

Awareness about Diabetes Mellitus and it's Ocular Manifestations in Indian Population

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Abstract

Context: Awareness about diabetes mellitus and it's ocular manifestations. *Aim:* To know the awareness about diabetes mellitus, it's complications and ocular manifestations in Indian population. *Settings and design:* Survey done through Questionnaire in diabetic patients attending health camps and OPD in medical college. *Methods & material:* Total 1114 diabetic patients, 566 males and 548 females, were included in this survey. The awareness about diabetes mellitus, it's complications, association with systemic diseases, role of family history, ocular manifestations, overall attitude and approach towards treatment, awareness about reversible and irreversible blindness was evaluated through questionnaire. *Statistical analysis:* Statistical software SPSS version 20 was used and all the data entered in excel sheet and interpreted. *Results:* Overall awareness about involvement of different organs was not good. Positive response received as follows: eyes (27.6%), kidney (35.9%), heart (28%), foot (33.8%), brain (22.3%), gums and teeth (17.2%), skin (19.4%) and nerves (22.3%). It was statistically significant. Poor orientation about diabetic retinopathy, it's treatment and not consulting ophthalmologist for treatment was noticed though not significant statistically. *Conclusion:* Poor awareness about diabetes mellitus, it's association with systemic diseases, ocular manifestations and various complications is the root cause of many life threatening complications. Timely intervention with the help of experts can save many lives.

Keywords: Awareness; Diabetic Retinopathy; International Diabetic Federation; Fundus Fluorescein Angiography (FFA); & Nephropathy.

Introduction

India is world's second largest capital for diabetes mellitus (DM). Rapid socioeconomic development, changes in life style and improper eating habits are the probable reasons. Total 425 million diabetic people in the world and 82 million people are in South East Asia. India is one of the 6 countries of the International Diabetic Federation South East Asia (IDFSEA) region [19]. In 2017, 72 million cases were reported in India and a figure of 151 million is expected in 2045. Fifty % of them remain undiagnosed and 4.6 million deaths occur every year [4,19].

Somewhere lack of awareness is a major problem apart from cost of treatment. Surveys done so far are restricted to small areas, not done at state or national level. Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB study) and study of prevalence of diabetic retinopathy (DR) done by AIOS are larger group studies [1,3].

In this survey, we tried to assess the awareness of patients about diabetes mellitus, then it's association with systemic diseases, ocular manifestations and patients approach and attitude toward treatment. So all these surveys may have global relevance and can improve the compliance towards treatment and so can save many lives [20].

Methods and Material

Total 1114 diabetic patients were included in this study attending health camps and OPD in medical college. Protocol was approved by institutional ethics committee. Questionnaire was given to them and on the basis of answered questions, analysis

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was done. Record was kept about unanswered questions also. Apart from personal profile different types of questions asked in questionnaire are as follows:

1. Since how many years you are suffering from diabetes?
2. Are your family members are also suffering from the problem? Yes or No
3. Are you aware about complications of diabetes mellitus? Yes or No
4. Which organs are affected? Eyes/ kidney/ heart/ foot brain/ teeth& gums/skin/brain/ nerves
5. Do you take oral tablets or insulin?
6. How many times in a year you consult your physician?
7. Are you suffering from any other disease? High BP/ Thyroid disorder/Obesity/Heart disease
8. Are you suffering from any eye problems like diminished vision? Yes or No
9. Do you know that it can lead to blindness? Yes or No
10. Do you know that at least once in a year eye check up is required? Yes or No
11. Are you made aware about diabetic retinopathy by your Doctor? Yes or No
12. How you got the knowledge about diabetic retinopathy? News paper/ Magazine/ Physician/Internet or other patients
13. Are you suffering from any other eye disease? Yes or No
14. Have you ever gone through fluorescein angiography? Yes or No
15. Have you gone for laser treatment? Yes or No
16. Do you know any patient who is blind due to diabetes mellitus? Yes or No
17. Are you aware that blindness due to diabetes is preventable? Yes or No

18. Do you know that total blindness cannot be cured? Yes or No

Statistical Analysis

In present study questionnaire was given to the patient and all data was entered in excel sheet. Statistical analysis was done by using statistical software SPSS version 20, test of significance applied whenever applicable. p value <.05 considered to be significant.

