

Knowledge Regarding Diabetic Retinopathy in General Practitioners, Interns and Residents

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Abstract: ***Purpose:** To ascertain the awareness level and basic understanding of DR in various health care providers. **Method:** A questionnaire was prepared and answered by 240 subjects {80 each in the groups} The answers were compared from each group and Graded into 3 groups (1st- 0 to 4 correct answers, 2nd- 5 to 7 correct answers, 3rd- 8 to 10 correct answers) and analysis was done using SPSS software. **Results** By comparing data among groups, it was found that Among Interns and General practitioners (GP's), there was a statistical difference in the knowledge (P=0.023). Among Interns and Residents, no significant difference was found (P=0.453) Among Residents and GP's, no significant difference was found (P=0.068) According to Grading, it revealed that 41.25 % of GP's were in Grade I, 53.75 % in Grade II and 5 % in grade III. 25 % of Residents were in Grade I, 65 % in Grade II, and remaining 10 % were in Grade III. Whereas 26.5 % of internees were in Grade I, 57.5 % of Internees were in Grade II and remaining 16.25 % were in Grade III. **Conclusion:** Our study concludes that GP's have poorer knowledge regarding DR. In a country where GP's are the first line of contact with patients diagnosed with Diabetes, the lack of proper attitude towards treating diabetics can be one of the barriers for proper diabetic management. It is hoped that this study will spread across a message across the medical community regarding poor knowledge of DR prevailing in health care providers and hopefully positive action is taken to change it.*

Keywords: Diabetic retinopathy, Ophthalmology, Diabetes

1. Introduction

India leads the world with largest number of diabetic subjects earning the dubious distinction of being termed the "diabetes capital of the world". Diabetes and diabetes related blindness are reaching alarming proportions in the developing countries. The World Health Organization (WHO) has predicted that The number of individuals with diabetes has increased from 19 million in 1995 to 40 million currently which will eventually increase up to 80 million in 2030 in India, which will account for the highest in the world.^[1] According to the WHO-NPCB surveys, over the last 20 years diabetes has emerged as a common cause of ocular morbidity and blindness in India, becoming number 6 (2001-02 survey report) from 17 (1986-89 survey report) among the list of causes for blindness in India.^[1] About one fifth of individuals with diabetes are projected to have diabetic retinopathy^[2] and it is estimated that one third of the diabetic population has never undergone an ocular examination.^[3] Since diabetic retinopathy is asymptomatic in its early stages, substantial barriers exist to screening and achieving regular eye examinations for people. Thus a main challenge to the health care providers in India is to spread awareness and knowledge about diabetic retinopathy and thus reduce the social and economic burden of the disease.

In India, General practitioners are physicians of first contact to the patients in majority of rural and semi urban area of India. In addition to disease management general practitioners are a critical source for health information and can play a significant role in preventing vision loss and blindness by early detection, proper counseling and timely referral to ophthalmologist. Interns are going to be future practitioners and are already in contact with the patients

suffering from diabetes regularly. While Residents working in various departments have constant exposure to diabetic patients, they can help in timely screening for the condition. Hence assessing over all knowledge and awareness of the people on the various levels of health care system regarding the knowledge of Diabetic Retinopathy will thereby increase the chances of suspecting the disease and decreasing the chances of the complication by timely intervention. In this study the knowledge of the interns, residents and General Practitioners regarding basics of Diabetic Retinopathy was assessed.

2. Subjects and Methods

A descriptive cross-sectional study was conducted with a self-structured, validated questionnaire about knowledge related to Diabetic retinopathy in a tertiary care teaching hospital situated in the rural area of western province of India. All the investigators took part in framing the questions. The questionnaire was checked for face validity, construct validity, content validity, and criterion validity. The study was conducted amongst interns, resident doctors (post graduate students) and general practitioners practicing in radius of 15 kilometers of the main hospital. The questionnaire was regarding Diabetic retinopathy, its signs and symptoms of the condition, as well as treatment, management and follow up protocols. The study was conducted between September 2017 and November 2017 after receiving the approval from the institutional ethics committee.

