



Thirteen years on: The long journey of optometry in Ethiopia



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Ethiopia is a developing African country with a population of more than 110 million. Visual impairment and blindness are among the public health problems in the country. The development of the eye health sector is promising although not adequate to fully address the existing problems that are relatively serious. The country is making an effort towards reaching VISION 2020, the right to sight initiative. For successfully accomplishing this goal, training primary eye care providers like optometrists plays a key role. This article provides an overview of the journey of 13 long years of the training programme in optometry in Ethiopia.

Keywords: optometry; history; long journey; Gondar; Ethiopia.

Introduction

The first author (H.W.A.) is one of the first optometry graduates from the University of Gondar, and the second author (A.S.C.) worked there as a guest lecturer; to start with, we would like to share some experiences, new developments and the history of optometry in Ethiopia.

Ethiopia, previously known as Abyssinia and officially the Federal Democratic Republic of Ethiopia, is a largely mountainous country situated in the Horn of Africa. The country is bordered by Eritrea to the north, Kenya to the south, Somalia to the east, Sudan to the west and Djibouti to the northeast. The land area of Ethiopia is estimated at about 1.1 million square kilometres and the current population is approximately 112 million, of which more than 84% live in rural areas.¹ Its capital and largest city, Addis Ababa, is situated 9°01'N 38°44'E.

The country is known for its age-old history and independence from colonialism. Ethiopia is a Federal Democratic Republic composed of nine national regional states (see Figure 1), namely, Tigray, Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, Southern Nations Nationalities and People Region (SNNPR), Gambella and Harari and two administrative states (Addis Ababa City Administration and Dire Dawa City Council). The national regional states as well as the two city administrative councils are further divided into 800 *woredas* (districts) and around 15 000 *kebeles* (10 000 rural regions).² Eighty per cent of the population are rural dwellers, and agriculture is the backbone of the country's economy.³ Ethiopia is a fast-developing sub-Saharan country with monthly per capita income of approximately \$660.00.⁴ In spite of noteworthy achievements with regard to many of the Millennium Development Goals (MDGs), Ethiopia needs to focus on eye care services in the country.

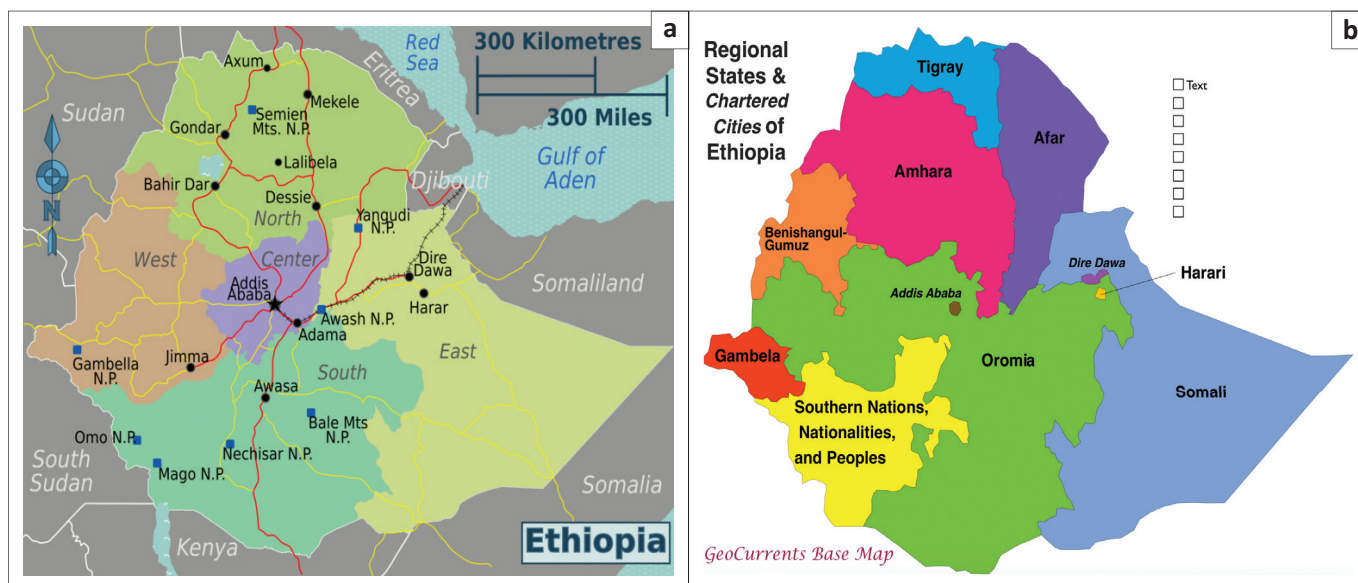
A national survey was conducted in 2006 to determine the prevalence of blindness and low vision based on the assessment of the presenting visual acuity. Of the 25 650 participants examined, the national prevalence of blindness was 1.6% (1.1% for the urban and 1.6% for the rural populations) and low vision was 3.7% (2.6% for urban and 3.8% for rural populations).⁵ The programmes are still referring to the national survey data for planning and resource mobilisations in spite of having other focussed recent studies showing a higher prevalence of blindness and low vision in different parts of the country.^{6,7,8} The prevalence of childhood blindness is about 0.1% and accounts for over 6% of the total burden of blindness, and the national prevalence of Bitot's spots (a build-up of keratin located superficially in the conjunctiva of the human eyes, which is a sign of vitamin A deficiency associated with drying of the cornea) is about 0.7%.⁵ This is higher compared to a study conducted in Kenya, Botswana and South Africa.⁹ This indicates vitamin A deficiency remains a major public health hazard in the country, and adequate emphasis needs to be given to prevent blindness among children.

