Blindness Among the Aged

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VISUAL ACUITY may be likened to a spectrum, ranging from normal or perfect vision at one end to total blindness or absence of light perception at the other. In a discussion of the extent of "blindness" in the aged population, it is necessary to remember that we are dealing with an arbitrarily defined group that includes only those with severe visual loss. The most widely accepted definition of "economic blindness" is that used in the administration of many programs of aid to the blind. Under this definition a person is blind if the vision of the better eye with best possible correction is 20/200 or less, or if he has a field defect in which the widest diameter of the visual field subtends an angular distance no greater than 20°. Persons in this group and many others with less loss of vision bear an inestimable burden in the social and occupational adjustments which their handicap requires of them.

How many aged persons are blind? How long have they been blind? What caused their blindness? These and other questions confronted the California State Department of Public Health when, in 1954, it received a grant from the W. K. Kellogg Foundation for a project in the prevention of blindness.

The Prevalence of Blindness

The literature reveals that most surveys of blind persons have been limited to recipients of aid from one of the programs for the needy blind (*1–9*). Notable exceptions are New York and North Carolina, which have registers of blind persons (*10–11*).

The most widely used estimates of the prevalence of blindness are those of Hurlin (*12*) and are based on the assumptions that the rates will vary with age and race composition and with the public health standards of the States.

Data on the incidence of blindness are almost entirely lacking and, except where registers exist, must be inferred from prevalence figures (*13*).

During the year May 1954–April 1955, the California State Department of Public Health conducted a survey of a sample of about 10,000 households throughout the State. Data collected included population characteristics, illnesses, accidents, chronic conditions, and receipt of medical care. Interviewers handed respondents a list of chronic conditions which included blindness and asked, "Has anyone in the family had any of these conditions during the past 12 months?" The interviewers then read each condition aloud and paused for the respondent's reply.

Responses which indicated losses of vision more severe than those due to refractive errors were later coded as blindness, partial blindness, or vision impairment. The coding was done with the aim of producing an underestimate of blindness. Admittedly, some persons who were classified as blind may have better than 20/200 vision, but it is also likely that a larger number of those who were classified as partially blind are actually blind by the usual definition. It was apparent from the terminology of the responses, and from the comparisons which could

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be made with available medical records, that to most lay people blindness means absence of light perception.

The prevalence rates shown in table 1 for the population 65 years of age or over are probably conservative estimates of the extent of vision problems.

Because of the size of the sample (2,600 persons aged 65 and over), these rates are subject to rather large sampling errors, and differences between income groups are not statistically significant. (The sampling error for the rate of 1.4 is ±0.2.)

In North Carolina, which has kept a careful register of blind persons for some years, 2.25 percent of the population aged 65 and over was blind according to the most recent report (*11*).

Another approach to the problem of determining the prevalence of blindness among the aged is to examine the portion of the population that receives public assistance. In California, recipients of aid to the blind normally receive $10 more per month than they would receive under the old age assistance program. This differential probably encourages qualified persons to apply for aid to the blind rather than for old age assistance. It is known, however, that some blind persons are receiving old age assistance.

In California in December 1954, 271,347 persons were receiving old age security (*14*), and 8,025 persons aged 65 or older were receiving aid to the blind. Thus, 2.9 percent of the indigent aged were receiving the pension for the blind. In counties known to have a liberal policy regarding applications for aid to the blind, this percentage was slightly higher. A blindness rate of approximately 3 percent in the indigent aged is not inconsistent with the rate of 2 percent shown for the aged population with incomes under $2,000 per year in the California Health Survey. One would expect the highest blindness rate to be in the indigent population since blindness so often leads to dependency.

Table 1. Prevalence rates of blindness, partial blindness, and impaired vision [1] among 2,600 persons, 65 years of age or over, by family income group, California Health Survey, 1954–55

Family income group	Percent		
	Blind	Partially blind	Vision impaired
All groups	1.4	0.9	2.4
$5,000 and over	1.5	1.9	1.1
$2,000–$4,999	.8	.4	2.8
Under $2,000	2.0	.8	2.8

[1] Excludes correctible refractive errors and all unilateral conditions.

Obviously, then, blindness, with a prevalence rate of between 1.5 and 3.0 percent of the aged population, does not concern as many people as arthritis or arteriosclerotic heart disease. However, its prevalence is about the same as diabetes or neuritis in this segment of the population, according to data gathered by the California Health Survey, and its impact on those affected is undoubtedly greater.

