

Full Length Research Paper

A study of ocular morbidity of patients attending ophthalmic outreach services in rural Ethiopia

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To determine the prevalence of eye diseases and visual impairment among patients presenting outreach site in rural Ethiopia. A cross-sectional survey for ocular morbidity among self selected patients during ophthalmic outreach campaign in Kersa town, Ethiopia, in June 2012 was conducted. A total of 214 patients underwent detailed eye examinations including visual acuity test, intra-ocular pressure measurements, anterior and posterior segment evaluation and refraction. A total of 214 patients were examined, where males comprised of 50.5%. Ocular diseases were quite prevalent among the study group. Conjunctivitis was the primary ocular morbidity accounting for 29%, followed by cataract (16.3%), presbyopia (15.4%), refractive errors (7.9%), Blepharitis 7.5%. Twenty four patients (11.2%) had uncorrected visual acuity of less than 6/60 in the better eye. The prevalence of visual impairment (VA less than 6/18) was 19.1% (41/214) in the study subjects. Eye diseases are common amongst rural Ethiopian community. Therefore, screening for eye diseases is important in identifying those patients at risk of getting blind and providing the right treatment to them and also give a chance to be treated for those who have logistic problems. The majority of the causes for ocular morbidity, visual impairments as well as blindness in the study were either preventable or treatable.

Key words: Ocular morbidity, Ethiopia, visual impairment, presbyopia, outreach campaign.

INTRODUCTION

Ethiopia has one of the highest blindness prevalence rates in the world, with 1.2 million blind people and an estimated 5 million people suffering from visual impairment. Although over 80% of blindness and visual impairment in the region is preventable, tens of thousands of people continue to lose their sight simply because they do not have access to the basic eye care that is so readily available in the developed world. Various non-governmental organizations have been working in Ethiopia to reduce the burden of avoidable blindness and visual impairment. In the rural area of Ethiopia where eye care facilities are primitive or non-existent, ocular morbidities are common. Eye diseases causing preventable blindness are often the result of a combination of factors such as poverty, lack of education and inadequate health-care services. The challenge that Vision 2020 has set itself in Africa is enormous. The social and financial hardships created by blindness that occur as result of not having on time treatment seriously affect individuals and families, in particular, and the nation at large.

Eye diseases constitute one of the commonest problems presenting to the health facilities in Ethiopia. A study of

the pattern of ocular diseases is very important because while some eye conditions are just causes of ocular morbidity, others invariably lead to blindness. Also while some conditions like refractive errors and cataract are treatable, others like trachoma and vitamin A deficiency are largely preventable.

This study was therefore designed to supply information about the pattern of ocular diseases in rural community of central Ethiopia. Information obtained from the study will assist government and NGOs in planning and facilitate the incorporation of primary eye care into the existing primary health care structure of the region.

METHODS

We conducted a cross-sectional survey for ocular morbidity among self selected patients from June 23-25 2012 during ophthalmic outreach campaign in Kersa town. It is located 230 kilometres south-eastern of Addis Ababa, the Ethiopian capital city. All patients who attended the ophthalmic campaign at Kersa health center were enlisted for this study. All the subjects had their

Table 1. Distribution of screened patients by age and sex at Kersa town, Ethiopia, June 2012 (n=214).

Age (yrs)	Sex		Total	
	Male	Female	No	(%)
< 10	16	10	26	(12.1)
11 – 20	15	20	35	(16.4)
21 – 30	7	11	18	(8.4)
31 – 40	16	16	32	(15.0)
41 – 50	15	16	31	(14.5)
51 – 60	14	14	28	(13.1)
> 61	25	19	44	(20.5)
Total	108	106	214	(100)

Table 2. Visual acuity as per WHO categorization among the study population at Kersa town, Ethiopia June 2012, (n=214).

