

Eye Diseases and Refractive Errors in Hargeisa, Somaliland and Implications for Human Resource Development for Eye Care

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Purpose: To estimate the burden of eye diseases & refractive errors in Hargeisa, Somaliland and analyze the need for human resource development for eye care in this region.

Study Design: Cross-sectional descriptive study.

Place and Duration of Study: The study was conducted at Manhal Specialty Hospital, Hargeisa, Somaliland from 2014-2015.

Material and Methods: All those patients who presented to the Ophthalmology out-patient department (OPD) were included in the study. Complete ocular assessment including clinical examination, refraction, visual field assessment and B scan ultrasonography was done to identify causes of the presenting eye problems. After completing the protocol the diagnosis was recorded. For the human resource development needs' assessment the data were obtained from the Somaliland's National Health Professions Commission database and the University of Hargeisa (UoH).

Results: A total of 5327 patients participated in the study, 75% of whom were adults (n = 4003) and 54.53% (n = 2905) were women. Cataract was the commonest eye disease accounting for 28.93% (n = 1541) of the cases followed by conjunctival diseases (n = 1212, 22.75%) and refractive errors (n = 1089, 20.44%). The most frequent refractive error was Myopia (n = 680 [12.77%]). Needs assessment for eye care human resource showed that there was only one trained Ophthalmologist in Hargeisa at the time of the study. This study is the first to report burden of various eye diseases in Hargeisa, Somaliland.

Conclusion: The human resource needed to deal with this burden of ocular diseases is very scarce and needs to be strengthened to prevent visual impairment and to promote eye health in the region.

Key Words: Refractive Errors, Blindness, Visual Impairment, Cataract, Human Resource

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Visual impairment caused by various eye diseases is known to have grave socio-economic consequences for the individual, the health care system and the community¹. The current estimate for the global burden of blindness is 39 million people, 18% of which live in Africa². Almost

50% of this burden is attributable to cataract. With less than 1 Ophthalmologist per million population in the region it is estimated that less than 10% of those who need eye care actually receive it. Africa is a continent with varied demographic, socio-economic and geopolitical characteristics but these estimates are

based on surveys from only selected countries of the region like Uganda, Tanzania, Rwanda, Nigeria, Mali, Kenya, Ghana, Gambia, Ethiopia, Eritrea, Cameroon and Botswana³. The horn of Africa (HOA) is a distinct geographic entity of East Africa with special demographic, climatic and socio-economic features. Africa is estimated to be the major growing region in 2050 accounting for over 25% of the world's population¹. With the changing demographics and growing prevalence of chronic illnesses, eye diseases are expected to contribute to a growing burden of blindness and visual impairment in the region². Scant epidemiological data about various eye diseases are available for the countries of the HOA which is home to over 200 million people. Somaliland is an autonomous region (since 1991) striving for international recognition. It is a relatively peaceful and politically stable territory of the region. This study was conducted at the largest Tertiary Eye Care (TEC) centre of Somaliland to estimate the burden of various eye diseases that require consultation and to analyze the human resource development needs of the area in the field of ophthalmology required to deal with this burden of disease. It is expected to provide baseline information for health care policy makers to take measures for the treatment and prevention of these diseases in the area.

MATERIAL AND METHODS

The study was conducted at the Manhal Specialty Hospital (MSH), Hargeisa from 2014-2015. The Institutional Ethics Committee (IEC) approved the study. All those patients who presented to the Ophthalmology out-patient department (OPD) were included in the study. Distance visual acuity was measured by a trained ophthalmic technician using the Snellen's visual acuity chart. After this the subjects had refraction followed by detailed eye examination by an ophthalmologist. Every patient had biomicroscopic examination on slit lamp. After assessment of pupils posterior segment examination was done with dilated pupils and intraocular pressure was measured. Visual field assessment, fundus photography and B-scan (ultrasound scan) of the eye was done where indicated to diagnose the cause of impaired vision. After completing the protocol the diagnosis was recorded.

For the human resource development needs assessment (HRDNA), gap analysis was done against the estimated burden of eye disease and the available human resource for the provision of eye care data, obtained from Somaliland's National Health Professions Commission database and the University of Hargeisa (UoH).

RESULTS

A total of 5327 patients who presented to the OPD of MSH and consented to participate were included in the study. Seventy five percent of the subjects were adults (n = 4003, 75.15%). Majority of the participants were females (n = 2905, 54.53%). Cataract was the commonest eye disease accounting for 28.93% (n = 1541) of the cases followed by conjunctival diseases (n = 1212, 22.75%) and refractive errors (n = 1089, 20.44%). Frequency of other eye diseases is given in table 1.

Table 1: Types of eye disease and their distribution (Bhatti, Abdullah, Hussain, Mohamed, Ege, Rahman).

