Awareness of Diabetic Patients towards Diabetes Mellitus: A Survey Based Study

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ABSTRACT

Introduction: Increasing diabetes mellitus prevalence and associated health complications poses an enormous health burden. Awareness of this disease will play a vital role in its prevention and control. Also lack of adherence towards the management leads to poor glycemic control, thereby, increasing hazardous complications. The present study was conducted to assess the awareness of diabetes on various aspects among Type2 DM patients and to evaluate the treatment adherence.

Methodology: This cross-sectional study was conducted on Type2DM patients visiting Diabetes OPD at HIMS, Dehradun over a period of six months. Demographic data and knowledge of participants on various aspects of DM was recorded using a structured and validated questionnaire. Descriptive statistics was used for data analysis.

Results: Out of 100 patients, overall awareness was found to be average in 56% of the patients with majority being good (41%) regarding knowledge of DM while poor (38% and 58%) in complications and self-care practices respectively. Only 28% of the patients were adherent to their antidiabetic medications.

Conclusion: Awareness among patients was found to be average but majority of them were non-adherent to their medications.

Key Words: Awareness, Adherence, Type2 DM

INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disorder being characterized by increased blood sugar levels. It is like a termite which insidiously eats up one's own body and, if not controlled, it cripples the body irreversibly. People get tagged with this incurable disease, if not detected and controlled in earlier stages. Over time, poor glycemic control can lead to multiple chronic complications like damage to eyes (leading to blindness), kidneys (leading to renal failure), and nerves (leading to numbness in the limbs, impotence and foot disorders/possibly amputation) as well as increased risk of heart diseases and stroke.[1] These complications contribute to the decreased quality of life for affected individuals and their families, with a devastating long-term effect on their financial and social wellbeing.

The WHO report has shown a marked increase in the number of people affected with diabetes. Globally an estimated 422 million adults are living with diabetes mellitus, according to latest 2016 data from the WHO.[2] Though diabetes mellitus is more common in developed countries, but the incidence is also increasing in the developing countries.[2] This is due to the trend of urbanization and lifestyle changes, including increasingly sedentary lifestyles, less physically demanding work and changing dietary habits.[2] Until recently, India had more diabetics than any other country in the world, according to the International Diabetes Foundation.[4] Diabetes currently affects more than 62 million Indians [4] and nearly 1 million die every year.[3]

The management of DM largely depends on the affected person's ability to pursue self-care in daily

living. Proper management requires patients to be aware of the nature of the disease, its risk factors, treatment and complications. Thus, effective DM education, with consequent improvements in knowledge, attitudes and skills, leads to better control of the disease and reduce the incidence of complications. Various studies have been conducted in India to look for the awareness among the diabetics. The Indian Council of Medical Research(ICMR) conducted a study in four regions of India in which they found that only 43.2% of the overall study population had heard about a condition called diabetes.[5] Another study found that 17% of their participants had poor knowledge and more than half believe it to be a communicable disease.[6]Having complete knowledge about the disease is like a small investment for large benefit.

Another major weapon in the management of diabetes is the Adherence to treatment. The World Health Organization (WHO) defined adherence as "the extent to which a person's behavior – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider."[7]It has been indicated through various studies that despite the extensive therapy options available for various stages of type 2 diabetes, less than 50% of patients achieve the glycemic goals recommended by the American Diabetes Association (ADA).[8]

In the line of above background, the present study has been carried out to assess the two important weapons for the management of diabetes mellitus i.e. the level of awareness about the disease and the adherence of the patients towards the management of their disease.

MATERIALS AND METHODS

This cross-sectional study was conducted in the Department of Pharmacology in collaboration with the Department of Internal Medicine, Himalayan Institute of Medical Sciences (HIMS), Swami Ram Nagar, Dehradun over a period of six months (January to June 2017). All the diagnosed type 2 diabetic patients attending the diabetes OPD within the study period were recruited in the study after taking written informed consent. Ethical approval was taken from Institutional Ethics Committee before initiating the study. Patients with type 1 diabetes mellitus, patients on insulin and pregnant/lactating women were excluded.

