 years	20 (38.5)	32 (61.5)		
Gender				
Male	36 (48.0)	39 (52.0)	0.8 (0.4, 1.5)	0.51
Female	40 (53.3)	35 (46.7)		
Education				
Upto 10th std	65 (49.2)	67 (50.8)	0.6 (0.2, 1.7)	0.34
More than 10th std	11 (61.1)	7 (38.9)		
Duration since diagnosis				
Less than or equal to 1 year	12 (75.0)	4 (25.0)	3.3 (1.0, 10.7)	0.04
More than 1 year	64 (47.8)	70 (52.2)		
Medication				
Insulin + OHA	21 (61.8)	13 (38.2)	1.8 (0.8, 3.9)	0.14
Only Oral hypoglycaemic agents	55 (47.4)	61 (52.6)		
Family support				
Poor	48 (60.8)	31 (39.2)	2.4 (1.2, 4.6)	0.009
Good	28 (39.4)	43 (60.6)		

[Table/Fig-2]: Determinants of medication adherence among the study subjects, n=150

At the end of the interview, a medical social worker counseled the subjects on self care of Diabetes mellitus.

Statistical analysis was done by using Statistical Package for Social Sciences (SPSS), version 12 and Open Epi Version 2.3. Based on the scores which were obtained on the Morisky's Medication Adherence Scale, they were classified into those with high adherence (score = 8), medium adherence (score- 6-<8) and low adherence (score-<6). Percentage of subjects with low/medium/high adherence was calculated. Percentage of subjects who adhered to the self care measure was also calculated. The subjects were divided into two groups which consisted of those with high adherence and those with low/medium adherence. Association between medication adherence and age, gender, education, duration of disease since its diagnosis and family support were studied by using percentages, Odds ratios, 95% confidence interval (CI). Statistical significance of these associations was calculated by using Chi-square test and a p-value of <0.05 was considered to be statistically significant. All factors which were significant in univariate analysis were included as independent variable in logistic regression model.

RESULTS

The mean age of the 150 study subjects was 54 years (SD ±12) and male: female ratio was 1:1. Around 59 subjects (39.3%) had studied up to primary education level. The median duration with diabetes was 4 years (range 2 months to 10 years). Most of the patients were on oral hypoglycaemic agents only (77.3%, n=116). In 37 (24.7%) subjects, the primary cause for admissions was Diabetes mellitus (type 2) or its complications. The score range of Morisky Medication Adherence Scale was 1 to 8. A high score indicated high adherence. The mean MMAS score was 6.6 (SD ±2.0). High drug adherence was identified if a score of 8 was seen on MMAS, medium adherence was identified if a score of 6 to <8 was seen and low adherence was identified if a score of <6 was seen. Only 49.3% (95% CI: 41% to 57%) of the subjects had high medication adherence [Table/Fig-1]. The Tamil version of MMAS which was used in this study had excellent internal consistency with a Cronbach's alpha of 0.8. Only 22.7% of the diabetics did physical exercise for at least 30 minutes for at least 4 days in a week. Only 16.7% of them regularly inspected their feet. Around 67.3% subjects reported of consuming diabetic diet for at least 4 days/week [Table/Fig-1].

The univariate analysis done, found that subject with age less than 60 years, shorter duration since diagnosis (< 1 year), poor family support, were more likely to have low/medium medication adherence. Those with poor family support were 2.4 times (95% CI: 1.2 to 4.6) more likely to have low/medium adherence. Multivariate analysis was done by using logistic regression. Age, duration of the disease since its diagnosis and family support were included as independent variables. In the multivariate analysis, only family support had significant influence on medication adherence [Table/Fig-2].

DISCUSSION

Around 50% of the subjects had high medication adherence. Adherence to diabetic diet was better (67.3%), as compared to other self care measures such as physical activity, feet inspection and feet care. Subjects with good family support had high medication adherence. Study characteristics of the study subjects corresponded to the epidemiology of Diabetes mellitus in India [10]. Morisky's adherence scale found that 49.3% patients had high adherence. A study which was done in Chennai in 1999, found that only 25% patients adhered to Diabetes mellitus treatment [11]. The present study subjects had better medication adherence. This could be explained by increasing awareness among the population about Diabetes mellitus and its complication, over years. However, both studies used different methods for evaluation of medication adherence. Noteworthy was the fact, that only a lesser percentage of subjects who were admitted to tertiary care hospital, adhered to medication, diet, physical exercise, feet inspection and feet care. These findings stressed on the importance of assessing adherence to medication and self care during the contact of the patients with health care system. For this purpose, MMAS scales would be a simple and reliable tool which can be used for assessing medication adherence of the diabetic subjects. Moreover, assessment of adherence to medication and self care activities would be a good starting point for conducting discussions and counseling on diabetes care.

It is worth mentioning that poor family support was a significant factor which was associated with low medication adherence. Similarly, a study done in rural south India reported that lack of family cooperation was one of the reasons for non-adherence [12]. Hence, in addition to individual counseling, family counseling should also be an essential component in the care of DM. Moreover, 75% of the study subjects were admitted for causes other than Diabetes mellitus. This contact of the subjects with the health care staff could be used as an opportunity for counseling the patients as well as their families regarding the importance of good medication adherence and self care activities. Subjects would be receptive to advices when they are admitted in hospital. Hence, this opportunity should be used to encourage and counsel diabetic subjects to adhere to self care. Though the subjects would be more receptive to counseling in a hospital setting, it has a limitation of missing subjects at an early stage and those who do not seek medical care.

CONCLUSION

Only 49.3% patients adhered to anti-diabetic medications. Less than 25% of the diabetics adhered to self care activities such as exercising/walking for 30 minutes on at least 4 days in a week, regularly inspecting their feet and providing feet care. Family support played a vital role in medication adherence among the diabetic subjects.

RECOMMENDATIONS

Contact of the subjects with the health care staff: During any hospital admission, subjects should be assessed for their adherence to diabetic medications. They should be provided self-care and counselled accordingly

Their families should also be counselled about the importance of medication adherence and their role in motivating the diabetics.

LIMITATIONS

In the study, the self care activities were not assessed in detail, for example, the extent to which a person restricted his/her refined sugar intake was not assessed.

The study results could be generalized to the population, as this was a hospital based study.

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