



Original Research Article

A Study on the Prevalence of Various Diabetes Mellitus Complications and Its Relation with Demographic Factors in Patients Attending Government Hospitals of Jamnagar District

Nitin Lodha¹, Sudha Yadav²

¹Tutor, ²Ex. Professor and Head,
Department of Community Medicine, M. P. Shah Govt. Medical College, Jamnagar, Gujarat, India.

Corresponding Author: Nitin Lodha,

Received: 18/06/2015

Revised: 10/07/2015

Accepted: 13/07/2015

ABSTRACT

Context: Diabetic patients, if undiagnosed or inadequately treated, develop multiple chronic complications leading to irreversible disability and death. Indians are susceptible to premature onset of DM which in turn leads to rapid progression of chronic vascular complications, incurring heavy burden on health care systems in India.

Aim: 1) to assess the prevalence of various complications of Diabetes Mellitus and 2) its association with various demographic factors

Setting and design: A hospital based cross sectional study.

Study population: Diabetes Mellitus patients attending OPD at the tertiary care hospital, and Patients attending OPD at sub-district hospital and CHCs of the Jamnagar district were included.

Period of study: One year, from January 2012 to December 2012.

Methods and material: total 400 patients were selected and interviewed by using pretested semi-structured questionnaire. The data entry and analysis were done using Microsoft Office Excel 2013 and Chi-square test used for analyzing the associations.

Results: Diabetic complications were seen in nearly half of the patients i.e. 48%. Most common complication seen was cardiovascular diseases in 14% and retinopathy 16% patients which were followed by, neuropathy 14.75%, diabetic ulcer in 9% patients, nephropathy in 7% and cerebrovascular accident in 1.75% patients. As the age of patient rise, the prevalence of complication also rises. The complications were seen more in rural patients as compared to urban patients. The complications showed a rising trend with increasing duration of diabetes mellitus. It was also high in patient with BMI >25. These associations were statistically significant.

Key words: Diabetes Mellitus, Complications.

INTRODUCTION

Diabetes mellitus (DM) is a major non-communicable disease that is becoming more prevalent, affecting more than 171 million people worldwide. The number of

people affected by DM is expected to rise to 366 million by 2030. ⁽¹⁾ The number of people with diabetes is mounting due to rapid population growth, ageing, and urbanization and increasing prevalence of

obesity and physical inactivity. ⁽²⁾ The most important aspect of diabetes is occurrence of complications that increase the cost of management. Diabetes is a costly disease not only for affected individuals and their families, but also for health system. ⁽³⁾

Diabetes is an “iceberg” disease. Although increase in both the prevalence and incidence of type 2 diabetes have occurred globally, they have been especially dramatic in societies in economic transition, in newly industrialized countries and in developing countries. Unfavourable modification of lifestyle and dietary habits that are associated with urbanization are believed to be the most important factors for the development of diabetes. Diabetic patients, if undiagnosed or inadequately treated, develop multiple chronic complications leading to irreversible disability and death. Coronary heart disease and stroke are more common in diabetics than in the general population. Microvascular complications like diabetic renal disease, diabetic retinopathy and neuropathy are serious health problems resulting in deterioration of the quality of life and premature death. Lower limb amputation is at least 10 times more common in diabetic than in non-diabetic individuals in developed countries. ⁽⁴⁾ Indians are susceptible to premature onset of DM which in turn leads to rapid progression of chronic vascular complications, incurring heavy burden on health care systems in India. ⁽⁵⁾

Present study is an attempt to assess the prevalence of various complications of DM and its association with various demographic factors in patients attending government hospitals of Jamnagar district.

MATERIALS AND METHODS

Present study was a cross sectional study. Total 400 Diabetes Mellitus patients attending OPD at the tertiary care hospital, and Patients attending OPD at sub-district

hospital and CHCs of the Jamnagar district were included in study. Out of 400, 50% study subjects (200 subjects) were selected from tertiary care hospital of study district and of remaining 50% study subjects; 25% (100 subjects) were selected from sub-district general hospital and another 25% study subjects from CHCs of study district.

Patients of diabetes attending weekly diabetic clinic held in tertiary care hospital were included in the study. On each diabetic clinic day, five patients were taken up for the study. Total forty, weekly diabetic clinic were attended for this work and thus total 200 patients of diabetes were taken up for study from tertiary care hospital. Every fifth patient was taken up for the study by applying systemic random sampling. From Subdistrict hospital and CHCs all the patients of diabetes who came to OPD at the time of visit were taken up till the sample size was completed.