Once included, a structured and validated questionnaire form was filled up by the study subjects after being properly explained by the principal investigator and enough time was provided to each patient. Socio-demographic information (age, sex, occupation, residence, education), family history of

diabetes, history of alcohol and history of tobacco consumption was recorded. The questionnaire also contained a series of 13 questions on awareness of DM which were divided under three headings, namely knowledge of DM, knowledge regarding complications of DM and self-care practices and management of DM. Adherence to antidiabetic medication was assessed by using the Morisky 8-Item Medication Adherence Questionnaire (Box 1).[9]

Table 1: Categorization of level of awareness of diabetics (N=100)

Score	Category
Knowledge about diabetes	
0-1	Poor
2-3	Average
≥3	Good
Knowledge regarding complications of diabetes	
0-2	Poor
>2-4	Average
>4-6	Good
Self care practices and management of diabetes	
0-1	Poor
>1-2	Average
>2-3	Good
Overall	
0-4	Poor
5-9	Average
>9	Good

Box 1: Morisky 8-Item Medication Adherence Questionnaire[9]

1. Do you sometimes forget to take your medicine? (Y = 1; N = 0)
2. People sometimes miss taking their medicines for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your medicine? (Y = 1; N = 0)
3. Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it? (Y = 1; N = 0)
4. When you travel or leave home, do you sometimes forget to bring along your medicine? (Y = 1; N = 0)
5. Did you take all your medicines yesterday?(Y = 0; N = 1)
6. When you feel like your symptoms are under control, do you sometimes stop taking your medicine? (Y = 1; N = 0)
7. Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan? (Y = 1; N = 0)
8. How often do you have difficulty remembering to take all your medicine? (A = 0; B–E = 1 where A. Never/rarely; B. Once in a while; C. Sometimes; D. Usually; E. All the time).

The responses to the questions about awareness of DM were in the format of Yes, No and Don't Know. Each correct answer was given a score of 'one' and each wrong answer inclusive of "don't

know" was given a score of 'zero'. The maximum possible score for the three categories were 4, 6 and 3 respectively while the minimum being zero. The categorization of awareness of DM on the basis of scores is given in the Table 1.

Adherence to medication was categorized based on patients' responses, according to the following scores: ≥1 = non- adherence; 0 = adherence.

Statistical Analysis: Interpretation and analysis of the obtained data was carried out using software Microsoft Excel 2010.Descriptive statistics was used to present the data in terms of percentages, mean ± S.D. and bar charts. Association of the demographic characteristics (gender, literacy status and occupation) of the study subjects with the awareness and the adherence scores was analysed using chi square test with $p<0.05$ taken as statistically significant.

RESULTS

A total of 100 type 2 diabetes patients attending diabetes OPD within the study period were recruited in the study. The sociodemographic characteristics of the study subjects are given in Table 2.

There was male preponderance in a ratio of 1.13:1. More than 50% of the patients were having positive family history for type 2 DM. Co-morbidities were found in more than 50% of the patients. Hypertension was the commonest followed by hypercholesterolemia.

The frequency of blood sugar level monitoring was also surveyed and it was found that majority of the patients (n=51) used to check it regularly every 15 days. 45% of the patients possessed a glucometer while the rest (55%) used to get the sugar levels checked from a lab.

% of the patients were found to undergo regular monthly follow-up visits, 30% had an irregular follow up while the rest never underwent a follow-up visit.

Regarding the behavior of the patients towards the management of their disease, other than pharmacological therapy, majority (73%) showed adherence to non-pharmacological methods, i.e. dietary restrictions and regular physical exercises. Out of the patients who performed regular physical exercise, 73.21% (n=41) used to exercise for more than 30 minutes daily.

Percentage distribution of the study subjects according to awareness score is given in Table 3.

The prevalence of adherence to antidiabetic medication according to the Morisky scale was 28% (Table 4).

Table 5 shows the association between demographic characteristics with the awareness and the adherence score. The association of gender and education status with the overall awareness score was found to be statistically significant (p<0.05). Majority (88.7%) of the males were found to have better (average + good) awareness than females. Majority (92.1%) of the graduates were found to have better awareness than others. No significant association could be established between the adherence and the demographic characteristics.

Table 2: The Socio-demographic Characteristics of study subjects (N=100)

Sociodemographic characteristics	Subjects
Male/ Female	53/47
Mean Age*(in years)	53.84 ± 10.95
Mean weight*(in kg)	65.79 ± 10.36
Rural/ Urban	15/85
Education	
Illiterate	22
Primary school(10th)	18
High school(12th)	22
Graduated	38
Occupation	
Employed	36
Unemployed	1
Self Employed	17
Housewife	32
Retired	14
Mean duration of diabetes mellitus(in yr)*	8.81 ±6.16
Positive family history	53
Co-Morbidities	
Hypertension	56
Hypercholesterolemia	18
Cardiovascular disease	11
Thyroid disease	3
Addiction	
Alcohol	25
Tobacco	26

*Mean ± S.D

Table 3: Percentage distribution of the study subjects according to awareness score

	Poor	Average	Good
Knowledge about DM	27	32	41
Complications	38	37	25
Self-Care Practices	58	28	14
Overall	28	56	16

