

Prevalence of visual impairment and eye diseases in Afghan refugees in Pakistan

H.R. Awan¹ and T. Ihsan²

انتشار ضعف البصر وأمراض العيون بين اللاجئين الأفغان في باكستان
هارون رشيد عوان وطارق إحسان

خلاصة : تم تحديد معدلات انتشار فقدان البصر وأمراض العيون وسبباتها في جماعة من اللاجئين الأفغان المقيمين في شمال باكستان. وشمل الاستقصاء 1156 شخصاً وظهر أن نسبة المكفوفين بينهم بلغت 2.1%، وأن 6.9% منهم كانوا ضباب البصر وفقاً لمعايير منظمة الصحة العالمية. وكانت الأسباب الرئيسية للعمى هي الساد (62.5%) وأخطاء الانكسار غير المصححة (16.6%) وتنكس/ حثل الشبكية (12.5%)، والزرق (الغلوكوما) (4.2%) وضمور مقلة العين (4.2%). أما أسباب ضعف البصر فكانت أخطاء الانكسار غير المصححة (46.2%) والساد (32.7%) وعتامات القرنية (4.8%). وكانت هذه الحالات كذلك من الأسباب المهمة لفقد البصر في إحدى العينين. ووجدت حالات حثر نشيط في 3.7% من جميع الأطفال دون العاشرة من العمر.

ABSTRACT The prevalence and etiology of visual loss and eye diseases were determined in a resident Afghan refugee community in northern Pakistan. The survey included 1156 people and revealed that 2.1% of the population were blind and 6.9% were visually impaired according to WHO criteria. The leading causes of blindness included cataract (62.5%), uncorrected refractive errors (16.6%), retinal degeneration/dystrophy (12.5%), glaucoma (4.2%) and microphthalmos (4.2%). The causes of visual loss were uncorrected refractive errors (46.2%), cataract (32.7%) and corneal opacities (4.8%). These conditions were also important causes of unilateral lost vision. Active trachoma was found in 3.7% of all children under 10 years of age.

Prévalence de la déficience visuelle et des maladies oculaires chez des réfugiés afghans au Pakistan

RESUME La prévalence et l'étiologie de la déficience visuelle et des maladies oculaires ont été déterminées dans une communauté de réfugiés afghans installés dans le nord du Pakistan. Cette étude comprenait 1156 individus et a révélé que 2,1% de la population était atteinte de cécité et que 6,9% souffrait d'une déficience visuelle selon les critères de l'OMS. Les principales causes de cécité comprenaient la cataracte (62,5%), les anomalies de la réfraction non corrigées (16,6%), la dégénérescence/dystrophie rétinienne (12,5%), le glaucome (4,2%) et la microphthalmie (4,2%). Les causes de déficience visuelle étaient les anomalies de la réfraction non corrigées (46,2%), la cataracte (32,7%), l'opacité cornéenne (4,8%). Ces troubles sont en outre des causes importantes de perte de vision unilatérale. On a trouvé un trachome évolutif chez 3,7% de tous les enfants de moins de 10 ans.

¹Pakistan Institute of Ophthalmology, Al-Shifa Eye Hospital, Rawalpindi, Pakistan.

²Save the Children (USA), Islamabad, Pakistan.

Received: 17/01/96; accepted: 12/02/98

Introduction

Blinding eye diseases are highly prevalent in many developing countries, where the prevalence of blindness has been estimated to be 10 to 40 times higher than in industrialized countries [1]. Over 30 million people in the world are blind and most are found in the developing countries of Africa, Asia and Latin America. About 75% of this blindness is avoidable, i.e. it is either treatable or preventable [2,3]. Blindness is not only a medical and personal problem, it is also a socioeconomic issue for the individual and the community.

The Afghan refugee population in Pakistan, which is estimated to be about 4 million, has been resident since 1980. They have been mainly domiciled in camps in the northern part of the country, while many have integrated themselves into the host society. According to the population-based survey 1987–1990, conducted by the Ministry of Health of Pakistan and the World Health Organization (WHO), a prevalence of blindness of 1.78% was found in Pakistan [4]. The major causes of blindness were cataract, corneal opacities, uncorrected refractive errors and glaucoma. There is a paucity of data on the prevalence of blindness and frequency of eye diseases in the refugee population.

In order to evaluate the magnitude of this problem, a community-based prevalence survey was conducted in a settled and resident refugee population in the North-western Frontier Province of Pakistan. The major objectives of the study were:

- to determine the prevalence of blindness and visual impairment
- to assess the prevalence of major causes of eye diseases and visual loss.

