

Delayed follow-up in patients with diabetic retinopathy in South India: Social factors and impact on disease progression

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Purpose: To identify social factors associated with delayed follow-up in South Indian patients with diabetic retinopathy (DR) and to study DR progression during the delayed follow-up period. **Materials and Methods:** In this cross-sectional study, 500 consecutive patients with DR returning after greater than twice the advised follow-up period were identified from a tertiary referral center in South India. A previously validated 19-item questionnaire was administered to study patients to assess causes for the follow-up delay. Patient demographics, DR status, and treatment plan were recorded at the study visit and the visit immediately before the delay. The eye with the most severe disease was included in the analysis. **Results:** Complete data were available for 491 (98.2%) patients. Among these, 248 (50.5%) cited “my eyes were okay at the time,” 201 (41.0%) cited “no attender to accompany me,” and 190 (38.6%) cited “financial cost” as causes of the follow-up delay. Those with vision-threatening DR (VTDR, $n = 233$) predominantly reported “financial cost” (47% vs. 32%, $P = 0.001$), whereas those with non-VTDR more frequently reported “my eyes were okay at the time” (58% vs. 42%, $P = 0.001$). Evidence of disease progression from non-VTDR to VTDR was seen in 67 (26%) patients. Almost 1/3rd (29%) of patients who were previously advised regular examination required additional intervention. **Conclusion:** Many patient-level factors affect poor compliance with follow-up in DR, and these factors vary by disease severity. Targeting these barriers to care through patient education and clinic procedures may promote timely follow-up and better outcomes in these patients.

Key words: Compliance, delayed follow-up, diabetes, diabetic retinopathy, South India

Diabetic retinopathy (DR) is a chronic disorder of the microvasculature of the retina,^[1] affecting roughly 93 million patients worldwide.^[2] Although the sequelae of untreated DR can be debilitating, repeated studies have shown that timely treatment can significantly reduce visual loss in patients with DR.^[3,4] Despite this, patient compliance with timely follow-up remains a significant barrier to prevent severe vision loss in the diabetic population.

DR is expected to become an increasingly common cause for morbidity in the developing world over the coming decades. There has been a well-documented rise in the rates of diabetes in the developing world, with India's prevalence expected to increase 3-fold by the year 2025.^[5,6] Population-based studies in South India have demonstrated rates of DR to be 12.2%–18.0% within the urban diabetic population,^[7–11] slightly lower than rates in the West but likely to be offset by the sharp rise in diabetes prevalence in India.^[12] The overall prevalence rates of DR in India have been seen to vary between 3.5% in urban populations^[7] and approximately 1.1% in rural populations.^[13]

A number of studies have investigated causes for lapses in follow-up in the medical and surgical settings, citing transportation and financial difficulties as common patient-level factors.^[14–16] In the ophthalmological setting,

follow-up in glaucoma has been widely studied in both the developing^[17] and developed^[18] world. A study in South Indian glaucoma patients identified major barriers being the belief that there was no problem with one's eyes and the lack of an escort,^[17] whereas a similar study in a Western population cited financial difficulties, doctor-patient miscommunication, and their condition being “not serious enough” to warrant follow-up.^[18] Interestingly, a study comparing ophthalmologic follow-up rates in patients with diabetes and glaucoma found lower compliance in diabetes compared with glaucoma^[19] although the causes were not explored. Diabetes itself is a known risk factor for appointment noncompliance in the medical setting.^[20,21]

Early detection of DR and prevention of visual loss depend on patients reporting to clinic in a timely manner. Understanding the local factors that contribute to low compliance rates will allow the development of policies and interventions to increase visit compliance and promote timely intervention.^[22] We performed this study to understand the factors associated with delayed follow-up in a South Indian population and to assess the progression of disease that occurs during this delay.

