

# Present Status of Ophthalmological Care for Diabetic Patients in Japan

Hideharu Funatsu and Sadao Hori

*Department of Ophthalmology, Diabetes Center,  
Tokyo Women's Medical University, Tokyo, Japan*

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**Purpose:** To investigate the present status of diabetic care provided by ophthalmologists working in hospitals and private clinics in Japan.

**Methods:** Questionnaires were mailed to 315 ophthalmologists. There was a return rate of 73%.

**Results:** Problems identified in the clinics were: (1) many diabetic patients who complain chiefly of ophthalmological symptoms voluntarily request their first ophthalmological examination; (2) appropriate cooperation between ophthalmologists and physicians is not established; (3) assessing the level of blood glucose control is difficult; and (4) scheduling of appointments is inadequate. Moreover, (1) inadequate handling of patients who discontinue their ophthalmological examinations, and (2) the lack of an established patient education program were seen as problems common to both hospitals and clinics.

**Conclusions:** For the resolution of these problems, comprehensive countermeasures should be developed urgently by medical associations, medical administrators, and other relevant entities. **Jpn J Ophthalmol 2000;44:75-81** © 2000 Japanese Ophthalmological Society

**Key Words:** Cooperative treatment by ophthalmologists and physicians, diabetic patients, ophthalmological care, patient education, questionnaire.

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## Introduction

Recently, many diabetic patients have been saved from the risk of blindness because of advances in treatment, such as the promotion of cooperation between ophthalmology and internal medicine departments, the popularization of patient education and medical examination programs, progress in the diagnostic techniques of ophthalmology, and the development of new methods of treatment for diabetic patients.<sup>1-14</sup> However, there are many diabetic patients who miss the opportunity for appropriate treatment because of delay in arranging the initial ophthalmological examination, or their neglect to seek treatment for diabetes after diagnosis.<sup>15-21</sup> The present status of patient care is advanced in many countries

as the result of studies focusing on diabetic patients. However, the current status of care for diabetic patients in Japan has yet to be studied in depth. Accordingly, we conducted a study by questionnaire to investigate the present status of care by ophthalmologists attending diabetic patients in Japan in university and general hospitals (referred to as hospitals hereafter), as well as in private clinics and doctor's offices (referred to as clinics hereafter). We report our findings below.

## Materials and Methods

### Subjects

We surveyed a random sample of 430 ophthalmologists working in hospitals and clinics, basing our study on the 315 (73.2%) ophthalmologists who responded to the questionnaire (Table 1); 61.3% of these were working in hospitals and 38.7% were working in clinics (Table 2). In terms of age distribution, most respondents in hospitals were between 20

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Received: March 13, 1998

Correspondence and reprint requests to: Hideharu FUNATSU, MD, Department of Ophthalmology, Diabetes Center, Tokyo Women's Medical College, 8-1 Kawada-cho, Shinjuku-ku 162-8666, Tokyo, Japan

**Table 1.** Return Rate of Questionnaire

University hospitals	43/61 (70.5%)
General hospitals	150/161 (93.2%)
Clinics	122/208 (58.7%)
Total	315/430 (73.2%)

and 49 years, whereas most of the respondents in the clinics (91.0%) were 40 years of age and older.

### Methods

We conducted a survey by mailed questionnaire in January and February of 1997. Before mailing the questionnaires to hospitals, a letter explaining the aim of the survey was sent; the questionnaires were mailed only to those facilities agreeing to participate in the study. Similarly, we sent a letter explaining the aim of the survey to ophthalmologist associations in seven different areas throughout Japan; the questionnaires were mailed only to those members of these groups who agreed to participate in the study. For ophthalmologists in hospitals as well as those in clinics, the questionnaire consisted of four general questions on baseline respondent characteristics, such as age and gender, in addition to 23 questions on patient care and treatment, a total of 27 questions in all. Questionnaires returned by the end of April 1997 were tabulated and the frequency of selected answers calculated for each question.

## Results

### Number of Diabetic Patients

The number of diabetic patients cared for monthly was more than 100 in 46.5% of hospitals, less than 50 in 51.7% of clinics, and more than 100 in only 26.6% of clinics (Table 3).