	Disease	Frequency	Percentage (%)
1	Cataract & other disorders of the lens	1541	28.93
2	Conjunctival Diseases	1212	22.75
3	Refractive Errors	1089	20.44
4	Corneal Diseases	517	9.71
5	Ocular Trauma	334	6.27
6	Ocular Adnexal diseases	263	4.94
7	Glaucoma	191	3.58
8	Vitreo-Retinal diseases	74	1.39
9	Strabismus	31	0.58
10	Uveitis	18	0.34
11	Others	57	1.07
	Total	5327	100

Corneal and conjunctival diseases (n = 1729) emerged as a major cause of consultation for ocular problems. Amongst this category the distribution of specific diseases is given in figure 1.

¹ United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2017 Revision. 2017. New York: United Nations.

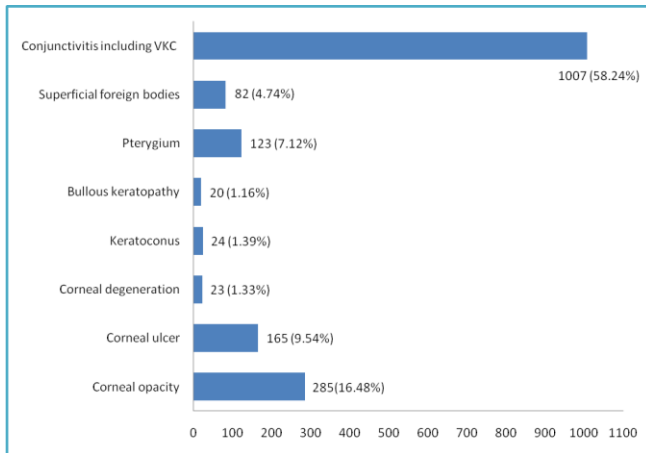


Fig. 1: Distribution of Corneal and Conjunctival Diseases.

Refractive errors accounted for 1089 cases (20.44%). Patients with myopia, hyperopia, astigmatism, presbyopia and children with amblyopia were included in this category. The most frequent refractive error was Myopia ($n = 680/5327$ [12.77%]). Out of a total of 1324 children, 50 (3.77%) had amblyopia while the overall frequency of Amblyopia was 0.94%. The details of the distribution of other types of refractive errors are shown in figure 2.

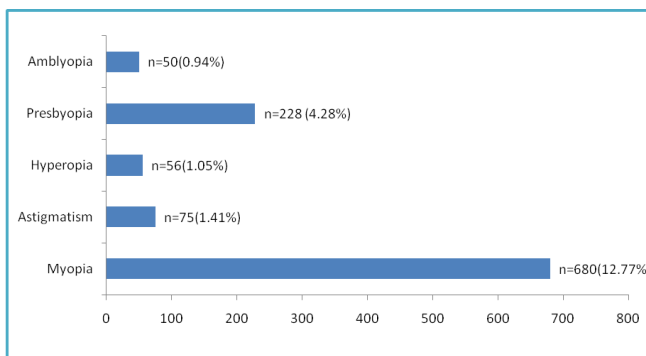


Fig. 2: Frequency of Refractive Errors & Amblyopia.

Needs assessment for eye care human resource showed that there was only one trained Ophthalmologist (holding an MCPS degree) in Hargeisa at the time of the study. The population of Hargeisa is estimated to be around 900,000ⁱⁱ. This

ⁱⁱ Republic of Somaliland- Ministry of National Planning and Development. National Development Plan (2012-2016). December 2011.

translates into one ophthalmologist per 900,000 individuals whereas the minimum required for the region is 1 ophthalmologist per 400,000 individualsⁱⁱⁱ - a target that only 14 of the 46 countries of African region could meetⁱⁱⁱ. In view of this situation in 2014 a collaborative programme for the training of Ophthalmologist was started at MSH in collaboration with UoH, Peshawar Medical College, Riphah International University, Pakistan, WHO (EMR) and Federation of Islamic Medical Associations- Save Vision. As of 2018, the programme has produced 11 Ophthalmologists with a Diploma in Ophthalmology (DO). Currently 7 trainees are enrolled in the DO programme and 2 in the MS programme. UoH also initiated a graduate programme in Optometry in which currently 42 students are enrolled.

DISCUSSION

This study is the first to report the frequency of various eye diseases and refractive errors at Hargeisa, Somaliland. Since this area of HOA is relatively a peaceful area with comparatively stable socio-political status and moderate climate, it carries a lot of potential for further human resource development to meet the burden of eye diseases in the region. The sample of the study was large enough to establish reasonable estimates and conclusions. In our sample majority of the patients were females i.e. 54.53%. Gender inequality in eye health is a complex issue and less utilization of eye care services by women is likely to be associated with their compromised socioeconomic and educational status⁴. Contrary to the evidence from developing countries⁵ our study showed a preponderance of women seeking treatment for their eye problem. The fact that blindness is more likely to affect women⁶ and the greater socio-political and economic autonomy of women in Hargeisa is likely to have contributed to more women seeking consultation for eye problems. Moreover female literacy in the area

<http://somalilandgov.com/new/wp-content/uploads/2012/05/somaliland-5-year-national-plan.pdf>