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Materials and Methods

This study was conducted in the retina clinic of a tertiary eye care hospital in South India over a 6-month period (June to December 2014). The study protocol was approved by our Institutional Review Board and Ethics Committee and adhered to the tenets of the Declaration of Helsinki. Informed consent was obtained from all patients. Patients with diabetes with or without previously diagnosed DR returning for follow-up after a delay were deemed eligible for the study. A delay was defined as greater than twice that of the recommended follow-up period and was calculated as the time interval (in months) between the recommended follow-up date and the eventual date of presentation. Patients of any age, gender, stage of DR, and those advised to return for either routine follow-up, investigations (angiography, optical coherence tomography, etc.), or interventions (laser photocoagulation, intravitreal injection, or surgery) were included in the study. Patients with retinal pathology in addition to DR (coexistent retinal vein occlusion, macular degeneration, etc.) were excluded from the study.

After obtaining informed consent, a standardized questionnaire was administered to each study participant. The questionnaire used previously by our group to study compliance rates in glaucoma follow-up^[17] was modified in-house for this study. In the initial phase of questionnaire modification, patients returning for follow-up after a delay were asked open-ended questions about the reasons for the delay. These responses, along with input from key members of the patient care team including physicians, nurses, counselors, and patient care coordinators, were compiled to create a modified questionnaire. This was administered to a pilot group of 21 patients returning after a delay in follow-up for questionnaire validation. Additional changes were made based on this pilot and were incorporated into the final questionnaire administered to the study participants.

The questionnaire consisted of three sections. Section A recorded baseline demographics such as age, gender, marital status, residence (urban vs. rural), education, family structure (nuclear vs. joint family), occupation, income, and insurance status. Section B included clinical findings from the patients' previous and current visit. All patients were examined by one of four fellowship-trained retina specialists. The details of the previous visit were recorded from available medical records, including previous intervention in the form of laser (panretinal photocoagulation or macular), intravitreal injection (anti-vascular endothelial growth factor [VEGF] or steroids), or vitreoretinal surgery for DR. Ophthalmic status was noted at the time of patient recruitment, including best-corrected visual acuity (BCVA), coexisting ocular conditions such as cataract, comprehensive slit lamp, and dilated fundus examination for staging of DR severity based on the Early Treatment Diabetic Retinopathy Study (ETDRS) criteria. Vision-threatening DR (VTDR) was defined as the presence of severe nonproliferative DR (NPDR), early/high-risk/treated but unstable proliferative DR (PDR), or the presence of diabetic macular edema (DME) irrespective of stage of background DR. PDR was described as "stable" if no active neovascularization or fresh vitreous hemorrhage was noted clinically in a previously treated eye, and eyes with stable PDR were classified as non-VTDR for this study.

The examining physician had advised the initial follow-up based on standard ETDRS guidelines. In cases where investigation or intervention had been advised, standard protocol-based institutional guidelines were followed (usually within 5–15 days, depending on disease severity). The initial date for follow-up was noted from the counselor's notes in the patient's records, and the duration of delay (in months) was calculated as per the definition mentioned above. Reasons for the current visit (such as vision loss, routine checkup, investigation, and intervention) and details of recommended treatment and follow-up instructions at the current visit were also recorded.

Section C consisted of questions pertaining to the reason for delay. A 19-point questionnaire with yes/no response options for each item was administered by trained paramedical staff, and participants were permitted to answer yes to all questions that applied. A comments section for reasons not included in the questionnaire was available. The questionnaire was prepared in English but administered to the patients in their vernacular language (Tamil). Sections A and C were completed with help of paramedical staff while section B was completed by any one of four fellowship-trained retinal specialists.

