THE PRESENT AND PROVISIONAL STATE OF AUXILIARY PERSONNEL IN EYE CARE IN JAPAN

YASUO UEMURA and KENICHI AKIYAMA

*Department of Ophthalmology, School of Medicine,
Keio University, Tokyo, Japan*

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ABSTRACT

The task of auxiliary personnel in eye care differs considerably from country to country. To illustrate an over all picture of eye care in Japan may help understanding the inter-relationship of different auxiliary personnels and useful for international comparison as a pertinent reference. Auxiliary personnel assisting in ophthalmic practice includes orthoptist, ophthalmic medical assistant, ophthalmic nurse and optician or optometrist.

Orthoptist and ophthalmic medical assistant have recently been introduced to the ophthalmic practice in Japan, and for this reason described in some detail.

Optician and optometrist in relation to ophthalmologist have become an important and popular topic among the people concerned. Some of the problems involved were briefly discussed.

Health care of the eye and screening of eye diseases in different communities were described. The job of personnel engaged in rehabilitation of the visually handicapped, and auxiliary personnel working in emergency situation were also stated.

When we think of the auxiliary personnel in eye care comprehensively from world-wide viewpoint, not only present situations in different countries with different eye diseases and eye cares, but ideal plans for the future for each country should be taken into account. The purpose of this paper is to illustrate the present and provisional state of auxiliary personnel in eye care in Japan.

Just as medical care necessitated the participation of X-ray technician, laboratory technician, pharmacist, dietician, physical therapist, speech therapist and other paramedical personnels, an advanced eye care requires an extensive help from auxiliary personnels. Figure 1 illustrates an over all system of eye care in Japan. The main feature in the primary eye care to the tertiary eye care is the task of ophthalmologist. It is important to have a comprehensive

Fig. 1 Over all system of eye care.

continuity in administration of eye care from prevention to rehabilitation. It is also important to have an agent in the system for constant monitoring and supervision.

With this over all system of eye care in mind, we would like to discuss the specific task and training of auxiliary personnel in eye care. We have divided the task of auxiliary personnel into four categories.

1. Assistance in ophthalmic practice
2. Health care of the eye and screening of eye diseases
3. Rehabilitation of the visually handicapped
4. First aid for eye emergencies

1. Assistance of Ophthalmic Practice

As modern ophthalmic practice evolved from "red eye clinic" to "white eye clinic", diagnostic tests and procedures became numerous and complicated with various kinds of instruments and machines. This trend inevitably produced a need for auxiliary personnel.

About 25 years ago in Japan, ophthalmologists convened to discuss the concept of having various auxiliary personnel involved in ophthalmic practice and

the following categories were adopted:

- a) Examination and training of amblyopia
and strabismus Orthoptist
- b) Examinations of visual acuity, refraction,
accommodation and contact lens Optometrist
- c) Qualitative visual field examination Perimetrist
- d) Intraocular pressure and tonography Tonometrist
- e) Medical photography of fundus and
the anterior segment Photographer
- f) Medical electronics engineer
(ERG, EOG, VEP, etc.) Medical Electronician
- g) Craftsman for prosthesis Ocularist

Among these, only orthoptist has been approved by law as an occupational category.

1) Orthoptist

The orthoptist was recognized and approved by the Japanese Ophthalmological Society in 1969. In 1971 the orthoptist was approved by law and two training institutions were opened in Tokyo and Osaka in affiliation with the Japanese national hospitals. Each year a total of 60 students graduate from these schools. A third private training school for the orthoptist opened in Niigata in 1977. Qualifications to enter these institutions are high school graduation for the three year course and college graduation for the one year course. Curriculum and requirements of these schools are shown in Tables 1 and 2. A national examination is performed annually and licenses are given to those who pass the examination. The examination covers clinical psychology, anatomy-physiology-pathology of the visual organ, visual physiology, physiological optics, ophthalmic disease entities, ophthalmic pharmacology, and orthoptics.

According to Japanese law, an orthoptist is a person who, under the supervision of an ophthalmologist, performs corrective training and necessary examination to restore binocular vision in those whose binocular function is disabled.