Subjects and methods

Two refugee camps, Haripur and Ghazi, with populations of 43 000 and 12 000 respectively, were selected for the survey because of their non-migrant populations. In addition, a complete and recent household census had already been carried out and these data were available. A 30-cluster random sample survey was carried out. The survey sample consisted of 210 households with 1156 people selected for the study.

The clusters consisted of households that were looked after by headmen or *maliks*. The average number of persons in a household ranged from 5 to 7. The centre of the cluster was located and a bottle spun. The first household was determined by the direction of the bottle. Seven consecutive households were selected in each cluster. All selected households within a cluster were visited. The headmen of each cluster were informed of the survey and were instructed to inform all residents to be present on pre-determined days. Members of a multifamily dwelling were considered to be one household if they shared the same kitchen.

Examination in the field

Examinations were conducted in the households of the people selected by an examination team using portable equipment. The team returned to the households to examine sample members who were missed until at least 90% of all eligible people were examined. The examining team consisted of an ophthalmologist, an ophthalmic medical assistant, two medical officers, two lady health visitors, a records clerk and a driver.

Each person was first registered, screened and had a history taken by a medical officer or a lady health visitor. The ophthalmologist, after reviewing the screened results, examined each individual using a $\times 4$ magnifying loupe and a hand-held flash-

light. Each person had a complete examination of the eyelid, the palpebral and bulbar conjunctivae, cornea and lens. Direct ophthalmoscopy was performed on any person over 40 years of age and any person who had a visual acuity of less than 6/18. Schiøtz tonometry was performed on any patient who was aged 40 years or over. Pupils were dilated if the fundus could not be seen.

Visual acuity

The visual acuity of each person was measured using a Snellen E chart for use at 6 m. Acuity was coded according to standard WHO criteria [3]. A person with a visual acuity in the better eye of less than 6/18 but better than 3/60 was considered visually impaired, and a person with an acuity of less than 3/60 was considered blind. Children under the age of 4 years and those who were unable to understand the procedure of visual acuity testing had an assessment of central fixation only. When uncorrected acuity was found to be less than 6/18 without refractive correction, then visual acuity was tested with glasses or using a pinhole correction. Refractive error was determined by retinoscopic examination in the field using a lens bar.

Diagnosis

For any person with a visual acuity of less than 6/18 in either eye, the examining ophthalmologist was required to assign a single principal reason for visual loss in the affected eye. For conditions with multiple causation, the examiner assigned the underlying precipitating reason or the one that accounted for the major component of lost vision. Unless noted otherwise, diagnoses discussed in this article are reasons for visual loss in the better eye.

It should be recognized that glaucoma will tend to be underestimated as a cause of lost vision in a survey of this type. No visual

fields were done and clinical protocol requires a visualization of a cupped disc of 0.5 disc diameter or more with elevated intraocular pressure (> 22 mmHg) or other indication in order to diagnose glaucoma. Glaucomatous visual field loss would therefore often be missed, as would glaucoma-occurring situations where the optic disc appeared normal or not visualized due to corneal scars or cataract.

Data recording

Results of the clinical examination were recorded on a data sheet based on the WHO/PBL (prevention of blindness) eye examination record form (WHO/PBL/EER III/1988). For children under the age of 15 years who had childhood blindness, the WHO/ICEH (International Centre for Eye Health) childhood blindness form was also used. All data sheets were sorted by the records clerk and reviewed by the ophthalmologist before proceeding from one household to the next. All examinations were validated each evening when the team returned to the base camp from the field. At the end of the survey, the questionnaires were fed into the computer and analyses were performed using *Epi-Info*.

Results

Sample characteristics

Table 1 shows the age and sex distribution of the sample. About 60% of the sample was under 19 years of age, 18.1% over 40 years and only 6.1% over 60 years. Females comprised 55.8% of the sample; the major reason for their majority was a notable predominance in the age group 20–59 years. Males appeared to be relatively under-represented because many of the men were away working in different towns.

