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Original article

Avoidable visual impairment among elderly people in a Slum of Addis Ababa

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Abstact

Background: In developing countries major causes of visual impairment are known to be preventable, however there is no information about the situation in Ethiopia.

Objective: To identify the major avoidable causes of visual impairment in elderly people.

Methods: A survey was conducted between November and December 1997, in the slum of central Addis Ababa. Five hundred seventy one people above the age of 50 years underwent detailed eye examinations including visual acuity test and intra-ocular pressure measurements.

Results: About 9% were blind [visual acuity <3/60] and 18% had poor vision [visual acuity >3/60 but <6/18] and. The leading causes of blindness were cataract, 48%; glaucoma, 15.3%; trachoma 11.5%; post-operative aphakia 11.5%; and age-related maculopathy, 5.8%. These etiologies and refractive errors were responsible for 90% of low vision. Cataract, 48.3%; trachoma, 14.9%; presbyopia, 12.6%; Glaucoma, 8.9%; and external eye infections, 7.8%; were the five top causes of eye morbidity.

Conclusions: Most of (86%) the blindness in the elderly was due to avoidable causes. Intervention programs targeting cataract, glaucoma and trachoma may significantly decrease the burden of visual impairment in elderly people. [*Ethiop. J. Health Dev.* 2001;15(2):139-144]

Introduction

Current global estimates indicate that blindness affects close to 48 million people. Ninety percent of the blind live in developing countries where eye diseases and blindness are major public health problem (1). For each blind person there exist three other people with low vision, a fact that raised even greater socioeconomic concerns (2). Half of the world's blindness is due to Cataract. Trachoma, Glaucoma, Onchocerchiasis, and trauma are the other leading causes in adult population.

The population of the world is aging, and the rate of senility is more alarming in the developing countries. By 2020 the current number of older people 60 years and above doubles to reach 1 billion, of which 700 million will live in developing countries (8). And 75% of the estimated 54 million elderly blind people will be in developing countries (2).

Ethiopia has a rate of blindness ranging from 1.1% to 1.5% (9-11). This would make the estimated number of blind persons in the year 2000 around 700 to 900 thousands among its 62 million people. Nearly eighty percent of blindness in the world as well as in Ethiopia are avoidable: ether treatable or preventable (2,9-11). A community based study in central Ethiopia showed 48.1% of the blind to be above the age of 50 years (11).

Age is recognized as the most significant factor associated with visual impairment (6). The incidence of age-related cataract, for instance, sharply increase with older age (12). With the aging of the population, the number of people affected by visual impairment will increase significantly (1).

Reports that give particular attention to the eye problems of Ethiopian elderly people are sparse. The objective of this analysis was to assess the degree and pattern of major avoidable causes of blindness and low vision among elderly people.

Methods

Addis Ababa is the capital city of Ethiopia with a population of nearly three million. A local nongovernmental organization called Integrated Holistic Approach/Urban Development Project (IHA/UDP) served a slum of District 3 of central Addis Ababa clustered in four Kebeles (30, 41, 42 and 43), which lie over a 4 km^2 area. According to a 1996 local survey, 30,000 people lived in the project area, 2000 were above 50 years of age, and about 744 of the 5026 households had no latrine facilities. The community uses private and communal pipe water supply. Single mothers head more than 70% of families. No figure was available on specific health indicators. After seven years of service, the project was transformed, in 1998, to a self-help organization run by the same community.

This is a descriptive intervention oriented survey for eye problems among self-selected elderly people above age of 50 years. It was part of an eye survey program, which also included screening of 3156 school children. After thorough house-to-house agitation by the community development agents, all elderly people above the age of 50 years who presented to a provisional eye clinic set at the IHA/UDP Health Center were included in the study. Verbal consent was obtained after explaining the aims and the benefits of the screening. Making appropriate interventions fulfilled other ethical considerations.

All the subjects had their vision tested on the illiterate E chart and those who failed to identify the largest test type (6/60) were asked to count fingers at less than six meters. If they failed again, eyes were tested for perception of pointed flashlight. Those with poor vision (less than the 6/18 line) were tested with pinhole. And then refracted with trial frame & lenses, if they improved. Fundus examination through dilated pupil, was made whenever necessary and the media were clear. Intraocular pressure (IOP) was taken using the Schiotz indentation tonometer in each eye. The examination did not include retinoscopic objective refraction; visual field assessment and color vision tests.