The study period was one year, from January 2012 to December 2012. Data collection was done through oral questionnaire method using a pre-tested, semi-structured type of proforma.

Statistical Analysis:

The data entry and analysis were done using Microsoft Office Excel 2013 and Chi-square test used for analyzing the associations. Approval for the study was obtained from the institutional ethics committee and verbal informed consent was received from all study subjects.

RESULTS

In the present study, it was seen that complications were seen in nearly half of the patients i.e. 48% (192) while remaining 52% (208) were free from complications (Table 1). High percentage of presence of various complications in diabetic patients, further suggests poor management of diabetes and apathy towards the self-care by these patients.

From table 2, it is found that most common complication seen in this studied was cardiovascular diseases in 14% (56) and retinopathy 16% (64) patients which was followed by, neuropathy 14.75% (59), diabetic ulcer in 9% (36) patients, nephropathy in 7% (28) and cerebrovascular accident in 1.75% (7) patients. As the age of patient rise, the prevalence of complication also rises. The complications were seen more in male as compared to female, in rural patients as compared to urban patients and in lower socioeconomic class as compared to upper class. The complications showed a rising trend with increasing duration of diabetes mellitus. It was also high in patient with BMI >25, this observation indicates careless attitude of diabetic patients towards their health in general and prevention of complication of diabetes in particular.

An attempt was made to find out the correlation between the diabetes mellitus complications and various Socio-demographic factors like age and sex of patients, education status, locality, socioeconomic class, BMI and duration of diabetes. Table 3 shows this relationship. It was seen that as the age of patient increases, the prevalence of diabetic complication is also increases and it was statistically significant [$\chi^2=14.565$, $df=2$, $p=0.001$]. Similarly, the difference between urban and rural area was also statistically significant [$\chi^2=6.681$, $df=1$, $p=0.01$]. It was seen that prevalence of complication is higher in male than female, however, the difference was not statistically significant [$\chi^2=3.695$, $df=1$, $p=0.055$]. Similarly, the difference between the education level and prevalence of complication also statistically not significant [$\chi^2=0.032$, $df=2$, $p=0.984$]. These observations indicate that as the literacy has no any positive influence on prevention of complication in diabetic patients. It was seen that prevalence of complication was higher in lower socioeconomic class than upper

class, but the difference was statistically not significant [$\chi^2=0.934$, $df=1$, $p=0.334$]. It was seen that prevalence was more in patients with longer duration i.e. more than 5 year duration than in patients with less duration i.e. less than 5 year of disease and this difference was found to be highly significant statistically [$\chi^2=32.453$, $df=1$, $p<0.001$]. Correlations between BMI of patients and prevalence of diabetes, showed that it was more in patients having BMI >24.99 than patients of low BMI. This difference was found to be statistically highly significant [$\chi^2=4.112$, $DF=1$, $p=0.043$].

Table 1 Distribution of study subjects according to presence of complication

Complication	No.	%
Present	192	48
Absent	208	52
Total	400	100

Table 2 Distribution of study subjects according to presence of various complication

Complication	No. (N=400)	%
Coronary heart disease	56	14
Retinopathy	64	16
Neuropathy	59	14.75
Diabetic ulcer	36	9
Nephropathy	28	7
Cerebrovascular accident	7	1.75

DISCUSSIONS

Prevalence of complications of diabetes mellitus are varies from region to region. In this study the prevalence of diabetic complication is 48%. The common complication seen in this study were cardiovascular diseases in 14% and retinopathy 16% patients which was followed by, neuropathy 14.75%, diabetic ulcer in 9% patients, nephropathy in 7% and cerebrovascular accident in 1.75% patients. Ramachandran et al in their study observed that prevalence of retinopathy is high among the Indian type 2 diabetic subjects (23.7%). Other complications seen were; nephropathy 5.5%, neuropathy 27.5%, cardiovascular disease in 11.4%, peripheral vascular disease in 4%, cerebrovascular

accidents in 0.9% and hypertension in 38%.⁽⁶⁾ A study by Mohan et al in South India showed a prevalence of 34.1% of retinopathy.⁽⁷⁾ Gautam et al (2009) in their study reported that most common 26.2% complication present was neuropathy.⁽⁸⁾ Findings of above studies corroborate the findings of present study.