Results

All the patients were known diabetic patients and total 1114 patients were included. There were 566 males and 548 females. Only 59.6% knew that diabetes can have complications despite the fact that they all were diabetic patients. Being a multisystem disorder, awareness towards involvement of different organs as mentioned by patient is as follows: Eyes (27.6%), kidney (35.9%), heart (28%), foot (33.8%), brain (22.3%), gums and teeth (17.2%), skin (19.4%) and nerves (22.3%). (Table 2). It was statistically significant.

Along with diabetes 30.2% were having hypertension, 15.8 % had thyroid disease, 22.3% had obesity, 12.2% had cardiac disease and 51 % had positive family history (Table 3).

Patients taking insulin were 26.3% while 73.97% patients were on oral treatment (Table 4 A). 50.08% patients consulted their physician less than once in a year, 36.6% patients consulted once in a year and only 13.28% patients consulted their physician more than once in a year (Table 4 B).

Only 53.3% patients had symptoms related to eyes, 32.9% consulted doctor for counselling of DR while 64.9% didn't consult a doctor. Most of the information about diabetic retinopathy (DR) was gained from magazine (27.3%), from newspaper (19.4%), internet (9.3%) and through patients in 10.1% patients. Total 14.4% patient had DR,

Table 1: Demographic Profile

	Male	Female	Total
No.of Patients	566 (50.8%)	548(49.2%)	1114
Age group			
20 - 30 years	20	18	38
31 - 40 years	58	56	114
41 - 50 years	178	172	350
51 - 60 years	152	147	299
61- 70 years	158	155	313
Mean age	47.502	47.628	47.564

Difference 0.126, Standard error 0.661, 95% CI, -1.1706 to 1.4226, t-statistic .191, p = 0.8488, DF=11123

Table 2: Awareness about involvement of different organs

S No	Involvement of organs	Yes	No	Not answered
1	Awareness of complications of DM	664 (59.6%)	202(18.1%)	248(22.3%)
2	Ocular involvement	307(27.6%)	790(70.9%)	17(1.5%)
3	kidney	400(35.9%)	690(61.9%)	24(2.2%)
4	Heart involvement	312(28%)	770(69.1%)	32(2.9%)
5	Foot	376(33.8%)	714(64.1%)	24(2.2%)
6	Brain	248(22.3%)	842(75.6%)	24(2.2%)
7	Gums and teeth	192(17.2%)	890(79.9%)	32(2.9%)
8	Skin	216(19.4%)	858(77%)	40(3.6%)
9	Nerves	248(22.3%)	818(73.4%)	48(4.3%)

chi-square = 0.177E+04 degrees of freedom = 16 probability = 0.000

This means there was statistically significant difference in involvement of different organs as per participant's awareness

Table 3: Showing Associated diseases

S No		Yes	No	Not answered
1	Associated Hypertension	336(30.2%)	778(69.8%)	Nil
2	Thyroid disease	176(15.8%)	898(80.6%)	40(3.6%)
3	Obesity	248(22.3%)	826(74.1%)	40(3.6%)
4	Cardiac Disease	136(12.2%)	954(85.6%)	24(2.2%)
5	Family history	568(51%)	538(48.3%)	8(0.7%)

Table 4: Treatment schedule

Treatment given	
On Insulin	290(26.3%)
On oral drugs	824(73.97%)
Frequency of visit to physician	
< Once in a year	558(50.08%)
Once a year	408(36.6%)
> Once in a year	148(13.28%)

Table 5: Details related to ocular involvement

S No	objective	Yes	No	Not answered
1	Having eye symptoms	594(53.3%)	512(46%)	08(0.7%)
2	Awareness about possibility of diabetic retinopathy	396(35.5%)	710(63.7%)	8(0.7%)
3	Awareness about DR screening for early detection	59(5.3%)	1047(94%)	8(0.7%)
4	Doctor counselling for DR	367(32.9%)	723(64.9%)	24(2.2%)
5	Information by Magazine	304(27.3%)	762(68.4%)	48(4.3%)
6	By news paper	216(19.4%)	858(77%)	40(3.6%)
7	By Doctor	0	0	0
8	Internet	104(9.3%)	962(86.4%)	48(4.3%)
9	Through other patients	112(10.1%)	946(84.9%)	56(5.6%)
10	Visiting eye doctor	116(10.4%)		48(4.3%)
11	optometrist	950(85.3%)		
12	Do you have DR	160(14.4%)	472(42.4%)	482(43.3%)
13	Underwent FFA	168(15.1%)	898(80.6%)	48(4.3%)
14	Underwent laser Treatment	136(12.2%)	970(87.1%)	8(0.7%)
15	Do you know any patient with blindness due to DR	288(25.9%)	818(73.4%)	8(0.7%)
16	Do you know DR is treatable in early stage	259(23.2%)	815(73.2%)	40(3.6%)
17	DR Is irreversible	98(8.8%)	408(36.6%)	608(54.57%)