Statistical analysis

The worse eye from each patient was chosen for statistical analysis. In cases of asymmetric eye disease, the eye with the more advanced DR during the previous visit or greater worsening of DR severity between the previous and current visit was chosen. When both eyes had the same disease severity, the right eye was chosen for analysis. The overall prevalence of answering "yes" to each item in the questionnaire was calculated, and differences in responses between patients with VTDR and non-VTDR (based on the previous visit) were analyzed using Chi-square or Fisher's exact test. In addition, patients who had shown a significant disease progression, defined as either severe NPDR to PDR or non-VTDR to VTDR in at least one eye were identified, and the prevalence of various social factors in patients with and without disease progression was compared using Chi-square test. Average vision for the group was compared before and after follow-up delay using a paired *t*-test. Differences in treatment plan between the current and previous visit were also compared to better understand disease progression during the delayed follow-up period. Continuous variables were presented as mean \pm standard deviation or median with interquartile range (IQR), and group differences were analyzed using Student's *t*-test or Wilcoxon rank-sum test. All data were entered in Microsoft Excel sheets and analyzed using STATA 12 I/c (STATA Corp., Texas, USA).

Results

Five hundred consecutive patients with DR satisfying the inclusion criteria were interviewed. Complete data were available for 491 (98.2%) of 500 patients. At baseline, 233 patients (47.5%) had VTDR. Overall, the mean duration of delay in follow-up was 13 months \pm 12.7 months (Median = 9, IQR = 5–16 months). The baseline sociodemographic characteristics of the study population are outlined in Table 1. The average age was 60 years, 90% had at least some education, most had traveled long distances (>75 km), and almost 80% did not have health insurance coverage. Compared to patients with non-VTDR, those with VTDR were more likely to be younger,

Table 1: Baseline sociodemographics of the study population

	Overall (n=491)	Non-VTDR (n=258)	VTDR (n=233)*	P
Age (years)	59±9.1	61±9.2	57.1±8.6	<0.001**
Gender (%)				
Men	336 (68)	163 (63)	173 (74)	0.008#
Marital status (%)				
Married	89	86	93	0.16#
Unmarried	1	1	1	
Other (widowed/divorced)	10	13	7	
Residence (%)				
Rural	168 (36)	76 (30)	92 (41)	0.02#
Travel distance to hospital (km)	75.2±87.7	67.4±63	83.5±107	0.05**
Education (%)				
Illiterate	12	13	10	0.27#
<8 th grade	31	28	34	
High school (10 th grade)	30	27	32	
Secondary school (12 th grade)	9	10	9	
Graduate	12	13	12	
Postgraduate	6	9	3	
Family structure (%)				
Nuclear	346 (70)	188 (73)	158 (68)	0.22#
Employment				
Unemployed	223 (45)	45	46	0.18#
Self-employed	68 (14)	14	14	
Public sector	40 (8)	8	9	
Private sector	43 (9)	7	10	
Retired	78 (16)	20	12	
Agriculture	23 (5)	4	5	
Daily wages	14 (3)	2	4	
Insurance (%)				
Uninsured	387 (79)	205 (80)	182 (79)	0.85#

*VTDR status was at baseline (before delay in follow-up), **Student's *t*-test, #Chi-squared test. VTDR: Vision-threatening diabetic retinopathy

male, and to have traveled long distances for care [Table 1]. Those with non-VTDR had a greater delay in follow-up compared to those with VTDR (median = 10.5 months, IQR = 6–17 months vs. median = 8 months, IQR = 4–16 months, $P = 0.006$).

The prevalence of various factors that contributed to a delay in follow-up is summarized in Table 2. Nearly 2/3rd of those with non-VTDR at baseline quoted “my eyes were okay the time” as the cause for their delay in follow-up compared to <1/2 of those with VTDR at baseline. In contrast, there were significantly more VTDR patients who quoted “financial cost” as their primary cause for the delay. In both groups, more than 20% of patients reported “checkup with other ophthalmologist” as a reason for the delay in follow-up.

