

## VISUAL IMPAIRMENT AND TYPES OF VISUAL DISORDERS AMONG ATTENDEES OF AN OUTREACH CLINIC FOR EYE CARE IN RURAL GHANA, 2006

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### Abstract

**Introduction:** The international community for eye care has targeted 2020 for eliminating avoidable blindness as a public health problem in the VISION 2020 agenda. However, eye care services in sub-Saharan Africa remain poor. The burden of eye diseases is unknown countrywide and in many rural districts in Ghana.

**Setting:** We present data on patients examined at an outreach clinic for eye disorders in Ejura-Sekyedumase, a rural district in Ghana, in December 2006.

**Objective:** To determine the prevalence of vision impairment among eye clinic attendees

Our aim was to give a profile of eye diseases in the district as baseline data to health authorities for action.

**Methods:** In January 2012, we studied the characteristics of 780 patients examined at an outreach clinic organised in December 2006, in Ejura-Sekyedumasi District, Ghana. We performed descriptive analysis of data from records and reviewed clinic reports.

**Results:** Of 780 patients examined, 704 (90.3%) had a disorder in one or both eyes: 16.2% of all eyes examined were vision impaired while 14.5% of all patients had bilateral vision impairment including blindness. The topmost five eye diseases were allergy, cataract, glaucoma, pterygium and uncorrected refractive errors. Together, these constituted over 84% of all reported eye disorders.

**Conclusion:** There was high prevalence of vision impairment among patients: more than three-quarters of reported visual disorders comprised five conditions namely cataract, glaucoma and uncorrected refractive errors which cause avoidable blindness; and allergy, and pterygium. Health authorities should assess the district prevalence of vision impairment and blindness, and ascertain burden of eye diseases. A sustainable VISION 2020 prevention of blindness programme should be adopted.

**Key Words:** Vision impairment, visual disorders, outreach clinic, eye care.

### Introduction

Eye diseases are common in rural areas with an estimated prevalence of blindness of 0.8 to 1.5% and low vision of 3.0 to 4.0 % in these areas.<sup>1,2</sup> However, eye care services are poor because of inadequate human, infrastructure and other resources.<sup>3</sup>

The international community for eye care has earmarked 2020 for eliminating avoidable blindness as a public health problem. The objective is to eliminate avoidable blindness by the end of that period. Five priority eye conditions: cataract, trachoma, refractive errors, onchocerciasis and childhood blindness have been targeted.<sup>4</sup> The key components to achieve this purpose have been clarified in VISION 2020: Right to Sight, providing a focus for all stakeholders.<sup>4</sup> In sub-Saharan Africa, the gap between the expected and what is done for eye care is wide because only about 20% of

needs are met.<sup>4</sup>

Ghana has around 1.5 ophthalmologists per 500,000 population and four ophthalmic nurses per 400,000 population respectively, many of whom are located in urban areas.<sup>5</sup> Although these ratios meet the World Health Organisation Year 2000 targets of 1:500,000 and 1:400,000 respectively,<sup>6</sup> this inequitable distribution leaves the rural communities grossly underserved. This makes eye care service delivery woefully inadequate in these areas where services are most needed. In addition the inequity also affects surveillance of eye diseases in the country.

In order to bridge health service inequity gaps in the country, including eye care, district health authorities in rural areas have been mandated and have the moral responsibility of providing comprehensive health care, including specialist care, for all citizens in their catchment areas. Some resource-poor districts, therefore, organise specialist eye-outreach clinics time and again in conjunction with authorities of eye centres and the Ghana Health Service. In 2006, one such clinic was organised in the Ejura-Sekyedumasi district, a rural district in the Ashanti Region of Ghana in collaboration with the Eye unit of the Komfo Anokye Teaching Hospital, Kumasi.

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We present data on 780 patients examined at this specialist eye-outreach clinic.

### Study Objectives

Our objectives were:

- i) To determine the prevalence of vision impairment among eye clinic attendees
- ii) To describe types of visual disorders among outreach clinic attendees
- iii) To provide health authorities with profile of district eye diseases as baseline for action.

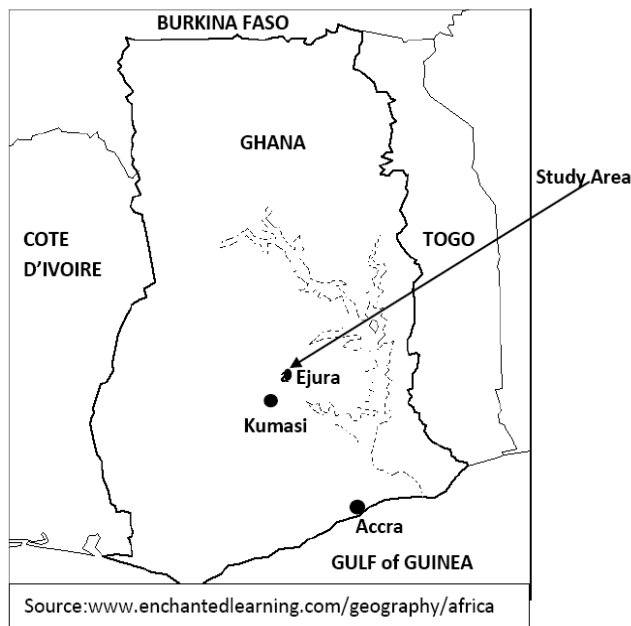
## Methods

### Study site

We conducted the study at the district hospital in Ejura, the district capital, where a 5-day outreach clinic for eye care had been held in December, 2006.