We used the World Health Organization (WHO) recommended categories of visual impairment. The current system of grading trachoma were also used (13). Visual impairment denotes the presence of either poor vision/low vision (<6/18) or blindness (<3/60). Mature cataract, regardless of visual acuity, was that cataract in which the cortex is very opaque or completely occluded the fundus on ophthalmoscopy even after dilatation. Other degrees of cataract that caused low vision or blindness were labeled as immature. Glaucoma was defined as IOP greater than 20 mm of Mercury (Hg) with glaucomatous cupping of the opticdisc; or high intraocular pressure over 35 mm Hg with fixed and dilated pupil. Patients with no optic disc abnormality but IOP between 20 and 35 mm of Hg Mercury were considered as having ocular hypertension (4). The diagnosis of the rest of the problems was made based on conventional history and clinical presentations. Detailed history identified the cause of long standing blindness where as no laboratory investigation was used to aid diagnosis. Age, sex, address and the single most probable preventable underlying cause of visual impairment or blindness were recorded. Three ophthalmic residents carried out the examination including the author who analyzed the data.

Results

Five hundred seventy one elderly people between the ages of 50 and 100 years appeared for examination. The mean age was 63.1 years. The majorities were females and 27% had visual impairments (Table 1). The IOP ranged from 10.2 to 50.9 mm of Hg, the mean being 18.0 mm of Hg and with no significant difference between eyes or gender. It was 17.2 and 16.4 for males and 18.8 and 18.6 mm of Hg for females in the right and left eyes, respectively. Table 2 describes the leading causes of blindness and low vision. All the cataracts were age-related. Cataract, trachoma and glaucoma together contributed to more than three-quarters of the avoidable blindness.

Ninety two percent of the examined had one or more eye problems identified. The leading causes of morbidity were cataract, trachoma, glaucoma and postoperative aphakia, (Table 3). The majority (58%) of patients affected with cataract blindness needed first eye operation. The coverage of cataract surgery in the area was estimated using the new indicator called Cataract Surgical Rate (CSR). These is a simple proportion calculated by dividing the number of persons already operated in one or both eyes (those who got some surgical service) to the total number of persons operated or not operated for cataract (those who needed surgical service (14). The CSR was found to be 20 and 30 for persons for visual acuity less than 3/60 (cataract causing blindness) and 6/18 (cataract causing low vision), respectively. About 490 patients

(85%) needed one or more intervention. Medications were given for 239, while 156 received spectacles. From the total 95 referred cases, 23 were for minor surgery, 37 for cataract and other major operations and 35 for further work-up or follow up.

Discussion

The limitations of such conventional surveys based on self-selected participants are well recognized. They are subject to a number of biases. The coverage of our survey was low because only those who thought to have some sort of eye problem subjected themselves for the screening. Most of the elder people are likely to accept failing vision as a natural part of the aging process while others remain suspicious about the benefit of such screening. Although the elderly population is commonly defined as persons aged > 60 years, most blinding eye diseases start much earlier. So screening eye diseases should probably be best done at 40 ro 50 years of age.
Reports that used similar methods are few. However, many reports have shown that leading causes of visual impairment among adults are similar in both clinic and community based studies, except in areas where there is known endemic eye disease to dominant the scene (1, 2, 10, 11, 15). Although there is no uniformity and clarity of diagnosis in most of the studies, the reported causes of blindness in Africa and in Ethiopia are also similar to the global scenarios (16,19). Therefore, our results are considered as preliminary report that could be only very cautiously compared with analysis in other countries of similar geographic and socioeconomic background.

Most of the people screened were females because females head 75% of families in the community. The top etiologic causes of visual impairment and blindness among the elderly people in this screening were cataract, glaucoma and trachoma. Corneal opacity from causes other than trachoma and age-related macular degeneration, though rare, have come to the scene. These findings are similar to other hospital or community-based reports on the general population performed in this country and other developing countries (3, 9, 10, 19-21).

Cataract was the main cause (>50%) of bilateral blindness and low vision in this survey as it also is else where in the world (1, 22). With the predicted increase of other risk factors, particularly diabetes and smoking, the burden of cataract may reach even higher proportions (1, 2, 4, 22). Attempts to produce drugs for the prevention of cataract have not been successful yet, and the only treatment for cataract remains to be surgical removal of the opaque lens. The cataract backlog in Ethiopia is one of the highest and the cataract surgical rate is very low, only 73 per 100 000 people (10). One can assess the real impact of cataract intervention in a community by extrapolating the CSR. It was much lower in this urban slum when compared with an Indian district rate of 53.2% and 40% (14). It is disheartening to know that only few of the few operated cases were restored to sight with spectacle correction. The number of people who have low vision due to aphakia was high. The current trend towards intraocular lens implantation would help in avoiding visual impairment from aphakia (uncorrected vision after cataract operation).