Table 4: Prevalence of adherence to antidiabetic medication according to Morisky scale

Adherence category	Subjects
Adherent (0)	28
Non – adherent (≥1)	72

Table 5: Association of demographic characteristics with awareness and adherence scores

Demographic characteristics	Awareness			Adherence	
	Poor	Average	Good	Adherent	Non Adherent
Education					
Illiterate (n=22)	15	7	0	4	18
Primary school(n=18)	7	10	1	5	13
High school(n=22)	3	17	2	3	19
Graduated(n=38)	3	22	13*	11	27
Occupation					
Employed(n=36)	5	22	9	13	23
Unemployed(n=1)	1	0	0	0	1
Self- employed(n=17)	4	11	2	2	15
House wife(n=32)	16	15	1	8	24
Retired(n=14)	2	8	4	5	9
Gender					
Females(n=47)	22	22	3	14	33
Males(n=53)	6	34	13*	14	39

Chi-square test; *p<0.05 compared to corresponding scores in other subgroups

DISCUSSION

This KAP study was undertaken to evaluate the awareness of DM among diabetics as well as to determine their adherence to both lifestyle changes and medications.

Majority of the study participants were males (53%) though in many other studies female preponderance had been reported.[1,10] In the present study, the mean age was 53.84 ± 10.95 years. Similar mean age has been seen in studies by Khapre. al,[11] Gupta RK et. al[12] and Shah VN et al[13] which suggests that type 2 DM is most prevalent in the middle age group (45-64 years) and not elderly which is contrary to popular belief that diabetes is disease of aged people.[14]

The mean duration of diabetes in the present study was 8.81 ±6.16 years and mean body weight be 65.79 ± 10.36 kg which was similar to the study by Shah VN et al.[13]

The overall awareness in the present study was found to be average in 56% of the patients. Contrarily in a study by Vankudre AJ et al,[15] awareness was more than 60% in all the aspects of the disease. While in other studies by Khapre et al,[11] Upadhyay DK et al[16] and Sangra S et al[17] poor general awareness was found. In our study, 71% believed that high sugar intake is the cause of diabetes whereas in the study by Desai R et al 32.5% had poor knowledge on etiology of diabetes in which a portion of patients believed diabetes to be a communicable disease.[5] Our study found poor knowledge regarding complications in which maximum (49%) were unaware that uncontrolled diabetes can lead to loss of foot which is in accordance with the study done in Gambia. Regarding self-care practices, about two-third of our participants gave more importance to medications over lifestyle changes. 59% of the patients were unaware of the importance of foot care. Vankudre AJ et al found that 88.6% were well aware of the self-care practices in which majority appreciated the importance of foot care.[15] Despite maximum number of patients having high education level and employed and also average duration of DM being 8 years, still awareness among the patients regarding all the aspects has been found to be average. Possible reason behind this could be lack of exposure to diabetes health education among the population.

In the present study more than 50% of the patients used to regularly monitor blood sugar levels which was in accordance with the study by Gupta RK et al where 47.82% of the patients were getting blood sugar monitored regularly.[12]

Males and graduates had significantly better (p<0.05) awareness score in the current study. Similar findings have been observed by Vankudre AJ et al.[15]

In this study, only 28% of the patients showed adherence to antidiabetic medications which correlates with the findings of Shobana R et al.[18] Contrary findings were seen in a study by Rwegera GM et al done in Botswana which showed 58.2% adherence.[19] In our study, reasons for such low adherence could be multifactorial which may include age, information, perception and duration of disease, complexity of dosing regimen, polytherapy, psychological factors, safety, tolerability and cost. Non-adherence could also be due to adverse events associated with medications due to which patients become hesitant in continuing the therapy. The main consequence of poor adherence to medications is decreased glycemic control, leading to the known complications of diabetes. Therefore, there is a need to improve adherence which might include better patient information, education and motivation and also reducing the treatment complexity.

Now given that diabetes is an important cause of mortality and morbidity, there is a need to institute or re-inforce patient health education and public health promotion.

LIMITATIONS

One potential drawback in the current study is a single location data collection and small sample size. Similar studies in different locations are required with a larger sample size to make the results truly representative.

CONCLUSION

Diabetes mellitus is a major health challenge both epidemiologically and economically and awareness of this condition among diabetics is low in many regions of India. The present study showed poor awareness regarding complications and self-care practices in majority of the patients. Low awareness among patients affects their ability of self-management and therefore have a negative impact on the outcome. This recommends the necessity for awareness programs, patient counseling and education to improve their knowledge regarding diabetes with the emphasis on lifestyle modifications.

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