Table 1 Number of persons by age and sex

Sex	Age group (years)						Total	
	0-4	5-9	10-19	20-39	40-59	60+	No.	%
Male	118	150	102	78	30	33	511	44.2
Female	114	108	105	171	109	38	645	55.8
Total	232	258	207	249	139	71	1156	
%	20.1	22.3	17.9	21.5	12	6.1		

Table 2 Prevalence of blindness and visual impairment in 1156 Afghan refugees by sex and age

Age (years)	Blindness		Visual impairment	
	No.	%	No.	%
<i>Male</i>				
0-19	6	0.5	5	0.4
20-39	0	0	4	0.4
40-59	0	0	3	0.2
60+	5	0.4	15	1.3
Sub-total	11	0.9	27	2.3
<i>Female</i>				
0-19	1	0.1	4	0.4
20-39	1	0.1	7	0.6
40-59	3	0.3	23	2.0
60+	8	0.7	19	1.6
Sub-total	13	1.2	53	4.6
Total	24	2.1	80	6.9

Blindness and visual impairment

The overall prevalence of blindness (visual acuity < 3/60) was found to be 2.1% (Table 2). The prevalence of blindness among females was 1.2% compared with 0.9% among males. As expected, the prevalence of blindness in females began to increase sharply in the 40- to 59-year-old age group. People older than 60 years tended to have the highest prevalence rates. In males, blindness was not found in the 40- to 59-

Table 3 Categories of visual acuity by sex

Visual acuity	Male	Female	Total	
			No.	%
> 6/18	320	432	752	65.0
< 6/18 to 6/60	20	37	57	4.9
< 6/60 to 3/60	7	16	23	2.0
< 3/60 to PL	11	13	24	2.1
Fix and follow target	152	147	299	25.9
Undetermined	1	0	1	0.1
Total	511	645	1156	100

PL = perception of light

year-old age group. Cataract and corneal opacities due to trauma, and inherited retinal disease were common causes of blindness in young males.

Table 2 also shows the overall prevalence of visual impairment (visual acuity < 6/18 but > 3/60) by age and sex. An apparently higher visual impairment of 2.0% among females in the 40- to 59-year-old age group, as opposed to 0.2% in males in the same age group, may be partly explained by the fact that many of the men in this age group were working away from home. Table 3 shows the categories of visual acuity by sex. Overall, visual impairment affected about 6.9% of the population.

Table 4 Causes of bilateral visual loss by category of visual loss

Cause	< 6/18 to 6/60	< 6/60 to 3/60	< 3/60		< 6/18*	
			No.	%	No.	%
Cataract	8	11	15	62.5	34	32.7
Uncorrected refractive error	35	9	4	16.6	48	46.2
Retinal degeneration/ dystrophy	3	0	3	12.5	6	5.8
Glaucoma	3	0	1	4.2	4	3.9
Microphthalmos	0	0	1	4.2	1	0.9
Macular degeneration	4	2	0	0	6	5.7
Corneal opacity	4	1	0	0	5	4.8
Total	57	23	24		104	

*This includes both visual impairment and blindness

Table 5 Causes of unilateral visual loss by category of visual loss

Cause	< 6/18 to 6/60	< 6/60 to 3/60	< 3/60	
			No.	%
Corneal opacity	2	1	9	27.3
Cataract	10	3	7	21.2
Uncorrected refractive error	21	8	5	15.1
Optic atrophy	0	3	4	12.1
Post-traumatic phthisis	0	0	3	9.1
Amblyopia	2	2	3	9.1
Macular scar	1	0	2	6.1
Retinal degeneration	2	0	0	0
Pterygium	2	0	0	0
Total	40	17	33	

Causes of blindness

The leading causes of blindness (Table 4) in the Afghan refugee community were cataract (62.5%), uncorrected refractive errors (16.6%), retinal degeneration/dystrophy (12.5%), glaucoma (4.2%) and microphthalmos (4.2%). The leading causes of visual loss, which includes visual im-

pairment and blindness (Table 4), were uncorrected refractive errors (46.2%) and cataract (32.7%). Corneal opacity accounted for 4.8% of all causes of visual loss.

Causes of unilateral visual loss

Table 5 depicts the major causes of unilateral visual loss. Corneal opacities, mostly

due to trauma, were the commonest cause of unilateral blindness (27.3%), followed by cataract (21.2%), uncorrected refractive error (15.1%) and optic atrophy (12.1%).

Other conditions

Active trachoma [follicular (TF) and intense (TI)] was found in 3.7% ($n = 18$) of all children under 10 years of age. In all, 30 cases of active trachoma were seen giving an overall prevalence of 2.6%. The absence of trachoma-related corneal opacities suggests that the infection was acquired in the refugee camps and is a cause for great concern.