80.65% patients didn't go for fundus fluorescein angiography (FFA) and 87.1% didn't go for laser

treatment. Only 8.8 % patients were aware that DR is irreversible and 23.2% knew that it is treatable in early stage. (Table 5)

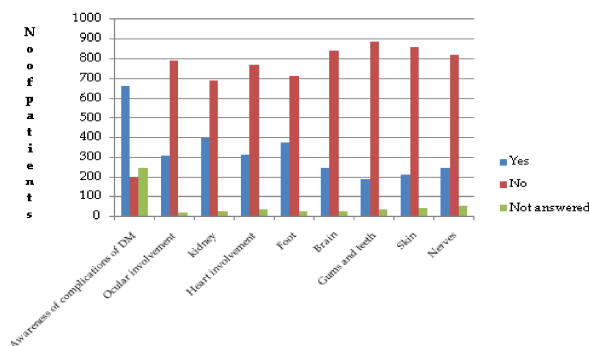


Fig. 1: Awareness about involvement of different organs

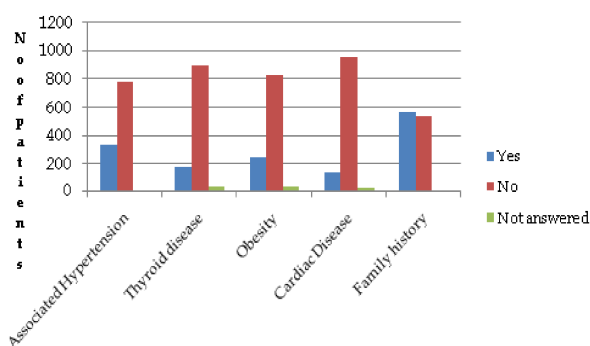


Fig. 2: Showing associated diseases

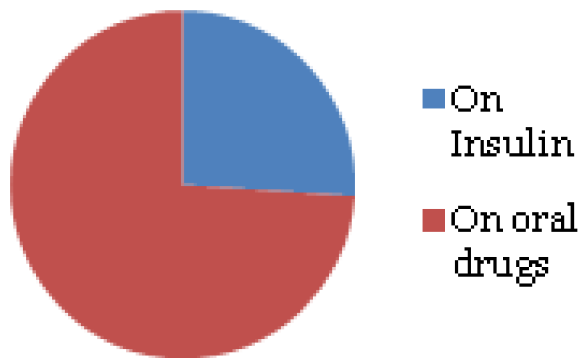


Fig. 3A: Pie chart to show percentage of patients on oral treatment & insulin

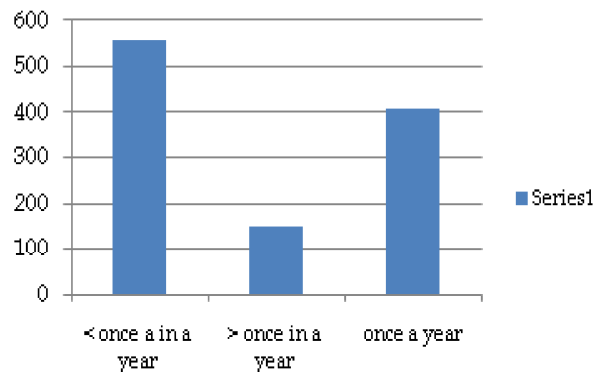


Fig. 3B: Showing frequency of visit to a doctor

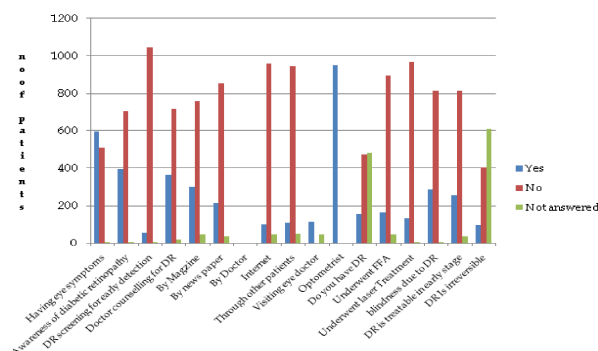


Fig. 4: Details related to ocular involvement

Discussion

This study was performed in city of Bhopal on diabetic patients coming to OPD in campus of medical college and was not restricted to any particular socioeconomic group and irrespective of any educational background survey was done in an unbiased manner. All these patients were known diabetics.