### Initial Ophthalmological Examination

Over 80% of hospital respondents received referrals from physicians, followed by other ophthalmologists (16%). Most (58.2%) respondents in clinics received referrals from physicians, followed by almost half (48.4%) the patients seeking an examination voluntarily (Table 4).

### Cooperation with Physicians

Hospital ophthalmologists who responded that they “closely cooperate” with the internal medicine department totaled 44.6%. Only 33.6% of ophthalmologists in clinics answered to this effect (Table 5). When asked about the methods of cooperation, most hospital ophthalmologists who “closely cooperate” responded that “an appropriate cooperation system already exists” within the hospital, whereas most clinic ophthalmologists stated that they “cooperate with several physicians.” Conversely, ophthalmologists who did not “closely cooperate” gave reasons such as, “in the hospital, an appropriate cooperation system does not exist” and “too busy to cooperate with the internal medicine department.” Most clinic ophthalmologists responded that “an appropriate cooperation system does not exist,” as well as other reasons, including “the absence of any physicians that I can trust” or “too busy to cooperate with physicians.”

### Laboratory Tests

Many ophthalmologists in hospitals and clinics responded that they stress the need for regular laboratory tests when a patient undergoes an ophthalmological examination (Table 6). Moreover, respondents were found to actively encourage laboratory tests for patients who do not regularly receive them by either “issuing medical care reports” or “explaining the need for laboratory tests” (Table 6).

**Table 2.** Respondent Data

	Hospitals	Clinics	Total
No. of ophthalmologists	193 (61.3%)	122 (38.7%)	315 (100%)
No. of hospitals and clinics	51	117	168
Ratio of men to women	148:45	85:37	233:83
Age distribution (y)			
24–29	40	0	40
30–39	106	11	117
40–49	34	37	71
50–59	10	25	35
60 and over	3	49	52

**Table 3.** Number of Diabetic Patients Under Care of Respondents

No. of Patients	Hospitals	Clinics	Total
	n (%)	n (%)	n (%)
49 or fewer	48 (25.7)	62 (51.7)	110 (35.8)
50–99	52 (27.8)	26 (21.7)	78 (25.4)
100–199	32 (17.1)	19 (15.8)	51 (16.6)
200 or more	55 (29.4)	13 (10.8)	68 (22.2)
Total	187 (100)	120 (100)	307 (100)
No answer	6	2	8

### Metabolic Control of Blood Glucose Level

Many hospital ophthalmologists responded that they assess the blood glucose level of patients by “referring to medical records,” which are common to the ophthalmology and internal medicine departments, or by “directly asking the patients.” However, most clinic ophthalmologists were found to “directly ask the patients” followed by many responding that they “refer to the patient’s diabetic data book” (Table 7).

### Ophthalmological Examinations

A total of 90.7% of respondents in hospitals were scheduling appointments and specifying subsequent examination dates to encourage the patients to have regular examinations. In clinics, only 58.7% did so (Table 8). Only about 20% of hospital and clinic ophthalmologists responded that they “actively contact” patients who discontinue ophthalmological examinations, with the majority responding that they “wait for the patient to be referred for examination from a physician” or “wait for the patient to seek an examination without a referral.”

### Patient Education Programs

Over 95% of hospital and clinic ophthalmologists agreed on the necessity for patient education programs in the ophthalmology department (Table 9). Many more responded that patient education should be conducted “at every examination” or “at first examination” than those replying “when problem occurs.” However, most responded that “ophthalmologists” conduct patient education in contrast to the few replying that it is “team treatment by medical and ophthalmology departments.”

## Discussion

### Problems in Current Care in Clinics

Ophthalmologists in clinics were found to have a lower diabetic-patient load per person. They were

**Table 4.** Initial Ophthalmological Examination (Plural Answer)

	Hospitals	Clinics	Total
	n (%)	n (%)	n (%)
Referrals from physicians	157 (81.3)	71 (58.2)	226 (71.7)
Referrals from other ophthalmologists	32 (16.6)	3 (2.5)	35 (11.1)
Voluntary visit	6 (3.1)	59 (48.4)	65 (20.6)
Other	0	2 (1.6)	2 (0.6)
No answer	0	0	0

well aware of the previous laboratory examinations of each case, with many actively encouraging testing to patients who had discontinued their laboratory tests.