The present study showed a significant association between prevalence of complication and demographic factors like age of patients, locality, duration of disease and BMI of patients and no association with factors like sex of patient,

education and socioeconomic class of patients. The study showed a rising trend in the prevalence of diabetic complication with the advancing age of patient, duration of disease and BMI. Vaz et al in their study on Prevalence of Diabetic Complications in Rural Goa, India also observed a similar rising trend in prevalence of diabetic complication with increasing the duration of Diabetes Mellitus.⁽⁵⁾ Ramachandran et al in their study on prevalence of vascular complication of type 2 diabetes in an urban set up also observed a similar trend.⁽⁹⁾

Table 3: Relation between prevalence of diabetes complication and socio demographic variables of study subjects

Variable	Diabetes mellitus complication		Chi value	P value
	Present (%)	Absent (%)		
Age				
20-39	11(5.73)	22(10.58)	14.565	0.001
40-59	80(41.67)	115(55.29)		
>60	101(52.60)	71(34.13)		
Sex				
Male	108 (56.25)	97 (46.63)	3.695	0.055
Female	84(43.75)	111(53.37)		
Locality				
Urban	85 (44.27)	66(31.73)	6.681	0.010
Rural	107(55.73)	142(68.27)		
Education				
Illiterate	79(41.14)	86(41.35)	0.032	0.984
Up to primary	58(30.21)	64(30.77)		
More than primary	55(28.65)	58(27.88)		
Socioeconomic class				
High class (I & II)	35(18.22)	46(22.11)	0.934	0.334
Lower class (III,IV,V)	157(81.78)	162(77.89)		
Duration of diabetes				
≤ 5 years	44(22.91)	105(50.48)	32.453	<0.001
>5 years	148(77.09)	103(49.52)		
BMI				
≤ 24.99	58(30.20)	83(39.90)	4.112	0.043
>24.99	134(69.80)	125(60.10)		

CONCLUSION

Prevalence of complications of diabetes mellitus is seen in nearly half of the patients. High percentage of presence of various complications in diabetic patients, further suggest poor management of diabetes mellitus and apathy towards the self-care by these patients. The observation indicates careless attitude of diabetic patients towards their health in general and prevention of complication of diabetes in particular.

RECOMMENDATIONS

As all the complications of diabetes mellitus are preventable, prevention and control strategies should be implemented. Community awareness creation regarding diabetes and its complications should be promoted through IEC activities. Every medium of communication i.e. Television, radio, news-papers and magazines etc. should be exploited for creating awareness about diabetes and its complications and also its modes of prevention.

All the aspects relating to diabetes and its complications and its prevention should be included in health education campaigns especially in youth groups, schools and colleges and other work establishment.

REFERENCES

1. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. *Diabetes Care* 2004, 27:1047-1053.
2. Sundar Lal, Adarsh, Pankaj. *Textbook of Community Medicine*, Third edition. New Delhi: CBS publishers, 2011.
3. J. Kishore. *J. Kishore's National health programs of India, National policies and legislations related to health*, 9th edition. New Delhi: Century publications, 2011.
4. K. Park's *Textbook of Preventive and Social Medicine*, twenty-second edition. Jabalpur: Bhanot publishers, 2013.
5. Nafisa c Vaz, AM Ferreira, MS Kulkarni, Frederick S Vaz, NR Pinto. Prevalence of Diabetic Complications in Rural Goa, India. *Indian journal of community medicine*. 2011;36(4):283-286.
6. Ramachandran A, Snehalatha C, Satyavani K, Latha E, Sasikala R, Vijay V. Prevalence of vascular complications and their risk factors in type 2 diabetes. *J Assoc Physician India*. 1999; 47(12): 1152– 1156.
7. Rema M, Ponnaiya M, Mohan V. Prevalence of retinopathy in non insulin dependent diabetes mellitus at a diabetes centre in southern India. *Diabetes Res Clin Prac*. 1996; 34:29–36.
8. Yogesh Gautam, A K Sharma, A K Agrawal, MK Bhatnagar, Roochika Ranjan Trehan. A Cross-sectional study of QOL of Diabetic Patients at Tertiary care hospital in Delhi. *Indian journal of community medicine*. 2009;34(4):346-350.
9. Ramachandran A, Snehalatha C, Vijay V, King H. Impact of poverty on the prevalence of diabetes and its complications in urban southern India. *Diabet Med* 2002;19:130-5.

How to cite this article: Lodha N, Yadav S. A study on the prevalence of various diabetes mellitus complications and its relation with demographic factors in patients attending government hospitals of Jamnagar district. *Int J Health Sci Res*. 2015; 5(8):19-23.