In view of limited resources, blindness and low vision are the major public health problems in the country. A large proportion of low vision (91.2%) and blindness (87.4%) were the result of

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FIGURE 1: (a) Major cities of Ethiopia and (b) the nine regional states.

avoidable (either preventable or treatable) causes like cataracts, trachomatous corneal opacities, refractive error and glaucoma.⁵ The severity and the magnitude of eye problems (blindness and low vision) were recognised as the driving factors that enhanced the government's commitment towards eye care service.

Ethiopia was one of the first sub-Saharan countries to sign the declaration of The World Health Organization (WHO) to support the global initiative, VISION 2020: The Right to Sight. However, before 2006, Ethiopia had no formally trained optometrists or an optometry school. Thus, training of mid-level eye care practitioners was taken up as a strategy by the government and its partners.

Programme establishment

Literacy is now widely advocated in Ethiopia, and presently, there are 31 functioning and 10 newly instituted public universities across the country¹⁰; among these, only two universities offer optometry training using a nationally harmonised curriculum. The University of Gondar located in the city of Gondar (727 km northwest of Addis Ababa) was the pioneer in this programme followed by the Hawassa University located in the city of Hawassa (about 278 km south of Addis Ababa). ORBIS International Ethiopia (a United States-based non-profit organisation) and Vision Aid Overseas (VAO) (a charitable organisation from the United Kingdom) supported both the universities. The programme in the University of Gondar started in the 2005–2006 academic year followed by the Hawassa University in the year 2007–2008, with an intake capacity of 16 students in each institution. In each university, the programme was started under the Department of Ophthalmology in the College of Medicine and Health Sciences.

Local ophthalmologists and full-time contracted pioneer volunteer optometrists, Gemma Peters from the United Kingdom and Ruhan du Plooy from South Africa,¹¹ developed the initial curriculum for the University of Gondar. The course curriculum was mainly based on the UK system, with 3 years of theoretical and practical sessions with a Bachelor of Science (BSc) degree in Optometry being awarded. The duration of the course was 3 years like other health sciences programmes because of the national higher education policy. The training was in line with the World Council of Optometry (WCO) competency-based model of scope of practice including the fourth category. This was the time when the optometry programme became the first of its kind at the bachelor degree level, not only in Ethiopia but also in the whole of East Africa as compared to Kenya (2011), Uganda (2013) and Eritrea (2012).¹²

After the completion of a general freshman course, 16 top matric students were selected by the government from the applicants to the University of Gondar Health Sciences. Applicants who enrolled in 2005–2006 were intensively trained for 3 years and graduated in September 2008. Courses were given by expatriates from different parts of the world such as South Africa, Nigeria, India, United Kingdom, Finland and the United States. The first batch of graduates were employed in academic institutions and public hospitals within the capital city, Addis Ababa. Because of faculty member constraints, the department in Gondar did not enrol new applicants in 2006–2007.