Progression of DR status during the delayed follow-up period is summarized in Table 3. Of the 219 patients with non-VTDR, 42 (19%) progressed to VTDR. In addition, 24 out of 76 with severe NPDR progressed to PDR (32%). Overall, 67 patients (23%) showed progression of DR/DME as per our predefined criteria. Among patients with DR progression, “my eyes were okay at the time” was again the most common (55%) reason quoted. A significantly greater proportion of those who

showed DR progression reported a delay because of “no attender to accompany me” (49% vs. 34%, $P = 0.03$), but there were no other differences in reasons for delayed follow-up between these two groups. In addition, those who showed disease progression had a lengthier delay in follow-up compared to those who did not (median = 14 months, IQR = 7–22.5 months, vs. median = 9 months, IQR = 5–16 months, $P = 0.004$).

In eyes with preexisting PDR or high-risk PDR ($n = 196$), 32 (16%) were treatment naive, 75 (38%) had been advised additional intervention for unstable PDR with ongoing neovascular processes, and the remaining (45%) had stable lasered PDR that required only periodic follow-up. Mean vision worsened by approximately three logMAR lines (from 0.36 + 0.5 logMAR to 0.64 + 0.55 logMAR, $P < 0.001$). At least one line drop in BCVA was seen in 230 (47%) eyes. There were no differences in reasons for delayed follow-up between those with vision loss and those without.

Nearly 1/3rd of previously untreated patients were advised to undergo more aggressive treatment for DR at the time of his or her delayed follow-up visit [Table 4]. This included patients who had been previously advised regular follow-up examination but were now advised to undergo additional

Table 2: Factors associated with delayed follow-up

	Overall (n=491), n (%)	Non-VTDR (n=258), n (%)	VTDR (n=233)*, n (%)	P [#]
Forgot date	147 (30)	91 (35)	56 (24)	0.007
Scheduling problem	29 (6)	17 (7)	12 (5)	0.50
Not aware of importance of eye checkup	92 (18.7)	42 (16)	50 (21)	0.14
Eyes were okay at the time	248 (50.5)	150 (58)	98 (42)	<0.001
No one to accompany me	201 (41)	102 (40)	99 (43)	0.50
Financial difficulties	190 (38.6)	82 (32)	108 (47)	0.001
Leave from work unavailable	64 (13)	29 (11)	35 (15)	0.23
Too much travel time	148 (30)	78 (30)	70 (30)	0.96
Too much waiting time in clinic	100 (20.3)	56 (22)	44 (19)	0.44
Not satisfied with previous treatment	26 (5.3)	8 (3)	18 (8)	0.06
Uncontrolled blood sugar	85 (17.3)	42 (16)	42 (18)	0.48
Visited outside ophthalmologist	111 (22.6)	56 (22)	55 (24)	0.61
Other ailments more important than DR	95 (19.3)	55 (21)	40 (17)	0.25
Patient nonambulatory (wheelchair)	12 (5.5)	15 (5)	17 (7)	0.37
DR being treated with alternative medicine	23 (4.7)	12 (5)	11 (5)	0.97

*VTDR status was at baseline (before delay in follow-up), [#]Chi-squared test for all variables. VTDR: Vision-threatening diabetic retinopathy, DR: Diabetic retinopathy

Table 3: Diabetic retinopathy status of eyes at last and current visit and reason for follow-up

DR at last visit	DR at current visit							Total
	No DR	Mild NPDR	Moderate NPDR	Severe NPDR	Early PDR	High-risk PDR	Lasered stable PDR	
No DR	11	2	8	1	2	1	0	25
Mild NPDR	0	31	10	2	1	2	0	46
Moderate NPDR	0	6	109	17	8	8	0	148
Severe NPDR	0	2	4	46	14	10	0	76
Early PDR	0	0	0	0	39	9	0	48
High-risk PDR	0	0	0	0	0	59	0	59
Lasered stable PDR	0	0	0	0	0	0	89	89
Total	11	41	131	66	64	89	89	491

NPDR: Nonproliferative diabetic retinopathy, PDR: Proliferative diabetic retinopathy, DR: Diabetic retinopathy