The interns and residents were given separate questionnaire in small group (3 to 5 candidates) by one of the investigators; the forms were collected immediately after

filling the response. Private practitioners who participated in the study were visited personally; questionnaire and their answer forms after receiving their response were collected on the same visit.

All the participants were selected randomly. The resident doctors of ophthalmology department were excluded from the study to avoid any bias. Each study population had sample size of 80. The questionnaire form contains ten questions, for question one and ten, the investigator directly asked the questions to participants and their responses were documented. For the rest of the questions the participants filled up the form. For each correct answer one point was given and total score was given out of 10 to each participant in all the groups. All the participants were divided in three groups. First group included the subjects who scored four or less, second group included the subjects who scored points 5 to 7 and the third group included the subjects who scored above 7 points. 240 response sheets for 240 participants were tabulated further to deduce the observations in a comprehensive manner.

Questionnaire for Diabetic Retinopathy

Diabetic retinopathy

1) Understanding of the condition in brief
 Yes No

2) What are the ocular manifestations of the disease?

3) Is DR related with the duration of the disease?
 Yes No

4) Is DR related with the control of the disease?
 Yes No

5) Is the vision always affected in DR?
 Yes No
 if yes, what are the conditions? (At least two)

6) When is a diabetic patient referred to an ophthalmologist for evaluation for the first time?
 Known not known

7) Is DR a reversible condition?
 Yes No

8) If yes, up to which stage
 Known not known

9) What are the treatment modalities available?
 Known not known

10) When should be the follow up visit in a case of DR?
 Known not known

3. Results

Total of 240 participants were taken as subjects. The mean age of the study group of interns it was 23+- 1.3 years, resident doctors was 26+-2.5 years and the general practitioners the mean age was 46+- 8.8 years.

Table 1: Showing different questions from the questionnaire and the percentage of subjects from each group who could answer them correctly

	Interns Number (%)	GPS Number (%)	Resident Doctors Number (%)	Average Number (%)
Understanding disease	70(87.5)	50(62.5)	75(93.75)	65(81.25)
Ocular manifestations	58(72.5)	43(53.75)	63(78.78)	54.66(68.3)
Duration of DM and DR	73(91.25)	37(46.25)	71(88.75)	60.33(75.41)
Control of DM and DR	69(86.25)	32(40)	62(77.5)	54.33(67.91)
Conditions affecting vision in DR	52(65)	40(50)	48(60)	46.66(58.75)
First evaluation of DR	57(71.25)	38(47.5)	46(57.5)	47(58.75)
Reversible condition?	53(66.25)	32(40)	52(65)	45.66(57.08)
Stage until which DR is reversible	49(61.25)	29(36.25)	41(51.25)	39.66(49.58)
Treatment modalities	60(75)	30(37.5)	37(46.25)	42.33(52.91)
Follow up visits	44(55)	18(22.5)	32(40)	31.33(39.16)

The first five questions which were about the knowledge of the disease were known to most of the study population. 87.5 % of interns (n=70), 93.5% of residents (n=75), 62.5% of general practitioners (n=50) were aware about the condition in brief.

Ocular manifestation of the diseases was correctly answered by 72.5% of interns (n=58), 78.75% of residents (n=63) and 53.75% of general practitioners (n=43).

The co-relation of DR with duration and control of the disease consisted of the question no 3 and 4. In the study group of interns, 91.25% (n=73) and 86.25 % (n=69) of the study population could answer these questions correctly. In the group of residents these data were 88.75 % (n=71) and

77.50 % (n=62) respectively. In the general practitioners the correct answers were from 46.25 % (n=37) and 40% (n=32) of the total study population.

Conditions effecting vision in Diabetic retinopathy includes Diabetic macular edema, vitreous hemorrhage etc. 65 % (n=52) interns, 60% (n=48) resident doctors and 50% (n=40) general practitioners knew about this.

Regarding the knowledge of evaluation of the condition and when an ophthalmologist should be referred for the first time only 71.25% (n=57) of interns, 57.5% (n=46) of resident doctors and 47.5(n=38) % of general practitioners knew the correct answer.