Following the first group of graduates from the University of Gondar, in 2008, the optometry programme expanded to the Hawassa University under the auspices of the Department of Ophthalmology. As in the case of the University of Gondar, optometry courses in the Hawassa University were also handled by foreign guest optometrists until it started recruiting faculty from among the local graduates from the

University of Gondar. The first batch of optometrists graduated in 2011; some of them were employed in the university as assistant lecturers, whilst the remaining graduates were employed in government hospitals across the country.

Following the employment of six local graduates in 2009 in the University of Gondar, the optometry programme now runs more efficiently. Moreover, training has become less dependent on the ophthalmology department. Within 3 years of initiating the programme at the University of Gondar, the optometry training programme advanced into an independent department in 2009 and is now run by optometry staff/faculty. The programme in the Hawassa University, however, is still run as a department under the Department of Ophthalmology. Both universities are working on improving the infrastructure and the intake capacity, and on expanding the service delivery for the catchment areas. Figures 2 and 3 show the old and new optometry buildings and classrooms in Gondar, respectively. Compared to the first intake capacity of 16 students in 2005 in Gondar and 16 in Hawassa in 2008, the combined intake in 2018 has increased to 84 students.

Curriculum revision

The optometry curriculum was revised shortly after the first batch of students graduated from the University of Gondar. Based on the feedback from the first graduates and expert opinion, the curriculum was revised in 2009. Major reasons were short attachment schedules for clinical rotations at the different outpatient departments, aiming at an in-depth coverage of the leading causes of blindness and infectious eye diseases during practice, to increase community service exposure and to incorporate public health courses and research work for partial fulfilment of graduation. The revised curriculum added a 1-year full internship programme and research work. Presently, the optometry departments in both

universities provide a full 4-year training programme with the awarding of a Bachelor of Science in Optometry degree, which gives a broad scope of practice. Both optometry departments are producing an average of 37 optometrists per year. Figure 4 indicates the number of enrolled students annually from 2005–2006 to 2017–2018. Since the establishment of the optometry programme, a total of 336 optometrists (211 from the University of Gondar and 125 from Hawassa University) have graduated and are serving the needy in the different parts of the country. In the next 3 years, an additional 224 optometrists will graduate and are expected to join the service. The present population of Ethiopia is about 109 million people,¹ and presently, the ratio of optometrists to population is 1:324404. Ethiopia is aiming towards achieving WHO standards of 1:25000 people per optometrist in the next 4 years.

At the University of Gondar, there are presently 21 faculty staff members in the department (15 MSc holders, two public



FIGURE 3: The new classrooms.



Source: Photo courtesy of Haile W Alemu.

FIGURE 2: (a) The old building of the Department of Optometry and (b) the new building supported by Light for the World.

