A Study on Non-Adherence to Medication, Self-care Practices and Health Related Quality of Life of Type-2 Diabetic Patients in Field Practice Areas of B.J. Medical College, Ahmedabad

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Abstract :

Introduction : Glycemic control plays the main role in diabetes management which mainly depends upon patient adherence to the treatment plan. Accurate assessment, adherence to medications, diet care, foot care and exercise is necessary for effective management of diabetes, as non-adherence leads to development of short-term risks as well as long-term complications which declines the quality of life of diabetic patients. **Objective :** The present study was conducted to study socio-demographic profile of diabetic patients, to find out prevalence rates of non-adherence to medications, diet care, foot care, exercise among type-2 diabetic patients and to find out association between non-adherence to medication, self-care practices and health related quality of life based on five domains among type-2 diabetic patients. **Method :** A cross sectional study was conducted from October to November 2016 infield practice areas of B. J. Medical College, Ahmedabad to find out prevalence rates of non-adherence to medications, diet care, foot care, exercise among type-2 diabetic patients. Total 130 diabetic patients diagnosed since at least 1 year and age >25 years were interviewed using a predesigned schedule adapted from EQ-5D questionnaire. **Results :** High non-adherence rate was found for exercise (76.8%) followed by foot care (70.7%), medication (56.1%), blood glucose monitoring (46.9%) and diet care (25.3%). There is significant association between mobility problem and poor foot care practices ($p<0.05$); between discomfort/pain and poor foot care practices ($p<0.05$); between anxiety/depression problem and medication non-adherence ($p<0.05$). **Conclusion :** In the present study high rate of non-adherence was found and it also reflected that non-adherence patient had poor quality of life.

Key words : EQ-5D, Health related quality of life (HR-QoL), Medication, Non-adherence, Self-care practices, Type-2 diabetes

Introduction :

In current century, globalization and industrialization, has led to a paradigm shift in the patterns of disease worldwide with life-style related/chronic diseases such as diabetes becoming more prevalent. Prevalence of diabetes in India is 7.8% (males-7.9% and females-7.5%) [1] and proportional mortality due to diabetes in India in 2016 is 2% [1]. India has become diabetic capital of the world.[2]

Diabetes Mellitus (DM) and its prevalence are rising rapidly all over the globe at an alarming rate. This prevalence continues to climb, because of an ageing population and rising obesity rates across the world.

Previously a disease of the middle aged and elderly, type 2 diabetes has recently escalated in all age groups, including adolescents. [3] This means, in developing countries most diabetic patients acquire the disease during the most productive period of lives. This will have major implications with respect to health care needs and costs as they will live up to an older age to develop chronic complications of diabetes.

It is clear that chronically ill individuals have lower mean health related quality of life (HR-QoL) when compared to healthy adults. [4] Thus type2 diabetics

have to face many problems which may have an impact on their HR-QoL. Increasing burden of morbidity and mortality due to diabetes warrants urgent attention towards measures to control it. Because of its chronic nature and multi-organ involvement diabetes also affects the costs of treatment and quality of life both in patients and people around them.

The definition of adherence, according to the WHO is the extent to which persons' behaviour – taking medication, following a diet, and/or performing lifestyle changes – corresponds with agreed recommendations from the health care provider.[5] Non-adherence to medication and self care among diabetic patients lead to short-term risks and long-term complications as well as declines the quality of life. This study aims to find out the association between non-adherence to self-care practices, medication and health related quality of life among type-2 diabetic patients.

Method :

A cross-sectional study was conducted during October-November 2016 in field practice areas of B.J.Medical College, Ahmedabad. Being a purposive sampling, 130 diabetic patients diagnosed since at least 1 year and age >25 years and patients who were able to give proper medication history were selected by purposive sampling method from field practice areas of B. J. Medical College, Ahmedabad.

A three – part questionnaire was designed. The first part consisted of socio demographic information and family history of diabetes. Part two contained questionnaire of self – care practices related to diabetes (Blood glucose monitoring, diet, foot care, exercise, smoking and medication) and part three consisted of the EQ-5Dquestionnaire (EuroQol Group, 2009).[6] EQ-5D questionnaire has five domains – mobility, self-care, usual activities, pain/discomfort and anxiety/depression.