ⁱⁱⁱVision 2020- Human Resource Development Working Group (HRDWG). Global Human Resource Development Assessment for Comprehensive Eye Care. June 2006. https://www.iapb.org/wp-content/uploads/Global-HR-Development-Assessment-for-Comprehensive-Eye-Care_2006.pdf

(Age 15-24 female literacy; 44.1%)^{iv} is comparatively higher than the neighboring countries of the region^v and educational status of women is reported to be the strongest independent predictor of utilization of health care services. Studies from Nigeria also reported higher proportion of women presenting for treatment of their eye diseases⁷. Nigeria has a higher overall literacy (66.8%) with a gender parity index (GPI) of 0.8, which is significantly higher than the other countries in the region^v.

In our study cataract was the most frequent reason of eye consultation followed by conjunctival diseases and refractive errors. These findings are similar to previously reported studies. According to global estimates among all eye diseases, cataract is still the leading cause of blindness and visual impairment followed by uncorrected refractive errors, age-related macular degeneration (AMD) and glaucoma⁸. The reported causes for blindness in the eastern part of Sub-Saharan Africa were cataract (36.7%) followed by uncorrected refractive errors (13.1%), AMD (5.8%) and Glaucoma (4.0%). For moderate and severe visual impairment uncorrected refractive errors (44.8%), cataract (19.6%), AMD (4.0%) and Glaucoma (1.5%)⁸ were the main causes.

In our study external diseases of the eye i.e. conjunctival and corneal problems together accounted for a significant number of eye consultations. Amongst this category; conjunctivitis (especially allergic conjunctivitis like Vernal Keratoconjunctivitis-VKC) was a major presenting problem followed by corneal diseases. This finding correlates with other studies from Africa⁹. Trachoma- an infectious type of conjunctivitis is still endemic in 29 of the 47 countries of the region with the highest prevalence reported in Ethiopia and Southern Sudan¹⁰. Although better sanitation conditions and personal hygiene practices have been able to control active Trachoma in Somaliland, allergic conjunctivitis is still a problem

^{iv} UNICEF- Somalia, Somaliland Ministry of Planning & National Development (PND). Somaliland Multiple Indicator Cluster Survey (MICS) 2011, Final Report. 2014. Nairobi, Kenya.
https://www.unicef.org/somalia/SOM_resources_mics4keyfindings_somaliland_eng.pdf

^v UNESCO. EFA Global Monitoring Report, 2006- Literacy for All. Regional Overview- Sub-Saharan Africa. UNESCO. 2006.
http://www.unesco.org/education/GMR2006/full/africa_eng.pdf

largely due to the dry and windy environment of the area. Further studies need to be done to establish the risk factors responsible for this prevalent eye disease with blinding complications.

Refractive errors were the 3rd leading cause of eye consultations (n = 1089, 20.44%) in our study. Uncorrected refractive errors are a major contributor to the burden of low vision and the second leading cause of blindness worldwide^{3,8}. Other hospital-based studies from the African region have also reported refractive errors to be among the top three causes of ocular morbidity⁹. The overall frequency of amblyopia in this study was much lower than that reported by Caucasian and Asian populations^{11,12,13,14}. However the finding is in conformity with the 0.1-2% frequency reported from the African populations^{15,16,17}.

In our study ocular trauma was a major cause of eye diseases (n = 334 [6.27%]). With an estimated global frequency of 55 million eye injuries a year, ocular trauma is a preventable cause of ocular morbidity that can result in monocular or even binocular blindness¹⁸. The frequency of eye injuries resulting in eye disease varies from region to region depending on the socio-economic, educational and occupational health awareness level of the population and engagement in conflicts^{19,20,21,22}. Regional studies from Africa have reported a frequency of 3.03-15.95%^{23,24,25}. Our results correspond to the studies from Ethiopia which have reported 3.03-6.9% frequency of ocular trauma. Ocular trauma predominantly affects males, children and young adults and the fact that it can largely be prevented makes it a high priority for public health interventions. Further research to identify the environmental, social and occupational factors responsible for the magnitude of ocular trauma and its impact on vision and the quality of life needs to be conducted.

This study has shown that almost all major anterior and posterior segment diseases of the eye are prevalent in this community. To deal with this burden of ocular diseases at the time of this study there was only one trained ophthalmologist per 900,000 population and only one tertiary eye care facility at Hargeisa. To address this enormous need the collaborative programmes for the training of Ophthalmologists and allied eye care personnel introduced by the UoH are expected to meet the eye care HRD needs of Somaliland and the neighboring countries.

CONCLUSION

This study is the first to report burden of various eye diseases in Hargeisa, Somaliland. Cataract, refractive errors, external diseases of the eye and trauma were among the common eye diseases that required consultation. Human resource needed to deal with this burden of ocular diseases is very scarce and needs to be developed further on priority basis to prevent visual impairment and to promote eye health in the region.

Conflict of Interest: None.

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