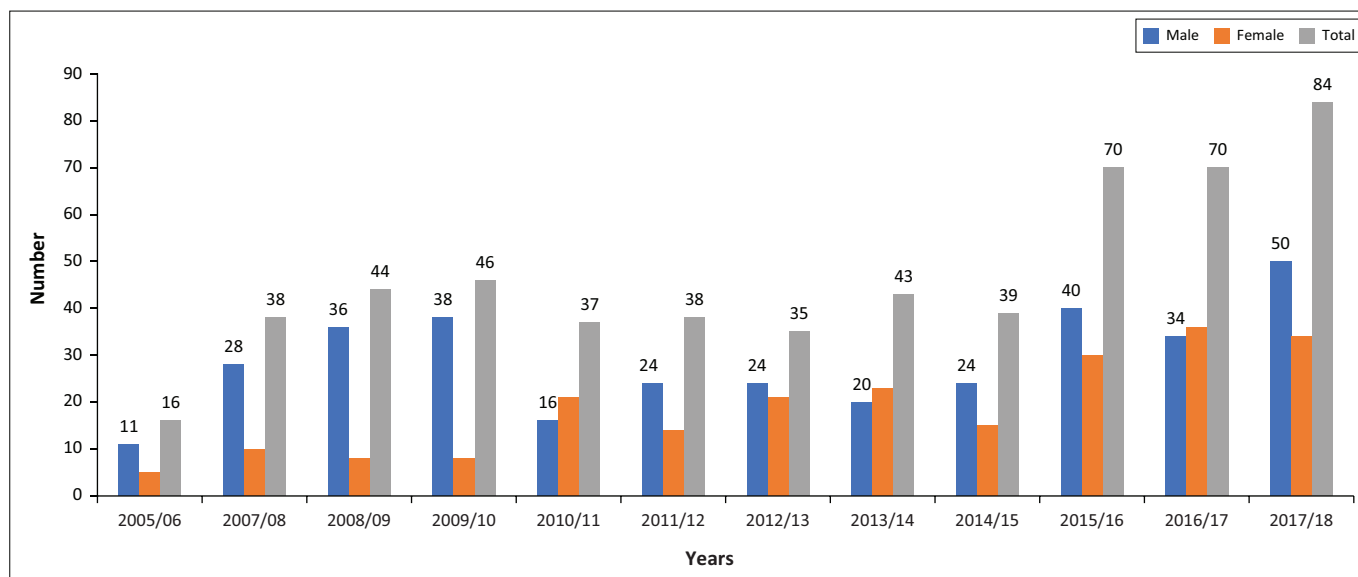


FIGURE 4: The number of enrolled students annually from the two universities from 2005–2006 to 2017–2018 (male in blue, female in red, and the total in grey).

health graduates and five females). Similarly, in the Hawassa University, there are 13 optometry faculty staff members (eight MSc holders and five females). At both the universities, the eye clinic is open to the public and examines about 70 patients a day, and optometrists diagnose, treat, refer and dispense spectacles to patients. Optometry speciality clinics such as paediatric and binocular vision clinics are partially functioning and are run by clinical optometrists. However, orthoptics, low vision and contact lens clinics are not yet properly functioning because of the shortage of resources and supplies.

The optometry school at the University of Gondar has also played a great role in training optometrists for the neighbouring states. In 2010, the Ministry of Education requested the University of Gondar to train students from Djibouti. The department awarded scholarships for 17 students (12 males and five females). Offering scholarships to foreign students has had a positive impact on the profession in promoting its popularity within the university community and at the federal level.

Commencement of the postgraduate programme

Expansion of the training from undergraduate to postgraduate level was found to be very important in optometrist retention and career progression of the optometrists vertically. In 2011, a postgraduate degree (MSc) in Clinical Optometry was introduced at the University of Gondar. Professors and expert optometrists commented on the curriculum during the African Council of Optometry Conference held in Addis Ababa in 2012. Since the commencement of the postgraduate programme, 41 optometrists have completed their master's degree in Clinical Optometry, and on average, annually eight optometrists graduated. Staff capacity building of local optometrists is undertaken to give lectures for all courses of undergraduate students. This minimises the dependency on guest lecturers and maximises the academic schedule.

Ophthalmologists, Master graduates and assistant professors (optometrists) supervise the undergraduate students in the optometry clinic. Master's in Public Health (MPH) and Master's in Clinical Optometry holders together supervise the research work. Overall, the training takes 2 years, 18 months for clinical attachments and 6 months for research. Activities include lectures, seminars, clinical attachments and research work. External examiners from the Institute of Public Health at the University of Gondar assess the theses.

The number of applicants is increasing every year, which is beyond the capacity of the existing infrastructure and clinical setup. This potentially compromises the community service, quality of service and core competency aspects of the trainees. The authors suggest that the two optometry departments should continuously improve their clinical setups, and establish skill laboratories and demonstration centres, so that the trainees' core competencies and clinical services can improve. According to the higher education standard in the country, academic staff are expected to be master's degree and doctoral degree holders to maintain quality education and clinical service. However, staffing remains one of the many problems facing optometric education in the country.