Visual impairment category	Right Eye		Left Eye	
	No	(%)	No	(%)
No visual impairment (6/6-6/18)	150	(70.1)	149	(69.6)
Visual impairment (<6/18-6/60)	7	(3.3)	22	(10.3)
Severe visual impairment (<6/60-3/60)	10	(4.7)	6	(2.8)
Blindness (<3/60)	40	(18.7)	30	(14.0)
Undetermined	7	(3.3)	7	(3.3)
Total	214	(100)	214	(100)

vision tested on the Snellen's 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 non-cycloplegic/cycloplegic objective (retinoscopy) and subjective refractions by the optometrist. Fundus examination through dilated pupil was made whenever necessary and the media was clear. A total of 214 patients attended the services, which constituted the sample size of the study. Personal observation form was used to collect the data, which comprised of detail history and evaluation of the patients. Intraocular pressure (IOP) was taken using the schiottz indentation tonometer in each eye.

Anterior segment was examined with torchlight and magnifying loupe if and where necessary. The fundus was examined with the direct ophthalmoscope. A fundus evaluation under mydriasis was done in relevant cases. Difficult cases which required examination under the slit

lamp were referred to nearby secondary eye units for further evaluation and management. Such cases were not included in the study.

We used the World Health Organization (WHO) recommended categories of visual impairment. Visual impairment denotes VA of less than the 6/18 line. Cataract, regardless of visual acuity, was that cataract in which the cortex is very opaque or that caused low vision or blindness with significant change in the lens. Glaucoma was defined as IOP greater than 20 mm of Mercury (Hg) with glaucomatous cupping of the optic disc; 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. Age, sex, VA and the type of ocular morbidity were recorded.

Statistical analysis was performed with Statistical Package for the Social Sciences (SPSS) version 12. A P

Table 3. Pattern of ocular diseases at Kersa town, Ethiopia, June 2012.

Eye Disease	No of patients (%)	Eye Disease	No of patients (%)
Eye Lid		Retina	
Trichiasis	4(1.9)	Diabetic retinopathy	2(0.9)
chalazion	2(0.9)	AMD	6(2.8)
Ptosis	3(1.4)	Macular Scar	1(0.5)
Dermoid Cyst	1(0.5)	Retinal Detachment	1(0.5)
Blepharitis	16(7.5)	Optic Nerve	
Lacrimal system		Optic atrophy	1(0.5)
Dry eyes	8(3.7)	Optic Neuritis	2(0.9)
Nasolacrimal duct obstruction	4(1.9)	Papilloedema	1(0.5)
Conjunctivia		Refractive Errors	
VKC	22(10.3)	Myopia	7(3.3)
Allergic conjunctivitis (others)	26(12.1)	Hyperopia	5(2.3)
Bacterial Conjunctivitis	14(6.5)	Astigmatism	5(2.3)
Pterygium/Pinguecula	4(1.9)	Presbyopia	33(15.4)
Cornea		Glaucoma	
Keratitis	3(1.4)	Glaucoma Suspect	2(0.9)
Corneal Ulcer	2(0.9)	Advanced Glaucoma	7(3.3)
Bullous keratopathy	1(0.5)	Squint	
Corneal Opacity	6(2.8)	Convergent squint	3(1.4)
Uveal		Divergent squint	1(0.5)
Uveitis	3(1.4)	Trauma	
Lens		Superficial FB	2(0.9)
Cataract	35(16.4)	Deep Lacerations	2(0.9)
Pseudophakia	4(1.9)		
Subluxated Lens	2(0.9)		

value of <0.05 was accepted as indicative of statistical significance.

RESULTS

A total of 214 patients were examined, and nearly equal proportions of males and females were examined at the outreach site by the survey team, 50.5% (108/214) and 49.5% (106/214), respectively. Patients examined were from all age groups; the mean age (SD) were 39.4 (± 22.3) years, ranging from 9 month to 80 years. Eye diseases were more frequent in aged 60 and above years followed by 11-15 years group accounting 20.5% and 16.4%, respectively. The number of female patients was more than males in 11-20 and 21-30 age groups (Table-1).