After obtaining their license, most orthoptists work in medical centers or university hospitals to extend their experience and training. The Japanese Orthoptic Association sponsors two or three seminars and two conferences per year to refresh the learning of the orthoptists.

Table 3 shows the places where orthoptists have been employed. Many of them are employed by private university hospitals but only a few by national

Table 1
Curriculum of school for orthoptist (three year course)

Subject		Required time in hours		
		Lecture	Laboratory work	Total
Basic subject	Pedagogy	60		60
	Ethics	30		30
	Psychology	60		60
	Gymnastics	15	45	60
	Biology	15	45	60
	Social welfare	15	45	60
	Psychological hygiene	30		30
	Nursing	30	90	120
	Mathematics · Statistics	15		15
	Physics	15		15
	Foreign language	180		180
	Law	15		15
	Medical ethics	15		15
	Anatomy · Physiology	30	45	75
	Public health	30		30
	Clinical psychology	15		15
	Pediatric disease entities	15		15
Specific subject	Anatomy · Physiology · Pathology of visual organ	60	45	150
	Visual physiology	45		
	Physiological optics	30	45	75
	Pphthalmic disease entities	30		
	Ophthalmic pharmacology	30	45	45
	Neuro-ophthalmology	30		
	Orthoptics (general)	150	540	540
	Orthoptics (specific)	240		
Total		1185	945	2130

hospitals. This is probably because national hospitals have a low allowance of new employment. The Japanese Ophthalmological Society has appealed to the Ministry of Education, Deans of the national universities and hospitals in order that they might hire more orthoptists. Thanks to those efforts, several national universities have set up orthoptic departments and gradually more and more orthoptists have been employed by the government. Only 11% work in the offices

Table 2
Curriculum of school for orthoptist (one year course)

Subject		Required time in hours		
		Lecture	Laboratory work	Total
Basic subject	Mathematics · Statistics	15		15
	Physics	15		15
	Law	15	45	
	Medical ethics			
	Anatomy · Physiology	30		75
	Public health	15		15
	Clinical psychology	15		15
	Pediatric disease entities	15		15
Specific subject	Anatomy · Physiology · Pathology of visual organ	30	45	105
	visual physiology	30		
	Physiological optics	30	45	75
	Ophthalmic disease entities	15		
	Ophthalmic pharmacology	15	45	90
	Neuro-ophthalmology	15		
	Orthoptics (general)	150		
	Orthoptics (specific)	240	480	870
Total		645	660	1305

Table 3
Employment of orthoptist (June, 1976)

Place of employment	No. of orthoptist	% of total orthoptist
National hospital	20	4
National university hospital	33	7
Public hospital	78	16
Private university hospital	78	16
Private hospital and clinic	115	24
Red Cross hospital	22	5
Medical center	74	15
Others	4	1
Not employed	58	12
Total	482	100

of practicing ophthalmologists.

Geographical distribution of orthoptists is shown in Table 4. Two thirds of the orthoptists are concentrated in the Tokyo area. In seven prefectures there is no orthoptists. Employment of orthoptists by national university hospitals and the correction of uneven geographic distribution are two immediate goals which we are trying to attain at present.

The first graduates of the three year course will emerge this year making the total yearly supply of 90 orthoptists. And yet, orthoptists are still in demand since about 10% of orthoptists ceases to work each year from various reasons.

Table 4
Geographical distribution of orthoptists (June, 1976)