They were interviewed using a predesigned schedule adapted from EQ-5D (EuroQol Group, 2009) questionnaire, based on five domains after being duly informed. Patient who were unable to answer a short list of simple questions (e.g. age, address, self care behaviour practice, medication history) were excluded.

The health care providers write subsequent date of testing on the case sheet of the patient. A patient was considered non-adherent if they missed and did not get their blood glucose monitoring done on the prescribed date.

For diet, a patient was considered non -adherent if they did not follow the recommended dietary intake and advised quantity and quality of food by their doctors.

Non-adherent to foot care was defined as, not following the basic foot care principles such as daily examination, cleaning, wearing correct size and shape shoes and cutting nails regularly.

Non-adherent to exercise was defined as not doing daily exercise <45 min/day.

Non-adherent to medication was positive if any of the following choices is present: don't observe the time of intake, change the prescribe amount and dose, change the dose according to their convenience. In addition, cross check was done by checking their prescription.

Informed consent was obtained from all respondents after full explanation of the nature, purpose and procedures used for the study.

Data analysis was done by using Microsoft Excel 2016 and appropriate statistical tests were applied.

Results :

A total of 130 diabetic patients were included in the study. Among total diabetic patients, 50.7% were male and 49.2% were females. Mean age of the patients was 56.71 ± 10.97 years.

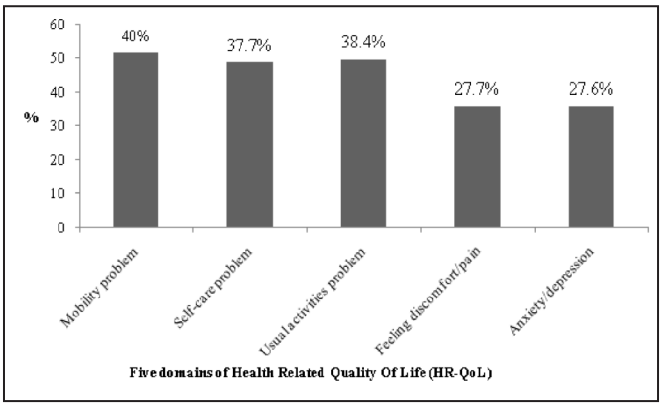
Approximately half of the patients were either illiterate or attended primary school (50.6%) followed by one fourth of the diabetic patients who are educated up to high school (26.9%). Most of the diabetic patients (66.1%) were from class III and class IV socio economic class as per modified Prasad classification (May-2016). (Table 1)

Table 1: Socio-demographic profile of diabetic patients

Variable	Frequency	Percentage
Education		
Illiterate	34	26.0
Primary school	32	24.6
Secondary school	18	13.8
High school	35	26.9
Graduate	11	08.4
Socioeconomic status*		
I	2	01.5
II	26	20.0
III	45	34.6
IV	41	31.5
V	16	12.3

*Modified Prasad classification for socio-economic status (May-2016)

Figure 1 : Profile of the Health Related Quality of Life (HR-QoL) among patients based on five domains.



In the present study 64.6% diabetic patients were overweight or obese according to WHO BMI classification 2016 while Mean BMI was 26.1 (± 6.7) kg/m^2. Figure 1 show that 40% diabetic patients were having mobility problem, 37.7% were having self-care problem, 38.4% were having problem in doing usual activities, 27.7% were having discomfort/feeling pain and 27.6% were having anxiety/depression.

Table 2: Non-adherence rate for different variables

Variables	Frequency	Percentage
Diet care	33	25.3
Foot care	92	70.7
Exercise	100	76.8
Medication	73	56.1
Regular blood glucose monitoring	61	46.9

The non-adherence rate among patients is shown in Table 2. Around 76.8% diabetic patients did not adhere to exercise. Non-Adherence to foot care was 70.7%, to diabetic medication 56.1%. Non adherence to regular blood glucose monitoring was 46.9% while 25.3% non- adhered to diet care.