Knowledge regarding the reversibility of DR and the stages till which it is reversible was known to 66.25% (n=53) and 61.25% (n=49) of interns, 57.5% (n=46) and 51.25% (n=41) of resident doctors, 47.5% (n=38) and 36.25% (n=29) of general practitioners respectively.

Timely treatment of the condition can prevent the visual loss. The type of treatment modalities available currently were known to 75% (n=60) of interns, 46.25% (n=37) of resident doctors and 37.5% (n=30) of general practitioners.

Regular follow up is important to know the progression of the condition and to take timely intervention if needed. Knowledge regarding Follow up in a case of Diabetes Retinopathy was known to 55% (n=44) of interns, 40% (n=32) of resident doctors, 22.5% (n=18) of general practitioners.

Table 2: Comparison in knowledge about Diabetic retinopathy amongst the three study groups

Group	Internees	Residents	General Practitioners	Total
I	21(26.25%)	20(25%)	33(41.25%)	74
II	46(57.5%)	52(65%)	43(53.75%)	141
III	13(16.25%)	8(10%)	4(5%)	25
Total	80	80	80	240

Chi square 10.0169
Cramer's V 0.1445
p value 0.04

As described in methodology, the participants were distributed in three groups as per their score for answers given. On assessing association between the scored marks and category of study participant, it was found that there was statistically significant difference (p value < 0.04) upon the category of study participants (viz. intern, resident or general practitioner). Interns were better in their overall performance as compared to other two counterparts. Out of total 80 participants in interns group, 16.25% were scored better and included in group III.

Table 3: Comparison in knowledge about Diabetic retinopathy between Interns and General Practitioners

Group	Internees	General Practitioners	Total
I	21(26.25%)	33(41.25%)	54
II	46(57.5%)	43(53.75%)	89
III	13(16.25%)	4(5%)	17
Total	80	80	160

Chi square 7.5325
Cramer's V 0.217
p value 0.023

Table 6: Association between category of study participants (Internees Vs General Practitioners Vs Residents) and their individual question wise knowledge about Diabetic retinopathy

Q No.	Answer	Internees	General Practitioners	Residents	Total	Chi Square	Cramer's V	P value
1	Correct	70	50	75	195	28.71	0.3459	<0.001
	Wrong	10	30	5	45			
	Total	80	80	80	240			
2	Correct	58	43	63	164	12.51	0.2284	0.002
	Wrong	22	37	17	76			
	Total	80	80	80	240			
3	Correct	73	36	71	180	57.7333	0.4905	<0.001
	Wrong	7	44	9	60			
	Total	80	80	80	240			
4	Correct	69	32	62	163	44.3248	0.4298	<0.001
	Wrong	11	48	18	77			
	Total	80	80	80	240			

Table 3 shows comparison between overall knowledge among Interns Vs. General Practitioners regarding their knowledge about Diabetic retinopathy. It was revealed that there was a statistical significant difference (p value 0.023) between knowledge related to Diabetic retinopathy among Internees and General Practitioners.

Table 4: Comparison in knowledge about Diabetic retinopathy between Interns and Residents

Group	Internees	Residents	Total
I	21(26.25%)	20(25%)	74
II	46(57.5%)	52(65%)	141
III	13(16.25%)	8(10%)	25
Total	80	80	240

Chi square 1.5822
Cramer's V 0.0994
p value 0.453

It can be observed from Table 4 that there was no statistical significant difference (p value 0.453) between knowledge related to DR among Internees and Residents. About 90% of the residents were included in Group I and II where as 83.75% of the internees were included in Group I and II.

Table 5: Comparison in knowledge about Diabetic retinopathy between Residents and General Practitioners

Group	Residents	General Practitioners	Total
I	20(25%)	33(41.25%)	53
II	52(65%)	43(53.75%)	95
III	8(10%)	4(5%)	12
Total	80	80	160

Chi square 5.3746
Cramer's V 0.1833
p value 0.068

Table 5 shows comparison between overall knowledge among General Practitioners Vs Residents regarding their knowledge about DR. It was revealed that there was no statistical significant difference (p value 0.068) between knowledge related to diabetic retinopathy among Residents and General Practitioners. 95% of General Practitioners were included in group I & Group II due their relative low score while around 90% were lodged in the same counterpart and 10% of residents received comparatively better score and kept in group III.

