Estimation of Prevalence and Incidence Rates and Causes of Blindness in Israel, 1998–2003

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Abstract

Background: The prevalence and incidence of blindness in Israel appear to be comparable to other western countries. Comparisons are difficult because of different definitions of blindness, and the uniqueness of the Israeli Registry of the Blind.

Objective: To characterize the population who were registered as Blind in Israel in the years 1998–2003 and estimate the prevalence and incidence of blindness by age and causes of blindness.

Methods: A retrospective review of the annual report of the national Registry of the Blind in Israel between 1998 and 2003 identified 21,585 blind persons who received a certificate for blindness. Blind persons are identified by ophthalmologists throughout Israel and referred to the Registry of the Blind if they have a visual acuity of 3/60 or worse, or a visual field loss of < 20 degrees in their better eye. This report includes prevalence data on 21,585 persons enrolled in this review still alive and living in Israel in 2003. We estimated the prevalence rate of blindness nationwide and the incidence rate for each cause of blindness for every year.

Results: The main leading causes of blindness in Israel in 1998 were (in percent of the total number of newly registered patients): age-related macular degeneration (20.1%), glaucoma (13.8%), myopic maculopathy (12%), cataract (10.4%), diabetic retinopathy and maculopathy (10.1%), and optic atrophy (7.9%), and in 2003, 28%, 11.8%, 7.4%, 6.5%, 14.4% and 6.5% respectively.

Conclusions: The results indicate that the incidence of age-related macular degeneration, diabetic retinopathy and maculopathy in Israel is increasing, while that of glaucoma, myopic maculopthy, optic atrophy and cataract is decreasing.

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Millions of people suffer from a wide variety of ocular diseases, many of which lead to irreversible blindness. The leading causes of irreversible blindness in the elderly – age-related macular degeneration and glaucoma – will continue to affect more individuals as the worldwide population continues to age. Although there are therapies for treating glaucoma, as well as ongoing clinical trials of treatments for age-related macular degeneration, there is still a great need for more efficacious treatments that halt or even reverse ocular diseases.

Advances in technology have a role in better treatment and prevention of blindness. In the present study we report and discuss the prevalence and incidence rates and causes of blindness in Israel in the years 1998–2003.

Subjects and Methods

This report is based on data obtained from the national Registry of the Blind in Israel (annual reports 1998–2003). Patients are identified by ophthalmologists throughout the country and referred to the Registry of the Blind if they have a visual acuity of 3/60 or worse, or a visual field loss of < 20 degrees in their better eye. Data are collected on visual acuity and visual field loss, causes of blindness in both eyes, and patient demographics. We estimated the prevalence rate of blindness nationwide and the incidence rate for each cause of blindness.

Results

The main leading causes of blindness in Israel in 1998 were (in percent of the total number of newly registered patients): age-related macular degeneration (20.1%), glaucoma (13.8%), myopic maculopathy (12%), cataract (10.4%), diabetic retinopathy and maculopathy (10.1%), and optic atrophy (7.9%), and in 2003, 28%, 11.8%, 7.4%, 6.5%, 14.4% and 6.5%. The incidence of age-related macular degeneration, diabetic retinopathy and maculopathy in Israel is increasing, while that of glaucoma is decreasing. Patient demographics (age) and the estimated prevalence and incidence rate of blindness nationwide are shown in Table 1.

Table 1. Patient demographics (age), estimated prevalence and incidence rate of blindness nationwide, 1998–2003

	1998	1999	2000	2001	2002	2003
Population (millions)	6.0	6.2	6.4	6.6	6.7	6.8
Blind persons (n)	15,937	17,468	18,509	18,270	20,818	21,585
Prevalence (per 1000 population)	2.6	2.8	2.9	2.8	3.1	3.2
New blind people (n)	2186	2445	2329	2263	2117	1958
Incidence (per 1000 population)	0.36	0.39	0.36	0.34	0.32	0.29
Age (yrs)						
> 18	5.8%	6.9%	7.4%	7.4%	7.2%	5.6%
19–65	34%	35%	30.6%	30.5%	31.5%	30.3%
> 65	60.2%	60.1%	62%	62%	61.3%	64.1%
Causes of blindness						
AMD	20.1%	20.9%	21.6%	23.5%	24.6%	28%
Diabetic retinopathy & maculopathy	10.1%	12.5%	13.1%	14.1%	14.5%	14.4%
Glaucoma	13.8%	13.9%	14.3%	13.1%	11.7%	11.8%
Myopic maculopathy	12%	10.8%	10.1%	8.3%	8.6%	7.4%
Optic atrophy	7.9%	7.8%	7.3%	8.3%	7.4%	6.5%
Cataract	10.4%	9.8%	9.9%	8.8%	7.1%	6.5%
Other diagnosis	25.7%	24.3%	23.7%	23.9%	26.1%	25.4%
Total	100%	100%	100%	100%	100%	100%

% = percent of the total number of newly registered blind people
AMD = age-related macular degeneration

Discussion

To the best of our knowledge, Israel has one of the very few nationwide blindness registries in the world. The registry has been maintained since 1987 under the auspices of the Ministry of Welfare, since people listed in the registry receive financial compensation. We believe that the Registry has a record of the majority of blind persons in the country. Our results seem to indicate that the prevalence of blindness from leading causes – such as age-related macular degeneration, glaucoma, diabetic retinopathy and maculopathy, optic atrophy and cataract – is almost identical to that in other western populations [1-8]. That is because Israel is a developed country with a western healthcare system. Comparisons between different populations are difficult because the definitions of blindness are not uniform.

The classification of blindness in Europe, Asia and Africa vary by country and study population [7,9-11]. The definition of blindness in Israel is less strict than that of the World Health Organization (< 20/400) [12] and more rigid than the definition in the United States (≤ 20/200)[13]. According to the 10th Revision of the WHO International Statistical Classification of Diseases, Injuries and Causes of Death, blindness is defined as visual acuity of less than 20/400, or corresponding visual field loss to less than 10 degrees in the better eye with best possible correction [14].

The International Council of Ophthalmology recommended the use of uniform definitions, measurements and reporting methods for vision loss (29th International Congress of Ophthalmology, Sydney, Australia, April 2002). The prevalence of blindness from cataract in Israel is high (10.4% in 1998). To the best of our knowledge the reason for this is the fear of surgical trauma more than the will for financial compensation. Our results indicate that the incidence of age-related macular degeneration, diabetic retinopathy and maculopathy in Israel is increasing, and can be attributed to higher life expectancy in the general population. According to an official publication of the Israel Central Bureau of Statistics, the life expectancy for women in 1990 was 78 and 80.9 years in 2000, while for men it was 74.9 and 76.7 years respectively. The incidence of glaucoma is decreasing and can be attributed to early detection and better treatment. Changes in attitudes and technology in the world during the last half-century have revolutionized approaches to blindness prevention and sight restoration. Although the possibilities have improved and increased immeasurably, unnecessary blindness will remain common, especially among the poor, unless a concerted international effort is made to prevent it.

Knowing the root cause of blindness would enable interest groups to coordinate and focus their efforts toward the prevention of blindness and to determine effective strategies to minimize the problem.

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