Furthermore, those working in clinics responded that they were fully aware of the need for patient education programs and were presently conducting patient education on a frequent basis at the first examination or even at each examination. However, some clinic ophthalmologists indicated problems in current care, responding that (1) many patients who complain chiefly of ophthalmological symptoms voluntarily request their first ophthalmological examination (suggesting a delay in the first ophthalmological examination); (2) systems of cooperation with physicians are not established; (3) it is difficult to assess the level of blood glucose control; (4) in many cases, appointment scheduling and specification of a subsequent examination date are not done; (5) handling of patients who had discontinued their ophthalmological examinations is inadequate; and (6) it is mainly ophthalmologists who are conducting patient education, suggesting that patient education is not yet adequate.

### Initial Ophthalmological Examination

Most initial ophthalmological examinations were found to be conducted after referrals from physicians. A lesser number were conducted on patients who had voluntarily requested an ophthalmological examination.

Generally, when the initial ophthalmological examination was conducted after the onset of subjective symptoms resulting from diabetes, most patients were found to have proliferative diabetic retinopathy or macular edema and, thus, ophthalmological care was already too late.<sup>3,5,7,15–17</sup> Delays in examination may be viewed as a result of the general public’s inadequate knowledge of the complications due to diabetes, as well as the fact that physicians do not actively encourage ophthalmological examinations unless there is the onset of subjective symptoms.<sup>2,3,16,17,19–21</sup>

**Table 5.** Cooperation With Internal Medicine Department

	Hospitals	Clinics	Total
	n (%)	(n %)	n (%)
Frequency of cooperation			
Closely cooperate	86 (44.6)	41 (33.6)	127 (40.3)
Occasionally cooperate	101 (52.3)	67 (54.9)	168 (53.3)
Seldom cooperate	6 (3.1)	11 (9.0)	17 (5.4)
Do not cooperate	0	3 (2.5)	3 (1.0)
No answer	0	0	0
Methods of cooperation*			
Adequate cooperation system exists	64 (74.4)	6 (14.6)	70 (55.2)
Cooperation with specific physicians	12 (14.0)	8 (19.5)	20 (15.7)
Cooperation with several physicians	10 (11.6)	27 (65.9)	37 (29.1)
Other	0	0	0
No answer	0	0	0
Reasons for lack of close cooperation <sup>†</sup>			
Lack of adequate cooperation system	71 (66.7)	47 (58.0)	118 (62.4)
Lack of reliable physicians	0 (0.0)	7 (8.6)	7 (3.7)
Too busy for cooperation	36 (33.3)	7 (8.6)	43 (22.8)
No need for cooperation	0	7 (8.6)	7 (3.7)
Other	0	14 (17.2)	14 (7.4)
No answer	0	2	2

\*Methods of cooperation relate to respondents who answered "closely cooperate" in response to "Frequency of Cooperation."

<sup>†</sup>Reasons for lack of close cooperation relate to ophthalmologists who did not answer "closely cooperate" in response to "Frequency of Cooperation."

### Cooperation with Physicians

Few clinic ophthalmologists responded that they "closely cooperate" with physicians, and many responded that they are "cooperating with a few physicians preferred by the patients." Conversely, most of the respondents without close cooperation re-

sponded that this was due to "no existing appropriate cooperation system," followed by responses that "they do not know any physicians that they can trust" or "they are very busy." The insufficiency of an appropriate cooperation system with surrounding facilities, such as laboratories, can be considered a significant reason that patient care is inadequate in clinics.<sup>20</sup>

**Table 6.** Medical Examinations

	Hospitals	Clinics	Total
	n (%)	n (%)	n (%)
Frequency of questioning about lab tests at ophthalmology visits			
Always	129 (66.9)	98 (80.3)	227 (72.1)
Sometimes	61 (31.6)	20 (16.4)	81 (25.7)
Seldom	2 (1.0)	4 (3.3)	6 (1.9)
Never	0	0	0
Other	1 (0.5)	0	1 (0.3)
No answer	0	0	0
Measures for handling lab test dropout patients (plural answer)			
Writing clinical records	84 (44.0)	55 (46.2)	140 (44.9)
Explaining necessity for regular laboratory tests	111 (57.5)	67 (56.3)	178 (57.1)
No problem	0	4 (3.4)	4 (1.3)
Other	0	0	0
No answer	0	3	3