In all, 16 cases of strabismus were encountered. Divergent squint was one and a half times more common than convergent squint (1.67:1). The prevalence of squint was 1.4%.

We found 25 cases of conjunctivitis giving a prevalence of 2.2%. In addition, 2 cases of ophthalmia neonatorum were diagnosed.

Childhood blindness

Bilateral causes of childhood blindness included developmental cataracts (3 cases), cortical blindness (4 cases), retinopathy with mental retardation (2 cases) and retinitis pigmentosa (1 case). Out of 636 children under the age of 15 years, 10 were blind, giving an overall prevalence of 1.6% or 16 per 1000. This is likely to be a gross overestimate as the sample size for children was small. The prevalence of childhood blindness in south Asia is estimated to be 0.5–1.0/1000 [5]. Amblyopia was the commonest cause of unilateral visual loss (6 cases) and there was 1 case of post-traumatic corneal opacity. We found two children aged 3 years with night blindness and Bitot's spots following chronic diarrhoea for 3 months.

Discussion

The data presented demonstrate that eye disease and blindness are important health problems in the Afghan refugee population in Pakistan. Over 2% of the total population, and over 18.3% of the population over 60 years in the study sample were blind by WHO criterion of best visual acuity less than 3/60.

Cataracts were the major blinding condition in Afghan refugees, as is the case in most developing countries. Cataracts accounted for over 62% of all blindness despite the fact that they are generally treatable. Only 13.3% of those with evidence of cataract had had surgery. Tabbara and Ross-Degnan found a similar figure (16.6%) in the Saudi population in their community-based survey [6]. The provision of accessible cataract surgery delivered in a timely fashion before individuals are severely visually handicapped by this condition would lead to major reduction in blindness and visual impairment.

Uncorrected refractive error was the second most common cause of blindness (16.6%). Furthermore, it was the leading cause of visual loss in 46.2% of all people with vision $< 6/18$. Over 90% of the people whose visual impairment was due to refractive errors and who did not have glasses could have their vision improved if glasses were made available as indicated by their improvement in acuity with a pinhole correction or refraction. Vision screening of children and adults is required. This can be achieved relatively easily by trained primary health care workers.

Squint was seen in 1.4% of the sample and amblyopia as a cause of visual loss in these people was found in 37.5%. Early detection and appropriate referral would go a long way to reducing this cause of visual loss.

Macular degeneration is considered to be an important cause of blindness in European and North American countries [7,8]. In the Afghan refugee population, age-related macular degeneration did not feature as a significant cause of visual loss. It accounted for 5.7% of all causes of visual impairment.

Of particular importance is the emerging problem of trachoma in the young population. Poor hygiene and inadequate waste disposal were found to be significant predisposing factors. The majority of children who suffered from trachoma were found in households that kept domestic animals in close proximity (within the same compound as the household). Health education, community surveillance and treatment of

affected individuals is required as a priority. The primary health care workers can easily be trained to detect and treat active trachoma.

Owing to the large population of children under 15 years of age, visual loss in children needs special attention. Cataracts can be treated and retinal diseases can be managed with low vision aids. The presence of early xerophthalmia is disturbing as it indicates a child population that may have subclinical vitamin A deficiency and/or borderline malnutrition. A good maternal and child health service with regular vitamin A supplements will go a long way to preventing this potentially blinding condition.

References

1. International Agency for the Prevention of Blindness. *World blindness and its prevention*. Oxford, Oxford University Press, 1990:1-118.
2. Kupfer C. Worldwide prevention of blindness. *American journal of ophthalmology*, 1983, 96:543-5.
3. *Methods of assessment of avoidable blindness*. Geneva, World Health Organization, 1980:1-42 (WHO Offset Publication No. 54).
4. Memon MS. Prevalence and causes of blindness in Pakistan. *Journal of the Pakistan Medical Association*, 1992, 42:196-8.
5. Johnson JG, Minassian DC, Weale R. *The epidemiology of eye disease*. London, Chapman and Hall Medical, 1988.
6. Tabbara KF, Ross-Degnan D. Blindness in Saudi Arabia. *Journal of the American Medical Association*. 1986, 255:3378-84.
7. *Statistical studies on the blind population of Canada registered with CNIB, 1979*. Toronto, Canadian National Institute for the Blind, 1981:1-10.
8. Accardi FE, Gombos MM, Gombos GM. Common causes of blindness: a pilot survey in Brooklyn, New York. *Annals of ophthalmology*, 1985, 17:289-94.