Scope of practice

According to World Council of Optometry's Global Competency-Based Model of Scope of Practice, optometry practice can be categorised into four categories, namely, optical technology service, visual functioning service, ocular diagnostic service and ocular therapeutic service.¹³ The scope of practice of the Ethiopian optometry training aimed to achieve all the four categories, in addition to performing minor ocular surgeries. The detailed scope of optometry practice includes refraction, prescribing spectacles, contact lenses, low vision aids, and managing paediatric and binocular vision disorders. It also includes diagnosing ocular pathologies, managing and referring accordingly, prescribing therapeutic drugs, performing minor ocular surgeries,

preoperative and postoperative care, performing diagnostic procedure tests and conducting research. Optometrists perform procedures independently, but if further consultation is required, they refer the patients to ophthalmologists. Compared to optometrists practicing in other East African and South African countries, the scope of practice seems wider for Ethiopian optometrists.¹⁴

In addition to teaching and learning activities, the University of Gondar and the Hawassa University optometry departments along with ophthalmology departments are largely involved in school screening programmes and community service on site and outreach programmes in the catchment areas. At the University of Gondar alone, the optometry and ophthalmology departments along with their partners conduct 8–10 outreach services annually in the catchment areas. Presently, strong community service partnerships exist with ORBIS International, Light for the World and Vision Aid Overseas. In addition, a capacity-building partnership exists with the Brien Holden Vision Institute.

Forming an optometric association

In 2011, a few committed optometrists took the initiative and formed the Ethiopian Optometric Association (EOA). It is worthy to mention that Dr Uduak Udom (former president of AFCO) supported the formation of this association, which was finally registered in 2012. Since then, it has been giving consultation services on the development of eye care policy in the country. The association successfully hosted its first annual conference in 2013 and continues to support member optometrists. At present, there are 150 association members and the EOA hopes to increase its numbers in the future. The authors have recommended to the association to facilitate a regulatory system for optometry education and practice. In addition, starting of a continuous professional development programme is mandatory to enhance an optometrist's expertise to provide quality eye care service. The association also has to start accrediting the outgoing graduates before placement to improve the quality of optometric service.

Discussion and conclusion

Ethiopia has made great strides in the training offered in the field of optometry, especially considering that this was achieved in a relatively short duration of 10 years. From being dependent on outside expertise to becoming almost self-sufficient, training optometrists outside its borders and developing postgraduate degrees within only 10 years, one can only wish them good fortune in the years to come. This progression could be considered as a potential model for East African optometry development.^{13,14} The association has to work towards increasing its membership by promoting itself and by sharing good experiences from other associations and also the African Council of Optometry.

The number of graduating optometrists and distribution across the country is encouraging. Annually, Ethiopia produces a higher number of optometrists when compared

to other East African countries.¹² However, the number is still not enough compared to the country's population and the magnitude of the problems concerned. Also, shortage of equipment in demonstration rooms, shortage of outpatient clinics and the absence of skill laboratories likely compromise trainee performance in the universities. Shortage of equipment and supplies largely remain a challenge for practitioners in the government hospitals.

Forming an association, increasing the number of graduating optometrists and further studying programmes were positive developments, but still there are critical challenges that remain to be addressed. Some of the concerns are the lack of a professional regulatory system and the absence of established continued education programmes to upgrade knowledge and teach and inform practitioners about new developments in the industry. The system does not fully reach the majority rural population, and the setup and infrastructure both in the training institutes and hospitals are still prominent challenges.

Mostly, the instruments used in both the departments and hospitals discussed were supplied by donors. This trend makes the government reluctant towards allocating proper budgets to eye care training and hospital services. Because of this scenario, the departments are in need of optical equipment and instruments to sustain quality education and hospital service. If there are people willing to donate new/old, but useable instruments, it would be very much appreciated, as is the case with all donations. The contact detail of the Department of Optometry, the University of Gondar, is Haile Woretaw (email: haileworetaw@gmail.com) and that of the Department of Optometry, the Hawassa University, is Kindie Desta (nemail: kindudiaopt@gmail.com).

Call for regional collaboration

Except for Somalia and Djibouti, the rest of the East African countries are offering bachelor- or diploma-level optometry training programmes.¹⁴ A great deal of effort is being put into strengthening regional eye care services and minimising the burden of blindness because of avoidable causes. However, the regional collaboration to standardise and harmonise the training curricula and scope of practice to the level of the World Council of Optometry competency levels is yet to be accomplished. This could facilitate staff and student exchange across the national boundaries in the region. In addition, it complements the unifying principle that underlies the optometrists' efforts to provide comprehensive eye care for their patients and facilitate patient referrals.

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Competing interests

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Authors' contributions

H.W. conceived, designed and compiled the initial draft of this article. A.C. guided the write-up of the information and data and compiled the final article.

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Data sharing is not applicable to this article.

Disclaimer

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