In surveying the possible sources of data in California, the project found that the largest single group of records on blind adults is available in the California State Department of Social Welfare, which, together with the county welfare departments, administers aid to more than 12,000 needy and partially self-supporting blind persons. No analysis had been made of these records since 1945 when the department of social welfare published a study based on the 1941 caseload (*4*). In December 1954 the project surveyed the causes of blindness in this group, using as a source the reports of eye examinations made by physicians. Almost two-thirds of the recipients were 65 years of age or over. The study included 1,605 persons in this age group, representing a 20 percent sample of those who were 65 years of age or over.

Persons receiving aid to the blind may not be representative of all the blind since some causes may occur more frequently among those in higher economic groups, but data on the self-sufficient portion of the blind population are not available.

Age at Onset

Blindness had its onset before the age of 25 years for only about 6 percent of the group, and for an additional 5 percent it began between 25 and 44 (table 2). For about one-third the

Table 2. Age at onset of impaired vision for 1,605 recipients of aid to the blind, 65 years of age or older,[1] California, December 1954

Age at onset (in years)	Total		Present age (percent)				
	Number [1]	Percent	65–69	70–74	75–79	80–84	85 and over
Total	1,605	100	100	100	100	100	100
Under 1	18	1.1	2.2	2.0	1.5	----	0.3
1–4	12	.8	2.2	.3	1.2	.3	----
5–14	40	2.5	4.0	3.4	3.4	1.8	.5
15–24	29	1.8	3.2	3.1	1.8	.6	.8
25–44	85	5.3	12.3	6.1	4.3	3.9	1.6
45–64	493	30.7	64.2	47.4	30.9	14.2	7.4
65 and over	867	54.0	6.5	33.4	54.7	74.7	86.2
Unknown	61	3.8	5.4	4.1	2.1	4.5	3.2

[1] A 20 percent sample of those receiving aid in December 1954.

SOURCE: Eye examination reports of the division for the blind in the California State Department of Social Welfare.

trouble began in late middle life, and for more than half (54 percent) the condition started after the age of 65. The onset of blindness represents a different problem in each of these age groups, and its prevention will therefore have a different meaning. For those blinded in childhood or youth, the problem is one of training for a self-sufficient and productive life in a sighted world. Preventive activities here save society the expense of either this additional training or of supporting a dependent person for his lifetime. For those blinded in the early years of maturity, the problem is one of readjustment and rehabilitation, again with costly periods of training and possible dependency. Blindness which occurs after the period when occupational rehabilitation is feasible is likely to result in dependency, and its prevention means, of course, a prolonging of the productive years.

The Causes of Blindness

Tables 3 and 4 relate to the causes of blindness among this group of aged persons. Cataracts acounted for 35 percent of the blindness and glaucoma for another 16 percent. A large proportion of these cases are preventable or treatable. Next in importance were arteriosclerotic disease of the choroid and retina, with 11.3 percent, and retinal degeneration, with 7.5 percent (table 3).

General (systemic) diseases accounted for

Table 3. Primary pathology of blindness [1] for 1,542 recipients of aid to the blind, 65 years of age or older, California, December 1954

Pathology	Number	Percent
Total [2]	1,542	100.0
Glaucoma	246	16.0
Refractive errors	69	4.5
Structural anomalies	7	.4
Degenerative changes	16	1.0
Cornea:		
Keratitis	46	3.0
Pannus	30	1.9
Ulceration and vascularization	3	.2
Other affections of cornea	19	1.2
Iris:		
Iritis	1	.1
Iridocyclitis and uveitis	18	1.2
Other affections of iris	4	.3
Lens:		
Cataract	538	34.9
Other affections of lens	4	.3
Choroid and retina:		
Choroiditis	2	.1
Retinitis	56	3.6
Chorioretinitis	77	5.0
Detached retina	5	.3
Retinal degeneration	116	7.5
Arteriosclerotic disease of choroid and retina	175	11.3
Other affections of choroid and retina	2	.1
Optic nerve atrophy	86	5.6
Other	22	1.4

[1] Last eye to go blind. When age at onset was the same in both eyes, but different pathologies were given, pathology for the right eye was used.