The district is rural and is located approximately 100km from the nearest referral hospital (Komfo Anokye Teaching Hospital, in Kumasi, the regional capital). The hospital serves over 100,000 inhabitants.<sup>7</sup> Most inhabitants are settler farmers from the far north of the country where trachoma and onchocerciasis are endemic. Human resource for health is limited and eye care is poor. The district has no eye nurse and records on eye diseases prior to the outreach clinic were poorly aggregated.

Inhabitants of the district enjoy the national community insurance scheme instituted by the government in 2005. This scheme covers the cost of a wide range of services including eye care at the referral hospital, yet many cannot afford the social and travel costs to this centre because poverty is widespread in this part of the country.<sup>7</sup> Figure 1 is a map of Ghana showing the study site.



**Figure 1:** Map of Ghana showing the Study Area

### Nature of the outreach clinic

The clinic was held as part of strategies by the district health management team to send specialist services closer to the people in the district which is largely deprived. A camp for eye care had been based in the district hospital for the clinic; a team of eye care specialists and auxiliaries totalling 18, supported by local health staff, held the clinic between December 18 and 22, 2006.

Patients were screened and given a standard systematic eye examination including distance visual acuity test, refraction and ophthalmoscopy. Treatment comprised a combination of drugs, eye glasses or surgery. Those who required further evaluation were referred to the teaching hospital in Kumasi.

### Study design

We performed a descriptive study, applying quantitative methods to abstracted data from patients' information charts, folders and clinic registers; we also reviewed clinic reports from the district hospital and the local health administration. These data had been systematically documented during the five-day specialist session for patients attending this outreach session.

### Data capture and analysis

In January 2012, we studied information on all 780 patients who attended the outreach clinic. Patients' information had been systematically documented in a structured morbidity register in the consulting room during the clinic session. We designed data abstraction forms which were used to extract data on age, sex, diagnosis, treatment, and visual acuity. We validated the data using individual patient's confidential reports, and theatre records for patients who went for surgery. We entered and analysed data using Stata<sup>TM</sup> software version 10.0 (Stata Corp. Texas, USA). Patient data extraction and analysis were done anonymously and unlinked to ensure confidentiality; permission was sought from health authorities in the district and the hospital.

We defined vision impairment as best corrected distance visual acuity (VA) test <6/18 on the Snellen's chart; eyes with VA 3/60 or worse were classified as blind.

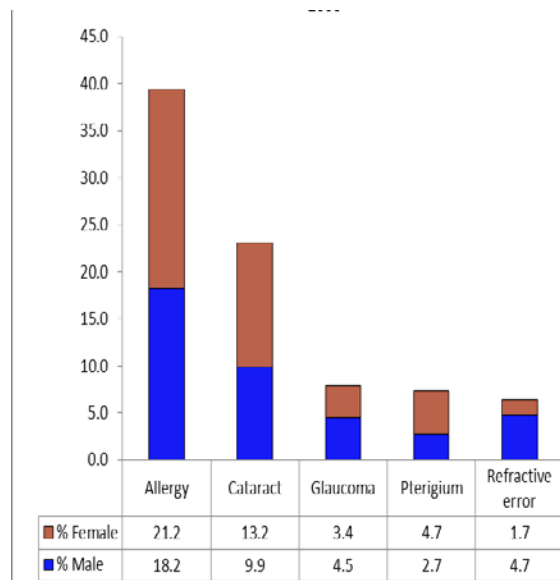
## Results

Out of 780 patients seen, 704 had a disorder in one or both eyes, giving an eye disease prevalence of 90.3% (95% confidence interval [CI]: 88.0-92.2%) among these patients. Of these, 113 (16.0%, CI: 13.4-19.0%) had bilateral blindness or visual impairment. This represents 14.5% (CI: 12.1-17.1%) of all patients examined. Of all 1560 eyes examined, 263 (16.2% [95% CI: 14.4%-18.1%]) were blind or visually impaired. Table 1 and figure 2 summarise reported eye disorders among clinic attendees.

There were more females than males but this was not statistically significant ( $\chi^2=0.002$ ;  $p$ -value > 0.5). The median age was 45 years and approximately 65% of patients were above 30 years. Allergic eye diseases (39.4%), cataract (23.2%), glaucoma (8.0%) and uncorrected refractive errors (6.4%) were the commonest of all eye diseases seen. Figure 2 shows the reported visual disorders by sex.