Glaucoma affect more than 66.8 million people in the world leaving 6.7 million blind (23). Where as reports from Ethiopia are sparse, it is a significant cause of blindness in hospital-based reports in west Africa (24). The method of screening for glaucoma depended only on single assessment of IOP and optic disc assessment. These could only detect half to three quarters of cases unless combined with visual field assessment. Therefore, the number of cases with glaucoma in this survey is probably underestimated. Cases with ocular hypertension have a potentially increased risk for the development of glaucoma. It is envisaged that increased awareness about the disease and the development of new sensitive and specific screening methods increases early detection and prevention of these treatable diseases.
Although trachoma in older people usually manifest with its complications, a significant number of elders had active trachoma. Blindness from trachoma is frequently found in the arid regions of North Africa, the Sahel and the dry plains of east and central Africa (25). It is considered endemic in many part of Ethiopia. In a community-based study in central Ethiopia, trachoma (29%) caused nearly as much

blindness as cataract (31%) (11). Trachoma is related to poor standard of living, and currently it is a significant problem in underserved rural areas or urban slums such as our study community. The promising global initiative to promote the SAFE strategy might reduce the magnitude of trachoma related visual impairment (25). SAFE is an acronym that stands for Surgery for trichiasis, Antibiotic treatment, Face washing and Environmental hygiene.

In general, eye diseases were quite prevalent among the elderly people. The top causes of ocular morbidity were also similar to other reports (9, 10, 11, 19). Presbyopia, external eye infections and allergic conjunctivitis were also common findings. The growing trends of diabetic retinopathy and age related macular degeneration, as causes of blindness might have been more remarkable in this survey if the number of participants was larger. Prevention programs starting before the onset of middle age would prevent the escalation of visual impairment in the older population. This would also help to decreasing mortality associated with blindness, especially among women (26).

In conclusion, as much as 86% of blindness among the elderly people in this survey was avoidable, cataract being the leading cause. Undertaking periodic surveys or establishing a primary eye care unit in the area is appropriate. Intervention programs targeting cataract, glaucoma and trachoma may significantly decrease the burden of visual impairment in this group of elderly people. Raising awareness about preventable eye diseases and the benefits of personal and environmental sanitation, as well as improving socioeconomic status through development programs provide lasting solution to the problem.

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Tables

Table 1: Age and sex distributions and visual status of elderly residents screened for eye diseases, in a slum of Addis Ababa. December 1997.

Characteristics	No.	%
Age		
50-59	235	41.0
60-69	204	36.0
70+	132	23.0
Gender		
Females	388	68.0
Males	183	32.0
Visual Status		
Good Vision (<6/18)	415	73.0
Low Vision (<6/18>3/60	104	18.0
Blind (<3/60)	52	9.0

Table 2: Causes of visual impairment among 571 elderly residents in a slum of Addis Ababa, December 1997.

	Low vision		Blindness	
Cause	No.	%	No.	%
Cataract	60	57.7	25	48.0
Trachoma	16	15.3	6	11.3
Macular Degeneration	7	6.7	3	5.7
Glaucoma	6	5.7	8	15.3
Aphakia (Postoperative)	6	5.7	6	11.5
Refractive errors	3	2.8	0	0
Others & Unspecified	6	5.7	4	7.6
Total	104	100	52	100

Table 3: Pattern of eye diseases identified among 571 elderly residents in a slum of Addis Ababa, December 1997

Diagnosis	No.	%
Cataract and uncorrected aphakia	247	43.1
Trachoma: complicated and active 86 15		
Presbyopia 72 12.6		
Glaucoma and ocular hypertension 57 10		
Blepharitis and Bacterial Conjunctivitis 51 8.8		
Corneal Opacities: non-trachomatous 21 3.6		
Epiphora of? Obstructive drainage 20 3.5		

Allergic Conjunctivitis	19	3.3
Macular Degeneration and Retinopathies	15	2.6
Refractive Errors	14	2.4
Traumatic uniocular Visual loss	11	1.8
Strabismus ±amblyopia	10	1.7
Others and Unspecified	58	10.1
No abnormality detected	44	7.7
Total	571	100

Figures

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