Table 4: Comparison of treatment advised at previous and current visit

Treatment advised at last visit	Treatment advised at current visit						Total	P [#]
	Regular examination	Surgery	Investigations	Laser	Anti-VEGF	Total		
Regular examination	244	36	9	63	3	355	<0.001	
Surgery	0	12	0	9	0	21		
Investigations	12	2	3	7	1	25		
Laser	21	15	2	31	7	76		
Anti-VEGF	4	2	1	0	7	14		
Total	281	67	15	110	18	491		

[#]Chi-squared test. VEGF: Vascular endothelial growth factor

laser photocoagulation, intravitreal injection, or surgery due to disease progression. More than 1/2 (58%) of those who were advised routine clinical follow-up cited “my eyes were okay at the time” as the reason for the delay in follow-up compared to only 1/3 (36%) of those who were advised investigations or laser and 1/5 of those who were advised anti-VEGF injections or vitrectomy surgery (18%) (*P* < 0.001).

Discussion

Patient noncompliance with scheduled follow-up presents a significant treatment barrier that has been shown to negatively affect the ultimate well-being of the patient in many ophthalmologic and nonophthalmologic diseases.^[23-26] In our study, a relatively large proportion of participants (47%) had

VTDR at baseline, which was unsurprising given that this study was conducted in a tertiary referral center. Over half of the study patients reported “my eyes were okay at the time” as a reason for delaying follow-up, and the majority of these patients had non-VTDR. This response represents a significant deficit in patient understanding of DR, which often has already caused irreversible damage once symptoms develop. Knowledge of DR and its progression patterns are poor in South India, with one study reporting that only one in ten community members are aware that retinopathy is a possible sequela of diabetes.^[8] Studies in Western populations have shown a similar connection between DR screening noncompliance and poor health literacy.^[27-29] It is standard practice for all patients to undergo counseling by a trained staff member about their diagnosis at our facility and a relatively small proportion of our study population cited “not aware of the importance of eye checkup” as the cause for noncompliance (18.7%). This indicates that while most patients may understand the importance of an eye examination, they may not be aware of the importance of eye examinations even while asymptomatic. Patient education efforts must be enhanced to emphasize the importance of early treatment of DR complications, particularly in those with non-VTDR. Extensive studies in patients with chronic disease have shown that persistent efforts toward patient education generally improve medication compliance,^[30-32] and this appears to be true in ophthalmologic settings as well.^[33,34] Studies regarding the impact of patient education on follow-up visit compliance are limited, but we hypothesize that greater emphasis on patient education and awareness of DR progression might affect clinic attendance similarly to medication compliance.

The second major reason for noncompliance with follow-up was “no attendant to accompany me”. Lack of escort has been observed as a major barrier to ophthalmologic care in both the developing and developed worlds.^[17,29,35] DR disproportionately affects elderly patients and those with comorbid health conditions that may cause them to be even more dependent on a chaperone for assistance. In addition, a large proportion of our study population was affected by VTDR, and these patients may be more likely to require an attendant although, interestingly, patients with VTDR were not more likely to answer “yes” to this question. For those patients who have access to an attendant, the risks of delayed follow-up should be emphasized to both parties during each visit. Community-based accompaniment, which enlists volunteers to accompany patients to medical visits, has shown immense success in improving outcomes in HIV patients lacking escorts in Rwanda^[36,37] but has not yet been used in the ophthalmologic setting to the best of our knowledge.

Patients cited “financial cost” as the third most common cause for follow-up noncompliance. Those with VTDR were more likely to cite this as a cause for noncompliance, and this is likely due to their lower earning potential, increased medical expenditures, and lower access to medications for glucose control. An inverse relationship between socioeconomic status and DR has been seen in some but not all studies.^[7,38,39] Our institution bills patients for services in a sliding scale fashion based on the patient’s self-reported ability to pay, but transportation costs and missed days of work for the patient and/or their caretaker may represent an indirect financial burden.^[22] The ultimate cost of blindness that can result from

DR progression far outweighs the marginal costs of follow-up visits and procedures, and this concept should be incorporated into existing patient education programs.