Table 3 shows the relationship between levels of non-adherence to self care practices and Health Related –Quality of Life among the patients. Significant association was found between mobility problem and non-adherence to foot care practices ($p<0.05$) and medication ($p<0.05$). Significant association was also found between non-adherence to foot care and problem in usual activities.

Significant relationship existed between discomfort/pain and non-adherence to foot care practices ($p<0.05$). Significant association was also found between anxiety/depression problem and exercise non-adherence ($p<0.05$) and medication non-adherence ($p<0.05$). Relationship between non-adherence to regular blood glucose monitoring and mobility also depicted significant difference.

A simple logistic regression analysis is presented for each of the health related quality of life in relation to socio-demographic, clinical features and adherence to self care practices (Table 4) and it was found that except adherence to foot care no other variables had effect on quality of life. The model explained 2% variability in the scores.

Table 3 : Relationship between non-adherence to self-care practices and health related quality of life (N=150)

HR - QoL	Non - adherence to				
	Diet (n=33)	**Foot-care** (n=92)	**Exercise** (n=100)	**Medication** (n=73)	**Regular blood glucose monitoring** (n=61)
Mobility					
Problem	13(40%)	47(51%)	44(44%)	36(49.3%)	30(49.2%)
No problem	20(60.6%)	45(48%)	56(56%)	37(50.6%)	31(50.8%)
χ^2/p	0.01/0.934	**16.12/0.001**	2.89/0.089	**6.02/0.014**	**0.69/0.407**
Self care					
Problem	13(39.3%)	44(47.8%)	39(39%)	31(42.4%)	25(41%)
No problem	20(60.6%)	48(52%)	61(61%)	42(57.5%)	36(59%)
χ^2/p	0.055/0.815	**13.763/0.001**	0.316/0.574	1.615/0.204	0.530/0.467
Usual activities					
Problem	17(51.5%)	44(47.8%)	43(43%)	32(43.8%)	27(44.3%)
No problem	16(48.4%)	48(52%)	57(57%)	41(56.1%)	34(55.7%)
χ^2/p	3.184/0.074	**11.661/0.000**	3.771/0.052	2.031/0.154	1.63/0.201
Pain/discomfort					
Problem	12(36.3%)	32(34.7%)	29(29%)	24(32.8%)	19(31.1%)
No problem	21(63.6%)	60(65.2%)	71(71%)	49(67.1%)	42(68.9%)
χ^2/p	1.661/0.197	**7.902/0.005**	0.370/0.543	2.235/0.135	0.685/0.408
Anxiety/depression					
Problem	11(33.3%)	27(29.3%)	32(32%)	28(38.3%)	19(31.1%)
No problem	22(66.6%)	65(70.6%)	68(68%)	45(61.6%)	42(68.9%)
χ^2/p	0.703/0.402	0.431/0.512	**4.016/0.045**	**9.455/0.002**	0.685/0.408

Discussion :

Diabetes involves multiple organs and it is chronic in nature so proper management of diabetes is needed to improve the quality of the life of the patients. Successful management depends upon the extent to which a person's adherence of keeping appointments, regular monitoring of his/her glycemic status, taking medication and making lifestyle changes. This study was done to assess the association between non-adherence to self-care practices, medications and health related quality of life.

In present study sample size was less (130) as compared to the other studies done by Farzana Saleh

Table 4 : Logistic regression analysis of predicting variables for health related quality of life.