When data on patients' visual acuity was considered, the uncorrected visual acuity of 6/18 or better in at least one eye was found in 150(70%) cases. Twenty four patients (11.2%) had uncorrected visual acuity of less than 6/60 in the better eye. The prevalence of visual impairment (VA less than 6/18) was 19.1% (41/214) in the study subjects. Vision couldn't be tested in 7 cases (they are children) (Table 2). Visual acuity difference was not statistically significant between genders ($P=0.94$, 95% CI, 1.31-1.66).

The prevalence of various ocular diseases is shown in Table 3. Some patients suffered more than one eye disease. For that reason, the total number of diseases in the table is more than the total number of patients in the study. Blepharitis was the most common eyelid disease (7.5%, 16/214), followed by trachomatous trichiasis. Conjunctivitis was seen in 66 patients (30.8%), of these VKC accounted the largest part (33.3%) of the conjunctiva diseases. Corneal opacity (of any cause) was seen in 6 out of 12 (50%) corneal diseases. Cataract was also the commonest eye disease seen in 16.5 % (35/214) cases.

Three cases of uveitis were detected, in all cases it was burnout. Glaucoma was seen in 9 cases. There was enlargement of optic cup in two patients who were diagnosed as glaucoma suspects and investigated using intraocular pressure and direct ophthalmoscope and referred for visual fields testing.

A percentage of 70 cases had VA 6/18 or better, while 9.8 % (21/214) of the cases examined had visual impairment due to cataract, in 3.3 % (7/214) due to RE, and the remaining 5.6% (12/214) of the subjects had visual impairment due to corneal opacity, glaucoma, amblyopia and optic atrophy. Reason for visual impairment (visual acuity less than 6/18 in the better eye) has shown in table 4.

Table 4. Causes of visual impairments among 214 patients in Kersa town, Ethiopia, June 2012. (n=45).

Eye Disease	Visual impairment*	
	No	%
Cataract	21	51.2
RE	8	19.5
CO	5	12.2
Glaucoma	4	9.7
Amblyopia	2	4.9
Optic atrophy	1	2.4
Total	41	100

*Presenting visual acuity of less than 6/18 in the better seeing eye was considered as visual impairment.

DISCUSSION

The limitations of such conventional surveys based on self-selected participants are well recognized. The coverage of this survey was low because only those who thought to have some sort of eye problem subjected themselves for the screening those who lived at far distance suffering from eye problems that did/ not cause them pain or redness in the eyes or visual impairment may not seek medical attention due to logistical difficulties. Therefore, results from such mobile eye clinics do not provide exact information on the prevalence of eye diseases in the community under study. They are subject to a number of biases. However, the data obtained is of great importance in the planning of eye services in these areas. Screening for eye diseases is important in identifying those patients at risk of getting blind and providing the right treatment to them. The majority of the causes for ocular morbidity, visual impairments as well as blindness were either preventable or treatable.

In the present study the attendance of men and women was in equal ratio. This is in contrast with the general observation that fewer females are seen in medical clinics than males in the developing countries (KC RM et al., 1998). As the study was took place at the rural areas thereby enabling the females for easy access to eye care services equally to males. Cataract was one of the commonest causes of ocular morbidity in this study that accounted for 16.4% and the main cause (>50%) of bilateral blindness and low vision in this survey similar to the national survey and it also is elsewhere in the world (Yemane Berhane et al., 2007; Resnikoff et al., 2002). This finding is similar to population based studies conducted in two different parts of rural Ethiopia, and slum of Addis Ababa (In self selected patients) that showed 50%, 66.7%and 48% of the blindness were due to cataract (Meles M et al., 2003; Alemayehu Woldeyes and Yilkal Adamu, 2011; Aga 2001). But larger than findings of a study conducted in mobile outreach clinic, Adjumani settlement camps for Sudanese refugees in

Uganda (44%) (M. Kawuma M, 2000). Bilateral congenital cataract is the most common cause of treatable childhood blindness, and this was seen in two infants. Attempts made 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 reversely the cataract surgical rate is very low (Alemayehu W and Chernent A, 1993). Refractive error is one of the most common causes of visual impairment around the world and the second leading cause of treatable blindness (Taylor HR, 2000). Also similar prevalence of refractive errors has been observed in the above studies. Nearly sixteen percent of the patients examined had difficulty in reading which was age related. All of them were refracted and then glasses were prescribed.