### Metabolic Control of Blood Glucose

Confirmation of blood glucose level is very important for the ophthalmological care of diabetic patients. Many hospitals have common medical records shared by the ophthalmology and internal medicine departments that facilitate the assessment of the pa-

**Table 7.** Blood Glucose Control (Plural Answer)

	Hospitals	Clinics	Total
	n (%)	n (%)	n (%)
Referring to medical records	97 (50.3)	1 (0.8)	98 (31.1)
Letter of inquiry	35 (18.1)	21 (17.4)	56 (17.8)
Directly asking patients	64 (33.2)	60 (49.6)	124 (39.4)
Referring to diabetic data book	37 (19.2)	57 (47.1)	94 (29.8)
Occasional check	1 (0.5)	1 (0.8)	2 (0.6)
No check	0	1 (0.8)	1 (0.3)
Other	0	1 (0.8)	1 (0.3)
No answer	0	0	0

**Table 8.** Ophthalmological Examination

	Hospitals	Clinics	Total
	n (%)	n (%)	n (%)
Appointment scheduling, specification of subsequent examination dates			
Conduct	175 (90.7)	71 (58.7)	246 (78.3)
Do not conduct	18 (9.3)	50 (41.3)	68 (21.7)
No answer	0	1	1
Measures for dropout patients (plural answer)			
Actively contact	44 (23.0)	22 (18.8)	66 (21.4)
Wait for physician to act	83 (43.5)	48 (39.3)	131 (42.5)
Wait for voluntary action	53 (27.7)	40 (34.2)	93 (30.2)
Other	20 (10.5)	9 (7.7)	29 (9.4)
No answer	2	5	7

patient's blood glucose level. However, many clinic ophthalmologists ask the patient directly and assess the level by referring to the patient's diabetic data book, with only 17% directly questioning a physician. In many cases, the patient's stated blood glucose level is not accurate and many patients do not even possess a diabetic data book, indicating the genuine difficulty in accurately assessing a patient's blood glucose levels.<sup>2,3,5</sup>

### *Ophthalmological Examinations*

Although many clinic ophthalmologists actively encourage patients to resume laboratory examinations

when they discontinue them, few responded that they "actively contact patients" who have discontinued their ophthalmological examinations. Continuity of ophthalmological examinations is very important for cases of severe retinopathy or highly active retinopathy because examination discontinuation can have a direct influence on the visual prognosis.<sup>2-5,16-18,21</sup> However, a large number of patients per doctor can make it difficult to accurately assess patient examination status and to actively contact those who have discontinued their examinations. Reasons for the discontinuation of ophthalmological examinations can be separated into shortcomings of the medical staff, in-

**Table 9.** Patient Education Programs

	Hospitals	Clinics	Total
	n (%)	n (%)	n (%)
Importance of patient education			
Very important	151 (78.2)	81 (66.9)	232 (73.9)
Important	42 (21.8)	37 (30.6)	79 (25.1)
Somewhat important	0	0	0
Not important	0	0	0
Others	0	3 (2.5)	3 (1.0)
No answer	0	1	1
Frequency of patient education (plural answer)			
Every examination	64 (33.2)	67 (55.4)	131 (41.7)
First examination	90 (46.6)	34 (28.1)	124 (39.5)
Problem occurrence	36 (18.7)	19 (15.7)	55 (17.5)
No program	0	1 (0.8)	1 (0.3)
Others	3 (1.5)	0	3 (1.0)
No answer	0	1	1
Methods of patient education			
Team treatment by medical and ophthalmology departments	22 (11.5)	5 (4.1)	27 (8.6)
Ophthalmologist	166 (86.4)	112 (91.8)	278 (88.6)
Other staff	4 (2.1)	3 (2.5)	7 (2.2)
Media on visual disturbances	0	1 (0.8)	1 (0.3)
Others	0	1 (0.8)	1 (0.3)
No answer	1	0	1

cluding inadequacy of explanations on the first examination or at each examination and insufficient appointment scheduling, and shortcomings related to the patient, including difficulty in understanding the ophthalmologist's explanations, a lack of subjective symptoms, being busy at work, long commuting distance from the medical facility, and the absence of a medical care assistant, thereby creating difficulty in commuting to the medical facility.<sup>14,16-24</sup>