We found poor awareness amongst females. Secondly despite the fact they all were known diabetics, only 59.6% patients were aware about the complications of diabetes mellitus and only 50.08% patients consulted a doctor less than once in a year so it should be more frequent.

Association of diabetes mellitus with other systemic diseases was not found statistically significant. Family history was found in 51% patients. Being a multi-organ disease, awareness needs to be created about microvascular complications such as DR or nephropathy, macrovascular complications like strokes, cardiac arrest, then neuropathies, diabetic foot, involvement of skin etc.

Duration of diabetes influences the prevalence of DR in patients [6,15]. In the Wisconsin epidemiological study, prevalence of DR varied from 28.8% for duration of <5 years to 77.8% for duration of 15 years or more [9]. Apart from this high systolic blood pressure, higher glycosylated Hb are also affecting the prevalence of diabetic retinopathy [5]. Advancing age affects BDR more than PDR.

In our survey only 27.6% patients were aware about ocular involvement and 70.9% were not aware. Most of the patient received information through news paper and magazine. Something very alarming that 85.35% consulted the optometrist and only 10.41% an Ophthalmologist. Forty three% didn't answer about DR, so there is a likely possibility that some of them might be suffering from the disease but not screened properly.

Secondly all the patients whether having DR or not, question comes that how many of them knew about lasers and FFA or in early stage it is

preventable or DR can lead to blindness [8,12,13]. Only 35.55% were aware about possibility of DR and 5.31% knew the importance of screening for DR. Only 23.2% patients were aware that DR can be treated in early stage and 73.2% were not aware, 25.9% patients were aware that diabetic retinopathy can lead to blindness and 73.4% were not aware.

Yearly fundus examination and preventive treatment are suggested by Diabetic retinopathy Study group (DRS group) and Early Treatment Diabetic Retinopathy Study Research Group (ETDRS) but poorly followed [2,17]. In developing country like India cost may be the reason but at the same time some of the richest countries also face this situation [18]. Iceland set an ideal example. In 25 years blindness from DR has decreased from 2.4% to 0.5% just by systematic screening [16].

It doesn't require new inventions in diagnosis or treatment as far as prevention of blindness from DR is concerned and there is nothing short on the part of technology. It's mainly the Awareness about the disease.

Most of the surveys were restricted to small areas not done at national or state level. A study done by Indian Council of Medical Research India Diabetes Study (ICMR-INDIAB study), only 4 regions were covered in it's 1st phase (November 2008 to April 2010) and later phase it included remaining states. Another attempt by AIOS to know the prevalence of DR, also involved a larger area. Lack of awareness was a major drawback [1,3,11].

The different government projects like National programme for control of blindness (NPCB), The National Program for Control of Diabetes, Cardiovascular Disease and Stroke, diabetes educators, National Diabetes Educator's Program (NDEP), Certificate Course in Evidence Based Diabetes Management (CCEBDM) are not only able to create awareness at national level, helped the organisations in treatment part also [7,10,14].

So in nutshell, there is a strong need to generate awareness through experts about symptoms, factors affecting progression of diabetic retinopathy, at what stage blindness is reversible and how routine retinal checkups, good glycemic control, FFA and lasers can help in preventing blindness.

Conclusion

There is a strong need for comprehensive diabetes education through awareness programs and if done at larger scale may have a global relevance also as this information can help other developing countries too, might be facing similar problems.

Good glycemic control, knowledge about glycosylated Hb, eating habits, life style problems and encouraging physical activity can check many complications. Being a multisystem disorder, knowledge about involvement of each and every organ is essential. As far as blindness from retinopathy is concerned, awareness about use of lasers, FFA and yearly fundus examination can save many eyes.

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Key Message: It's lack of awareness not always lack of technology making people blind or causing disastrous complications in diabetes mellitus.

Conflict of Interest: Nil

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