

Survey of ENT services in Africa: need for a comprehensive intervention

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Background: Burden of disease (BOD) is greatest in resource-starved regions such as Africa. Even though hearing disability ranks third on the list of non-fatal disabling conditions in low- and middle-income countries, ear, nose, and throat (ENT) disorders are not specifically coded for within the framework governing global BOD estimates, and in discussions about health challenges, non-communicable diseases receive scant attention. Implementing cost-effective interventions to address conditions largely neglected by global estimates of BOD such as hearing loss are important contributors to health and economic development.

Objectives: Establish a database of ENT, audiology, and speech therapy services in Sub-Saharan Africa; create awareness about the status of these services; propose effective intervention; gather data to lobby African governments, donor countries, and aid organizations; determine need for Developing World Forum for ENT, Audiology, and Speech Therapy services.

Design: Survey of ENT, audiology, and speech therapy services and training in 18 Sub-Saharan Africa countries.

Results: There is an alarming paucity of services and training opportunities, and there is a large gap between higher technology, expensive health care in high-income countries and lower technology, low-cost practice in low-income countries.

Conclusions: Lower technology and lower cost Developing World medical practice should be recognized and fostered as a field of medical practice, teaching, and research. Developing World centers of excellence must be fostered to take a lead in teaching, training, and research. A *Developing World Forum for ENT Surgery, Audiology, and Speech Therapy*, directed and driven by Africa and the Developing World, supported by the First World, should be established, to develop a comprehensive intervention to turn around the severe shortage of services and expertise in the Developing World. Global health policies and practices should include new norms and standards which serve the interests of the global community, and are based on current realities of global health.

Keywords: *otolaryngology; ENT; audiology; speech therapy; Developing World; Africa; hearing*

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In recent years, public health has emerged as a priority in the discourse on globalization, and the collective health of the world's people has become a subject of intense debate. The challenge of addressing transnational health problems is not new. In the mid-1940s, the threat of malaria, polio, and biological warfare led to the establishment of Centers for Disease Control with its initial focus on combating malaria by killing mosquitoes (1).

Concerns about unequal development in the world underpin all discussions related to the global health agenda, with available evidence pointing to growing economic disparity. This inequity is mirrored by the

burden of disease (BOD), which is greatest in those regions of the world where resources are few.

Nowhere is this inverse relationship more prominent than in the African subcontinent. Yet, in discussions about addressing Africa's health challenges, non-communicable diseases have received scant attention. This has led to a current wave of advocacy for this neglected area.

Hearing disability ranks third on the list of non-fatal disabling conditions in low- and middle-income countries (2). There is a broad agreement that implementing cost-effective interventions to address conditions largely neglected by global estimates of BOD such as hearing loss are important contributors to health care and, in

turn, overall economic development (3). Yet, even within the framework governing global BOD estimates, conditions such as ear, nose, and throat (ENT) disorders are not specifically coded for.

Against this background, a survey was done of the availability of ENT, audiology, and speech therapy services and training in Sub-Saharan Africa.

Present investigation

Aims of study

- 1) Establish a database of ENT, audiology, and speech therapy services in Sub-Saharan Africa.
- 2) Create an awareness in the First World about the status of these services.
- 3) Plan and promote effective, targeted support for these services.
- 4) Gather data to lobby African governments, donor countries, and aid organizations.
- 5) Determine the need for a Developing World Forum for ENT surgery, Audiology, and Speech Therapy.

Materials and methods

A questionnaire was distributed by email to an ad hoc group of ENT surgeons and audiologists in Sub-Saharan African countries in which there were known to be ENT services. Participants were traced through personal contacts and the *Pan African Federation of Oto-Rhino-Laryngological Societies* (PAFOS) database, and proved to be challenging or impossible in some countries. Questions were asked about the availability of ENT, audiology, and speech therapy services and equipment (nil/poor/good/excellent), about training programs for ENT surgeons, audiologists, and speech therapists, about the availability of services in rural areas, and about their opinions about how to improve the situation.