Comparisons between Japanese and Western routine care for diabetic patients reveal that the greatest differences lie in the average number of patients treated per ophthalmologist, with a lower figure in the West than in Japan. Also, more time is devoted to the examination of each patient in the West. Moreover, in the West, examinations are usually arranged according to an appointment system to provide adequate ophthalmological care. Furthermore, the waiting time in hospitals is comparatively shorter in the West.<sup>18-24</sup> In the future, the greater use of systems facilitating the development of patient data files will help to prevent dropouts and to bring such patients back for treatment.

### *Patient Education Programs*

Many respondents were aware of the need for patient education programs, with more than half the ophthalmologists conducting patient education not only at the first examination, but also at each subsequent examination. However, with 90% of patient education conducted only by the attending ophthalmologist, brief explanations during the busy schedule of outpatient treatment are inadequate for most patients to comprehend the ophthalmological complications arising from diabetes. Physicians have found it more successful to administer patient care through team medical efforts.<sup>16,17,19</sup> Hence, patient education through the training and assistance of not only medical doctors, but also of the entire medical staff, including nurses, orthoptists, and office staff, in addition to the use of posters and media presentations is recommended.

### *Comparison of Urban and Rural Ophthalmological Care in Japan*

A comparison of current urban and rural ophthalmological care revealed that the above problems were more serious in rural regions. In urban areas, the frequency of referrals from internists for an initial ophthalmological examination was high; a large proportion of ophthalmologists experienced close cooperative relations with the internal medicine de-

partments in their institution; appropriate cooperative systems existed with the internal medicine departments; and a large number of internists closely cooperated with ophthalmologists. Conversely, investigation in rural areas demonstrated that many patients voluntarily sought examinations complaining of subjective symptoms, many ophthalmologists were not involved in a cooperative system with internal medicine departments, and a number of internists did not cooperate closely with ophthalmologists. According to rural ophthalmologists, the inadequate number of physicians and medical facilities and low patient recognition level of the disease largely contribute to the current state of affairs. However, no differences were observed between urban and rural care with respect to the following: examination by internal medicine department, assessment of blood glucose control, ophthalmological examination, and patient education.

### *Current Status of Hospital Care*

In many cases, the establishment of an appropriate system of cooperation with the in-hospital internal medicine department was found to facilitate ophthalmological care. Conversely, inadequate handling of dropouts and the fact that 90% of patient education is being conducted by physicians were raised as problems within hospitals. Many patients who discontinue their ophthalmological examinations also discontinue their laboratory tests, indicating the necessity to formulate measures to prevent the discontinuation of either examination after the initial examination and measures to cope with the lack of compliance.<sup>2-5,16-21</sup> The fact that 90% of hospital respondents conduct appointment scheduling shows that the importance of the examination status of patients is well understood. It is important to make the effort to convince patients of the need for examinations through active contact with those who have dropped out, even when they are still suffering from highly active retinopathy. Moreover, because the hospital environment facilitates team medical care, the development of a cooperative system and active patient education programs is considered extremely important.

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The authors express their appreciation for cooperation in completing the questionnaire provided by all members and staff of the organizations listed below: the Sapporo Ophthalmologist Association, Tokyo-to Nakano-ku Ophthalmologist Association, Nigata Prefectural Ophthalmologist Association, Kyoto City Ophthalmologist Association, Ube City Ophthalmologist Association, and Kitakyushu City Ophthalmologist Association. Moreover, we would also like to thank the staff of the Department of Ophthalmology of

the following: Asahikawa Medical College, Second Hospital, Tokyo Women's Medical University, Fukui Medical College, Osaka University Medical School, Hiroshima University Medical School and all the ophthalmologists throughout Japan who participated in our study.

A summary of this article was presented at the 40th Annual Meeting of The Japanese Diabetic Society in a symposium on "Care for Diabetic Patients with Ophthalmological Complications."

This article was published by the same authors in the *Nippon Ganka Gakkai Zasshi (J Jpn Ophthalmol Soc)* 1998;102:123-129, under the title "The Present Status of Ophthalmological Management for Diabetics." It appears here in a modified form after peer review and editing for this journal.

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