In general, Ocular diseases were quite prevalent among the study group. Conjunctivitis was the primary ocular morbidity accounting for 29%, of these vernal keratoconjunctivitis (VKC) or spring catarrh is accounted one-third. This is a self-limiting disorder; it often leads to visual impairment due to secondary corneal complications if not treated during active stage of the illness. Apart from this, the illness is known to affect the productivity and quality of life in school going children due to absenteeism and limitations to outdoor activities. The second common ocular morbidity among the study group was cataract (16.3%), followed by presbyopia (15.4%), refractive errors (7.9%) extra ocular diseases, like Blepharitis 7.5%, Posterior segment diseases (6.5%), which includes age related macular degenerations, Diabetic retinopathy and optic Neuritis and others. A clinic based survey of several rural eye clinics in Cambodia showed that cataract, refractive error, anterior segment diseases, glaucoma were the common diseases seen in the community (Thomson I, 1997). Conjunctivitis 32.9%, cataract 14.7%, ocular injuries 12.8% and refractive errors 9.9% were some of the diseases identified at an outpatient clinic in Ibadan, Nigeria (Scott SC and Ajaiyeoba AL, 2003). A study of eye diseases in

Gaza showed cataract, refractive errors, trachoma, keratitis, ocular trauma as the common causes of ocular morbidity (Thomson IM and Chumbley LC, 1984). Cataract (48.0%), glaucoma (21.1%), refractive errors (12.4%) were some of the ocular problems seen among rural dwellers in a study conducted in South-western Nigeria (Adegbehingbe BO and Majengbasan TO, 2007). In a similar survey of ophthalmic conditions in rural Lesotho, it was seen that conjunctivitis, refractive errors, cataract and glaucoma were the common conditions presenting in the community (Yitzhak JG and Mokete M, 1980). But the findings of the present study were larger than findings of rural Nigeria where the prevalence of refractive errors was 41.2% and it was the most common condition followed by allergic conjunctivitis and pterygium each accounting for 8.2% (Nwosu SN, 1998). The finding of prevalence of visual impairment (19.1%) among the study group was similar to the rural community (20%) in Gurage Zone (Ethiopia), Malaysia (18.9%), and comparable to the urban population (27%) in Addis Ababa and Saudi Arabia (25.6%). This finding was larger than findings of Abeshge and Kebena districts study (14.4%), south of Addis Ababa (Meles M et al., 2003; Alemayehu Woldeyes and Yilkal Adamu, 2011; Aga, 2001; Reddy SC et al., 2004; al Faran MF and Ibechukwu BI, 1993). The reason for this variation could be the age group, number of patients examined and the study design. The prevalence of visual impairment and blindness varies geographically due to socio-economic factors, availability of health services and awareness of eye diseases among the population. Globally, uncorrected refractive errors were the main cause of visual impairment; cataracts remained the leading cause of blindness in middle- and low-income countries; the number of people visually impaired from infectious diseases had greatly reduced in the last 20 years; and 80% of all visual impairments could have been avoided or cured (World Health Organization, 2011). In the present study, 88% of causes of visual impairment could have been avoidable or cured.

In conclusion, the majority (88%) of causes of blindness among the study group in this survey was avoidable, cataract being the leading cause. Stable intervention programs targeting cataract, refractive errors, glaucoma and trachoma may significantly decrease the burden of visual impairment in the area. Health educations that raise awareness about preventable and curable eye diseases and the benefits of personal and environmental sanitation are mandatory.

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