Prefecture	Tokyo School	Osaka School	Special	Total	Prefecture	Tokyo School	Osaka School	Special	Total
Hokkaido	3		3	6	Fukui			1	1
Aomori	1		2	3	Ishikawa			2	2
Iwate			—	—	Toyama				—
Akita	2		1	3	Tottori			3	3
Yamagata			1	1	Shimane				—
Miyagi	2		2	4	Okayama	10		11	21
Fukushima			—	—	Hiroshima	2		6	8
Tokyo	68	1	52	121	Yamaguchi			5	5
Kanagawa	20		15	35	Kagawa		1	5	6
Chiba	4		12	16	Tokushima	2		1	3
Ibaragi	1		2	3	Kochi	1	1	5	7
Tochigi	2		2	4	Ehime	1	1	4	6
Saitama	6		4	10	Fukuoka	3	1	6	10
Gunma			1	1	Saga				—
Yamanashi	3			3	Nagasaki	1		1	2
Nagano	2			2	Kumamoto	1		4	5
Niigata	2		3	5	Oita				—
Shizuoka			3	3	Miyazaki			4	4
Aichi	6	1	28	35	Kagoshima				—
Gifu			2	2	Okinawa	1			1
Mie			3	3	Outside Japan	1		2	3
Osaka	9	12	65	86	Total	157	25	300	482
Kyoto		1	4	5					
Shiga		1	5	6					
Nara			8	8					
Wakayama			5	5					
Hyogo	3	5	17	25					

2) Ophthalmic Medical Assistant

For general office ophthalmologists, orthoptists are not available and office nurses are too busy to do vision check, visual field, tonography and other numerous examinations. In order to meet this need of the general ophthalmologists, the Japanese Association of Ophthalmologists has been trying to establish a system of ophthalmic medical assistant on a legal basis. However, the present law concerning medical practice does not coincide with the suggested tasks of ophthalmic medical assistant (Table 5).

Table 5
Suggested tasks of ophthalmic medical assistant
(1976, Japanese association of ophthalmologists)

1.	Vision
2.	Visual field
3.	Lensometer
4.	Contact lens assistance
5.	Color vision
6.	Keratometer
7.	Accommodation and convergence
8.	Binocular function
9.	Photography of anterior segment and fundus
10.	Refraction

In spite of this difficult legal situation, the Japanese Association of Ophthalmologists set up a special committee on this matter in 1976. Following the report of this committee, a one year curriculum was prepared and the plan (Table 6) is presently being pursued with self-trained office assistants. The curriculum consists of home study with texts and about 30 hours of schooling provided by the local ophthalmologists. The first examination was performed in May, 1979.

We are of the opinion that the task of the ophthalmic medical assistants is the subject to change according to the requirements of the time and the development of ophthalmic practice. The place of work of these assistants and their relationship to ophthalmologists are important considerations. In Japan, the ophthalmic medical assistants will perform their jobs in clinics or hospitals under the direct supervision of ophthalmologists.

3) Ophthalmic nurse

Registered nurse and practical nurse can become ophthalmic nurse after gaining practical experience in eye offices for an extended length of time.

Table 6
Curriculum to train ophthalmic medical assistant

1. Proces of training	
I. Home study with suggested texts	
II. Thirty hours of schooling in about one week	
III. Examination	
2. Curriculum of Schooling (lectures)	
Work of OMA	2 hours
Anatomy and function of the visual system	4
Basic Optics	2
Ophthalmic pharmacology	2
Reception and history taking	2
Preparatory examinations	6
Visual acuity without correction	(1.0)
Lensometer	(1.0)
Accommodation, convergence	(0.5)
Occlusion, stereoscopic vision	(1.5)
Color vision	(1.0)
Inspection of the outer eye	(1.0)
Refraction	8
Refractive errors	(2)
Objective refraction	(3)
Keratometer	
Refractometer	
Retinoscopy	
Subjective refraction	(2)
Multiple lens method	
Examination of astigmatism	
Prescription of glasses	(1)
Major eye disease entities	3
Contact lens care	1
	Total 30 hours

Teachers are usually ophthalmologists themselves and this is probably the most widely practiced form of ophthalmic assistance. Some nurses learn to take fluorescein angiography, fundus photography, refraction and tonometry. They can also help surgically in the operating room. Problems here are: 1) standardization of the quality of assistance, 2) ophthalmic nurses are usually unable to make use of previous experience as nurses partly due to the fact that not many private practice ophthalmologists perform surgery in Japan, 3) conflicts between the ophthalmic medical assistant and the orthoptist.

4) Optician and Optometrist

The optician and the optometrist do not necessarily assist directly in

ophthalmic practice, however, in our classification of auxiliary personnel in eye care, this seems to be a good place to discuss them.