Of note, 30% of patients cited “forgot date” as one of the reasons for missed follow-up. Patients with non-VTDR were significantly more likely to have forgotten their appointment date (36% vs. 26%, $P = 0.02$), likely because they had less severe symptoms. Text message reminders have been shown to increase attendance in ophthalmologic and nonophthalmologic settings,^[40-42] and these may be employed in the future. A small but significant number of patients attributed the use of alternative medicine to their delay in follow-up. Patient education regarding the low efficacy and potential hazards of most alternative medicines available in our community must be increased to bring these numbers even lower.

There was substantial progression of DR in almost 25% patients during the delayed follow-up period, with nearly one-third of those who initially required no treatment ultimately requiring a more aggressive treatment plan. A large number of factors can affect progression of DR including poor systemic health, and patients who are noncompliant with follow-up may also be likely to have poor general health. Nonetheless, patients with delayed follow-up have many missed opportunities for treatment and could likely benefit from returning in a more timely fashion. Currently, it appears that those with compromised vision due to DR might find it difficult to remain economically productive leading to delayed but costlier treatments. These treatments may not always restore good vision, thus creating a vicious cycle of DR progression, vision deterioration, and draining finances. A health economics analysis to assess the economic burden levied on those who delay their follow-up compared to those who return as advised might make a beneficial future study. We also found that small percentage of patients with severe NPDR experienced regression of DR to mild and moderate NPDR. Although regression is rare, it is possible with excellent glycemic control and such patients can be used as examples to motivate other patients to maintain tight control over their blood sugar levels. A study in Chinese type 2 diabetics found a DR regression rate of 24.1%, with low baseline glucose and triglycerides due to systemic treatments being the strongest factor in disease regression.^[43]

Our study has a number of limitations. Existing clinic procedures prevented physician masking to patients’ follow-up status during clinic visit, which could have inadvertently affected physician examination or treatment strategy. In addition, because data were collected in a cross-sectional manner, patients completely lost to follow-up were not included in the analysis, and reasons for nonadherence to follow-up may be distinctly different in this population. A future study might track all DR patients and use phone contact to assess reasons for noncompliance in those who do not return for follow-up. Addition of a control group with timely follow-up, matched for age, gender, and DR severity, would assist in further interpretation of the effect of delayed follow-up on DR progression. Finally, a significant proportion of patients in our study had been seen by an outside ophthalmologist during the delayed follow-up period, and these patients could have undergone sight-altering therapy that may have changed our observed changes in visual outcomes.

Conclusion

DR is a chronic disease that is largely treatable with careful follow-up and timely intervention. Although there has been a significant improvement in screening and diagnosing DR in the Indian population over the last several years, poor adherence to treatment and follow-up recommendations remains a significant barrier to ultimate improvement in the condition of these patients. Our findings represent a first step toward improving outcomes in DR patients in South India.

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Conflicts of interest

There are no conflicts of interest.

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Questionnaire

Factors Associated for Delayed Follow-up in Diabetic Retinopathy

இந்த ஆய்வில் பங்கு கொண்டமைக்கு நன்றி. இந்த ஆய்வு சர்க்கரை நோயால் விழித்திரை பாதிக்கப்பட்டவர்கள் மறுபரிசோதனைக்கு வரவேண்டிய நாளை விட தாமதமாக வருவதற்கான காரணங்களை அறிவதாகும். என்னிடம் இந்த ஆய்வை பற்றி எடுத்துக் கூறப்பட்டுள்ளது. இந்த ஆய்வுக்கு என் முழு சம்மதத்தை அளிக்கிறேன். இதில் குறிப்பிட்டுள்ள விபரங்கள் அனைத்தும் உண்மையே.

Enrollment No : _____

Sign:

I. Demographic details

Name of the patient : _____ **MR.No:** _____

DOB/Age (Yrs) : _____ **Sex:** M / F

Marital status: Married Unmarried Widowed Divorced

Place of living: Urban Rural City, Province:-----

Education: Illiterate < 8th Std High School High Sec Graduate Post graduate

Type of family: Nuclear family Joint family No of adults in the family

Employment: Unemployed Self-employed Public sector Private sector Retired
 Agriculture Daily wages

Monthly Income:-----

Insurance: Yes No If Yes:-----

II. Details on last visit

Date:-----

Status of DR in RE V/A.....