[2] A 20 percent sample of those receiving aid. Excludes 63 cases for which a report of pathology was not available.

SOURCE: Eye examination reports of the division of the blind in the California State Department of Social Welfare.

Table 4. Etiology of blindness [1] for 1,542 recipients of aid to the blind, 65 years of age or older, by sex, California, December 1954

Etiology	Males	Females
Total number [2]	674	868
Total percent	100. 0	100. 0
Infectious diseases	5. 6	6. 2
Syphilis	2. 8	1. 6
Ophthalmia neonatorum	--------	. 1
Trachoma	2. 2	2. 6
Tuberculosis	. 1	. 2
Meningitis	--------	. 1
Measles	. 1	. 5
Other	. 3	1. 0
Trauma and poisonings	6. 4	2. 0
Neoplasms	. 1	--------
General (systemic) diseases, not elsewhere classified	13. 4	19. 5
Diabetes	1. 3	4. 7
Vascular diseases	12. 0	14. 0
Diseases of central nervous system	--------	--------
Other	--------	. 7
Prenatal origin	1. 6	. 5
Etiology undetermined or unknown to science	72. 8	71. 9
Cataract [3]	35. 3	32. 5
Glaucoma [3]	14. 7	16. 5
Other	22. 8	22. 9

[1] Last eye to go blind. When age at onset was the same for both eyes, but different etiologies were given, etiology for the right eye was used.

[2] A 20 percent sample of those receiving aid. Excludes 63 cases for which a report of etiology was not available.

[3] Excludes cases for which etiology was known and which were placed in appropriate categories above.

SOURCE: Eye examination reports of the division for the blind in the California State Department of Social Welfare.

about half of the cases of known etiology, followed by infectious diseases and accidents (table 4). Diabetes was a more prevalent cause among the women than men, while accidents and syphilis accounted for a higher proportion of the blindness among the men.

Prevention

The etiology of the two major sources of blindness in older persons is unknown. Careful medical supervision and surgery at the appropriate time can, however, restore vision in a large portion of persons with cataract. Likewise, early detection and continued treatment of glaucoma can prevent loss of vision. For many in whom blindness is due to degenerative diseases, such as arteriosclerosis and diabetes (*15*), preventive activities must wait for further advances in medical knowledge (*10*). Fortunately, effective control measures are operating to reduce the toll of blindness caused by many of the infectious diseases such as syphilis, tuberculosis, trachoma, and measles. Ophthalmia neonatorum, which 50 years ago accounted for more than one-fourth of the blindness in school-age children, has, by the routine use of prophylactics at birth, been almost eliminated as a cause of blindness in infants (*16*). Adequate prenatal care, especially in the early months of pregnancy, may help to reduce the numbers of cases of congenital blindness. Educational work in the broad field of accident prevention will also help to prevent the loss of sight due to trauma.

Summary

Studies of the extent and causes of blindness in California indicate blindness in about 3 percent of the persons aged 65 and over who are receiving public assistance. More than half of these recipients of aid became blind after age 65 and about one-third in late middle life. Cataracts and glaucoma together accounted for more than half of the cases, followed by general diseases, infectious diseases, and accidents. Although the specific causes of cataracts and glaucoma are not known, much of the blindness from these conditions can be prevented by careful medical supervision and treatment. Preventive activities under way in the fields of infectious disease control and accidents are hopeful indicators of decreasing incidence of cases of blindness from these causes.

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Glaucoma After Forty

With advancing years as physical activity becomes somewhat curtailed, our ability to read newspapers, books, and to observe television becomes increasingly important to our emotional well-being. Dr. Peter C. Kronfeld, speaking before the National Society for the Prevention of Blindness in Chicago March 28, 1956, indicated that in the population over 40 years of age chronic glaucoma occurs with a frequency of 1 to 2 percent. Unfortunately the silent character of this disease means that unless it is looked for specifically it may have progressed to such a point that it has caused irreparable damage. If it is detected during the first 2 years, the permanent visual damage is slight and a good therapeutic result can be anticipated.

Industrialists have been cognizant, through industrial safety programs, of the need for protecting the vision of those engaged in hazardous occupations, but some of these same industries have offered relatively little to their office and clerical personnel. Those with experience in this field tell me that when eye fatigue is minimized there is an actual increase in employee efficiency with improvement in equanimity. We have not done the many things that could be done to minimize eye fatigue.

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