Under Japanese law, examination of refraction is included in medical practice and only medical doctors are allowed to practice medicine. Because of this law, the concept of professional position of optometrist has not developed in Japan. In reality, however, some 5,000 ophthalmologists are unable to perform adequate refraction to over 100 million Japanese people. Accordingly the majority of refraction has been handled by opticians. Awareness of this contradiction matched with recent movements to build schools for opticians, have caused a fiery argument as to who is to do the job of refraction—ophthalmologists or opticians.

In Japan, opticians have no professional qualifications. Usually their education is given by apprenticeship. Several training schools for opticians have recently opened but no qualification is given to the graduates. There is a movement not only among opticians but among ophthalmologists to train opticians with qualifications. In consequence, however, the qualification is not given for refraction but for filling prescriptions issued by ophthalmologists. As likewise ordinary medical prescriptions are filled by licensed pharmacists, many claims that optical prescriptions should be filled by licensed opticians arose.

There are other opticians who demand qualification for refraction. Recently a four-year college was founded for the training of optometrists. If the Japanese law were strictly followed, most working hours of ophthalmologists would be spent for refracting patients. This would be quite detrimental to hospital ophthalmologists who are responsible for carrying on the contemporary practice of ophthalmology as well as research work and education. Most ophthalmologists seem to prefer ophthalmic medical assistants as refractionist to opticians or optometrists. After considering the quality and scale of modern ophthalmic practice, it seems that the approximately 5,000 ophthalmologists with the help of twice as many ophthalmic medical assistants are still not adequate in refracting more than 30 million Japanese people who require refraction.

Nevertheless, medical schools in Japan have reached 80 in number and a yearly supply of doctors will be 8,000 in the near future. Ophthalmologists are expected to reach a total of 8,000 in ten years. With this number, all refractions will be able to be handled by ophthalmologists and their assistants. It is not known yet what the ideal solution for this matter will be, but all are searching for the best way of treating it.

2. Health care of the eye and screening of eye diseases

Prevention of disease is the goal of medicine. Early detection and early

treatment is the fundamental rule of medicine. These certainly apply to eye care. The more the health care and welfare advance, the greater the need in the field of prevention and early detection become.

The Japanese government and local public organizations participate in health care and perform various screening tests for members of the community. One side of screening programs comes by age while the other comes by special groups such as schools and vocational units. Table 7 summarizes these screening programs. Participants in these programs include office ophthalmologists, pediatricians, general practitioners, health nurses and nursing teachers. Health nurses work for the public health department and they usually receive lectures on eye disease once or twice a year. Nursing teachers belong to schools and in addition to their basic training for nursing teachers they can study under ophthalmologists at their school.

Table 7
Various screening programs for eye care

Program	Objective	Frequency	Participant
Periodic screening program for infant	early detection of visually handicapped infant, amblyopia and strabismus	Once a year Applicable infant: age 6 months, 1 year, 3 year and 5 year	Ministry of Welfare, Prefectural office of hygiene, Public health department, Pediatrician, Primary care physician, nurse, dry nurse
School screening program	Visual acuity, refractive errors, color blindness, external disease of students	1-2 times a year	Ministry of Education, School doctors (including ophthalmologist), nursing teacher
Vocational screening program	Visual acuity, External disease of employee	Once a year	Ministry of Labour, Company doctors, Nurse (ophthalmologist)
Human dock screening program	Glaucoma Cataract Retinopathy from diabetes or hypertension	Once a year	Company doctors, Nurse, Primary care ophthalmologist

3. Rehabilitation for the visually handicapped

Rehabilitation of visually handicapped infants is increasingly in demand. The attendants in this field have been personally trained by Dr. Harada, head of the Tokyo Metropolitan Rehabilitation Center for the Physically and Mentally Handicapped. There is no official center for such specialists in eye care, but because of the high demand several plans are presently under consideration.

4. First aid for eye emergency

The successful treatment of perforating eye injuries, chemical burns and acute attack of glaucoma depend a great deal on who gives the first aid. Lectures on eye emergency are given to ambulance attendants, health nurses and nursing teachers regularly.

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