5	Correct	52	40	48	140	3.84	0.1265	0.147
	Wrong	28	40	32	100			
	Total	80	80	80	240			
6	Correct	57	38	46	141	9.3875	0.1978	0.009
	Wrong	23	42	34	99			
	Total	80	80	80	240			
7	Correct	53	32	52	137	14.3207	0.2443	0.001
	Wrong	27	48	28	103			
	Total	80	80	80	240			
8	Correct	49	29	41	119	10.134	0.2055	0.006
	Wrong	31	51	39	121			
	Total	80	80	80	240			
9	Correct	60	30	37	127	24.7174	0.3209	<0.001
	Wrong	20	50	43	113			
	Total	80	80	80	240			
10	Correct	44	18	32	94	17.7674	0.2721	<0.001
	Wrong	36	62	48	146			
	Total	80	80	80	240			

As discussed in methodology, out of total 10 questions asked, Question 1 was regarding General Knowledge, Question 2,3, 4,5,6 and 7 assessed the knowledge of participants about DR and question 9 and 10 for prognosis and for follow up. It can be revealed from Table 5 that there was statistical significant difference among all three categories of study participants in terms of their General Knowledge related to diabetic retinopathy except in Q no 5 which tested knowledge regarding conditions affected visual acuity in DR.

4. Discussion

Diabetic retinopathy constitutes 4.8 % of the global cause for blindness with reported prevalence in India from 7.3 % to 25%. Diabetic retinopathy being a silent disease, early detection and timely intervention are important for its management.^[3] The main objective of this study was to ascertain the awareness level and basic understanding of DR in various health care providers.

It was found in our study that a majority of the General Practitioners (GPs) in the study lack proper knowledge regarding diabetic retinopathy in areas like the early symptoms of diabetic retinopathy, when the first ophthalmic examination is to be conducted and follow up visits to the ophthalmologist. In a country where GPs might be physicians of first contact for many patients suffering from diabetic retinopathy, their lack of sufficient knowledge towards treating diabetic patients might be one of the barriers for proper management. Almost 52.5 % general practitioners lack the knowledge of when a patient suffering from diabetes should be referred to an Ophthalmologist, thus increasing the burden of the disease. Comparing it with data from a study done in Sri Lanka, an annual fundoscopic examination for diabetic retinopathy was carried out by majority of the GPs (75.2%).⁽⁴⁾

The present study showed that amongst the three tested groups interns showed the best knowledge regarding diabetic retinopathy. The reason for having better knowledge can be partly attributed to the PRE-PG preparation and also that the knowledge of DR is imparted in Final year Part I (1.5 years ago). As a study done in Saudi Arabia states that almost all of the students in this study

strongly agreed that all diabetic patients must be referred to ophthalmologist for routine ophthalmological examination for the detection of diabetic retinopathy^[5]

Overall performance of residents was better as compared to GPs but their knowledge was not at par with interns. This suggests a possibility of degradation of knowledge about diabetic retinopathy. The residents encounter patients with diabetes in every clinical setting and thus they need to understand the value of early screening in patients with diabetic retinopathy and early symptoms of the same so as to help in decreasing the burden of disease.

5. Conclusion

Our study concludes that residents and general practitioners lack sufficient knowledge regarding diabetic retinopathy. Their lack of sufficient knowledge towards treating diabetic retinopathy could be one of the barriers for timely intervention if needed.

It is hoped that this study may bring to light to the concerned authorities that this preventable cause of blindness can be curtailed with attending compulsory regular CME's about diabetic retinopathy which would help in creating awareness in the general practitioners and residents.

6. Limitations

- The sample size for this study was small.
- The study was conducted in Western province of our country which just represents a part of our country and hence results cannot be predicted for entire country on its basis.

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