Health related quality of life (domains)										
Socio-demographic, clinical characteristics and self-care practices	**Mobility problem**		**Self-care problem**		**Usual activity problem**		**Pain/discomfort**		**Anxiety/ depression**	
	β	**P-value**	**β**	**P-value**	**β**	**P-value**	**β**	**P-value**	**β**	**P-value**
Sex	-0.92	0.10	-1.20	0.03	-1.30	0.02	-1.47	0.01	1.96	0.00
Education	0.08	0.87	-1.15	0.03	-0.19	0.72	-0.66	0.22	-0.73	0.17
Occupation	0.53	0.34	0.32	0.56	1.23	0.04	1.37	0.02	-1.62	0.03
Duration of having DM(years)	-0.63	0.21	-0.09	0.85	-0.61	0.21	-0.39	0.44	-0.09	0.87
Family H/O of DM	-0.83	0.06	-0.32	0.45	-0.24	0.59	0.06	0.89	-0.09	0.84
H/O having Hypertension	-0.13	0.76	-0.58	0.17	-0.73	0.09	-0.69	0.13	-0.15	0.75
Exercise	0.37	0.50	-0.27	0.62	0.68	0.22	0.05	0.94	0.86	0.20
Diet care	-0.49	0.35	-0.17	0.75	0.77	0.13	0.75	0.17	-0.19	0.73
Regular BG monitoring	-0.05	0.91	-0.58	0.23	-0.74	0.14	-0.63	0.22	0.28	0.60
Foot care	1.92	0.00	2.26	0.00	1.58	0.01	1.67	0.02	-0.74	0.25
Knowledge of DM	0.62	0.23	0.40	0.44	0.95	0.07	0.12	0.83	0.20	0.73
DM Medication	0.68	0.12	0.12	0.79	0.29	0.51	0.30	0.53	1.84	0.00
	R^2=0.21		R^2=0.20		R^2=0.21		R^2=0.16		R^2=0.22	

β = standardized regression coefficient

R^2=coefficient of determination

et al in Bangladesh [7] and Taruna Sharma et al in Dehradun, Uttarakhand. [8]

In present study mean age ± SD of diabetic patients was 56.71 ± 10.97 years almost similar to a study done by Farzana Saleh et al [7].

In the present study more than half of the patients were either overweight or obese according to WHO BMI classification 2016 while the study done by Farzana Saleh et al had 78.8% patients being overweight or obese according to Asian BMI cut-off value [7]. The present study depicts the lack of physical exercise and modern life style adaptation by diabetic patients in our study which leads to various morbidity and mortality.

In the present study non adherence to exercise and foot care was highest followed by blood glucose monitoring and diet modification. However, in the study done by Farzana et al the rate of non - adherence was very low.[7] A study done in Uttarakhand by Taruna Sharma et al, non-adherence to diet and exercise was 31.7% and 23.3% respectively.[8] Compared to other studies the rate of non-adherence was relatively high for different self care practices.

In present study approximately, half of the diabetic patients did not adhere to diabetic medication and did not had diabetes disease knowledge while in study done by Waleed M Sweileh in Palestine and Joan N Kaliyago et al in Uganda revealed that (42.7%) and (28.9%)diabetic patients did not adhere to medication respectively.[9, 10]A study done by Taruna Sharma et al in Dehradun, Uttarakhand revealed that 16.6% diabetic patients were non-adherent to diabetic medication.[8]This explains there is low education level, lack of awareness and lack of disease knowledge among the participants.

In the present study 40% of the diabetic patients had problem in mobility, in self care, in usual activity and one fourth had discomfort/pain whereas a study done by Farzana Saleh et al in Bangladesh, half of the patients had problem in mobility, majority had pain/discomfort and anxiety/depression which explains that diabetic patients those who do not adhere to diabetic medication and different self-care practices have lower quality of life. [7]

Conclusion :

In present study non-adherence rate was reflected by poor health related quality of life based on five domains among study subjects. High prevalence for non- adherence rate was found for exercise and foot care followed by medication, regular blood glucose monitoring and diet care. Significant association was seen between non-adherence to various self care practices and health related quality of life based on five domains.

Recommendations :

Diabetic patients should be educated regarding importance of adherence to medication, exercise, diet care, and foot care practices to live healthy life. Individuals with diabetes disease should make major lifestyle changes and learn to live with regular blood glucose monitoring, taking medications regularly and dealing with complications of the disease and self care. It is recommended that all effort should be made to promote behavior change and to improve quality of life in people with diabetes. To achieve this, an appropriate, strong and effective patient education, motivation programs and patient-doctor relationship should be planned.

Declaration:

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Conflict of Interest: Nil

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