No DR NVT DR VT DR

NVT DR: NPDR Mild NPDR Mod NPDR

VT DR: Severe NPDR PDR HPDR

DME/CSME

Previous Laser: Yes No

PRP Focal

Post PRP: Stable Unstable

Intravitreal Injection: Yes No

Previous Surgery: Yes No

Any other eye problem:-----

Status of DR in LE V/A.....

No DR NVT DR VT DR

NVT DR: NPDR Mild NPDR Mod NPDR

VT DR: Severe NPDR PDR HPDR

DME/CSME

Previous Laser: Yes No

PRP Focal

Post PRP: Stable Unstable

Intravitreal Injection: Yes No

Previous surgery: Yes No

Any other eye problem:-----

Follow-up given date:-----

Type of follow-up: Urgent (E1) Important (E2) Routine (E3)

Follow-up given for: Surgery Investigations Laser Intravitreal Regular Eye exam

Patient was given counseling: Yes No

III. Details Follow-up date

Follow-up date:

Delay in follow-up: Year: Months: weeks: Days:

Reason for follow-up: Vision loss Follow-up Other eye problem Others checkup

Status of DR in RE V/A-----	Status of DR in LE V/A-----
<input type="checkbox"/> No DR <input type="checkbox"/> NVT DR <input type="checkbox"/> VT DR	<input type="checkbox"/> No DR <input type="checkbox"/> NVT DR <input type="checkbox"/> VT DR
NVT DR: <input type="checkbox"/> NPDR <input type="checkbox"/> Mild NPDR <input type="checkbox"/> Mod NPDR	NVT DR: <input type="checkbox"/> NPDR <input type="checkbox"/> Mild NPDR <input type="checkbox"/> Mod NPDR
VT DR: <input type="checkbox"/> Severe NPDR <input type="checkbox"/> PDR <input type="checkbox"/> HPDR	VT DR: <input type="checkbox"/> Severe NPDR <input type="checkbox"/> PDR <input type="checkbox"/> HPDR
<input type="checkbox"/> DME/CSME	<input type="checkbox"/> DME/CSME
Laser Status: <input type="checkbox"/> Stable <input type="checkbox"/> Unstable	Laser Status: <input type="checkbox"/> Stable <input type="checkbox"/> Unstable
Rx Advice: <input type="checkbox"/> Surg <input type="checkbox"/> Inv <input type="checkbox"/> Laser <input type="checkbox"/> IV <input type="checkbox"/> Regular	Rx Advice: <input type="checkbox"/> Surg <input type="checkbox"/> Inv <input type="checkbox"/> Laser <input type="checkbox"/> IV <input type="checkbox"/> Regular

Reason for delayed follow-up (Tick more than one if required)

- I. Forgot the appointment date Yes No
- II. Appointment scheduling problem Yes No
- III. Not aware of importance of follow-up Yes No
- IV. My eyes were ok at the time Yes No
- V. No attender to accompany Yes No
- VI. Financial cost Yes No
- VII. Leave unavailable Yes No
- VIII. Travel time Yes No
- IX. Long waiting time in clinic Yes No
- X. Not satisfied with previous treatment here Yes No
- XI. Uncontrolled blood sugar Yes No
- XII. Check up with other ophthalmologist Yes No
- XIII. Other diabetic problem more important than eye----- Yes No
- XIV. Taking alternative medicine(if Yes)----- Yes No
- XV. Other medical/ Physical condition:----- Yes No
- XVI. Incidental : Out of town Family function Death in Family Foreign Travel
- XVII. Others:-----

Have you had your blood sugar done in the period Yes No

Have you consulted a diabetologist in the period Yes No