**Table 1.** Reported visual disorders among eye outreach clinic attendees, Ejura-Sekyedumase District, Ghana-December, 2006

Diagnosis	Male	Female	Total	(%)
Allergy	128	149	277	39.35
Cataract	70	93	163	23.15
Glaucoma	32	24	56	7.95
Pterigium	19	33	52	7.39
*Refrac. error	33	12	45	6.39
Corneal lesion	20	10	30	4.26
Presbyopia	11	7	18	2.56
Retinal lesion	3	5	8	1.14
Pingueculum	0	6	6	0.85
†Bacterial conj	2	2	4	0.57
Optic atrophy	3	0	3	0.43
Pthisis Bulbi	1	1	2	0.28
Staphyloma	1	1	2	0.28
Toxoplasmosis	0	1	1	0.14
Trauma	1	0	1	0.14
Trichiasis	1	1	2	0.28
**Undiagnosed	12	9	21	2.98
‡Other	9	4	13	1.85
<b>Total</b>	<b>346</b>	<b>358</b>	<b>704</b>	<b>100.00</b>



**Figure 2:** Percentage distribution of top five reported visual disorders at eye care outreach clinic by sex: Ejura-Sekyedumasi District, Ghana 2006

Of the 163 patients with operable cataract, 126 (77.2%) had cataract surgery within the 5 day-period. Of these

122 had intra-ocular lenses, giving intraocular lens implantation rate of 96.8 % (95% CI 92.1%-99.1%).

Seven percent (7.0%) of patients had co-morbidity of the eye. Two congenital cataracts and a case of juvenile glaucoma in a 22-year female were identified and were all referred to the referral centre, together with 21 undiagnosed cases, for further evaluation. No case of trachoma or onchocerciasis was seen in this group. However, 4.3% of all eye diseases were corneal lesions, most of which were corneal scars and opacities; as well, two cases of trichiasis were seen.

**Discussion**

There was a high prevalence of eye diseases and visual impairment at this outreach clinic. This is likely due to selection bias: the clinic was a specialised one, purposely for eye diseases, so there was patients' self-selection. Nearly 10 percent of the patients had no eye diseases and perhaps took the opportunity to do an eye check which is not routinely available in this part of the country.

Blinding eye diseases are primarily, diseases of the aged.<sup>1</sup> This probably explains the median age of 45 years and the fact that nearly two thirds of the patients were above 30 years. Many patients had allergic eye diseases: this is a farming community and environmental allergens may be associated. The use of wood fuel is a common practice and household smoke may be implicated. The common presence of pterygium may also be related to allergy. The commonest reported visual disorders were cataract, uncorrected refractive errors and glaucoma, the first two being VISION 2020 priority diseases.<sup>3, 4</sup> This was consistent with findings from other studies.<sup>5, 8, 9-12</sup>

Onchocerciasis elimination, which is a component of the Neglected Tropical Diseases Program, has probably contributed to the reduction of the prevalence of onchocerciasis as shown by its absence in this sample of patients. The district distributes free ivermectin in endemic zones as part of onchocerciasis elimination every year.<sup>7</sup> Trachoma is endemic in the northern dry areas of the country.<sup>3, 12</sup> The absence of trachoma in these patients, many of whom migrated from the endemic zones in the far north of the country<sup>7</sup> suggests unfavourable transmission conditions in the district for the disease. However, the 4.3% corneal lesions which were mostly corneal scars and opacities, and the two cases of trichiasis could be trachoma-related complications and further studies are needed to ascertain this.

**Conclusion**

We analysed data on eye diseases among attendees of an outreach clinic for eye care held in a rural district in Ghana in December 2006 to provide information to assist local planning. Although this cannot be generalised to the entire district, there was high prevalence of vision impairment among patients: more than three-quarters of reported visual disorders comprised only

five conditions namely cataract, glaucoma and uncorrected refractive errors which cause avoidable blindness; and allergy, and pterygium.

VISION 2020 priority diseases<sup>4,6</sup> were common; these pose serious public health problems in this community. Lack of trained personnel is a major obstacle in rural settings such as this.

### Recommendations

District health authorities should conduct a survey to determine the actual prevalence of blindness and assess the actual burden of eye diseases in the district. Sustainable VISION 2020 prevention of blindness programme to eliminate blinding cataract and refractive errors should be adopted. This should include education on prevention and management of cataract, glaucoma, refractive errors and allergic eye diseases in health promotion activities. Health authorities should collaborate with the local political leaders and other partners to sponsor nurses for ophthalmic training.

We recommend to the regional health authorities to post an eye nurse to the district hospital, if not already done, to eye care services. The Ghana Health Service should attract eye nurses to resource-poor areas with sustainable incentive packages, and through the Ministry of Health, train more nurses to meet demands.

### Limitations

The study revealed commonly reported avoidable blinding eye conditions in the district. This reported profile from an outreach clinic may not be a true reflection from the district, as a specialised clinic of such nature will attract patients from other areas.

The recommendations coming six years after the study would need review within the context of present eye care situation.

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