Results

ENT surgeons from 18 Sub-Saharan countries responded to the survey (Fig. 1). Countries with no known resident ENT services were not surveyed.

Table 1 and Fig. 2 present the number of ENT surgeons, audiologists, and speech therapists per country, and compares it to the UK. The UK has the poorest ratio of ENT surgeons to population in Europe, and is intending to further improve this ratio to 1/75,000 (4). Some African countries have no ENT, audiology or speech therapy services at all.

Table 2 presents a summary of ENT, audiology, and speech therapy training programs. Many countries have no training programs, especially for audiology and speech therapy. If one applies the current ratios of ENT surgeons, audiologists, and speech therapists in the UK to the total population (521.7m) of the countries surveyed, then the

shortage of personnel in these 18 countries is as follows: ENT: $5,251 - 496 = 4,755$; audiology: $21,381 - 525 = 20,856$; speech therapy: $85,525 - 1,182 = 84,343$.

In all the countries surveyed, the overwhelming majority of people depend on the state health services. Table 3–6 present summaries of the levels of clinical services in the state sector in the countries surveyed. ENT services are restricted to major cities (Table 3).

Table 4 highlights the poor access to simple, routine audiology, hearing aids and the most basic hearing restoration surgery such as ventilation tubes and tympanoplasties.

Table 5 demonstrates that there is very poor access even for relatively low-cost oncologic surgery, and that laryngectomies are not offered the opportunity of post-laryngectomy voice restoration.

Table 6 presents the poor access that patients have to modern sinus and rhinologic surgery, and the reliance that is still placed on open as opposed to endoscopic sinus surgery. In some countries, no sinus surgery is done.

Table 7 highlights the limitations to delivering a modern ENT service due to a lack of equipment.

Discussion

In *Engaging for Health* (2006), the World Health Organization released a plan for global health for the next decade, and proposed the following major policy thrusts (5):

- 1) Investing in health to reduce poverty.
- 2) Building individual and global health security.
- 3) Promoting universal coverage, gender equality, and health-related human rights.
- 4) Tracking the determinants of health.
- 5) Strengthening health systems and equitable access.
- 6) Harnessing knowledge, science, and technology.
- 7) Strengthening governance, leadership, and accountability.

There has been an unprecedented global response in the past 10 years, with large increases in funding being directed at global health improvement. Recognition of the dire circumstances in Africa has placed the subcontinent at the forefront of such efforts through initiatives around AIDS/HIV, malaria, and tuberculosis. These efforts are however uncoordinated, and the disconnection between vast donor funding and lack of development of health systems is lamentable (6), for in most cases, the financial aid targets particular diseases, such as HIV/AIDS and malaria; interventions, such as ARV programs or bed nets; or a list of challenges which are unconnected to strengthening of health systems and indigenous institutions which have the potential for making a sustainable impact on health. A further reality is that the design of several of these initiatives is dominated by



Fig. 1. Eighteen countries that participated in survey.

Table 1. Comparisons of ENT surgeons, audiologists, and speech therapists/100,000 people, with the UK

Countries	Population (Million)	ENT surgeons		Audiology		Speech	
		Number	Per 100,000	Number	Per 100,000	Number	Per 100,000
Botswana	1.7	3	0.176	6	0.353	3	0.177
DRC	55	25	0.045	0	0	0	0
Ethiopia	78	11	0.014	0	0	0	0
Ghana	22	15	0.068	6	0.027	2	0.009
Ivory Coast	21	48	0.229	1	0.005	3	0.014
Kenya	33	40	0.121	4	0.012	3	0.009
Lesotho	2	2	0.1	0	0	0	0
Madagascar	17	16	0.09	2	0.012	4	0.024
Malawi	10	1	0.01	0	0	0	0
Namibia	2	3	0.15	7	0.35	12	0.6
Nigeria	130	70	0.054	5	0.004	3	0.002
Senegal	11	25	0.227	1	0.009	2	0.018
S Africa	48	200	0.417	490	1.021	1,144	2.383
Swaziland	1	2	0.2	1	0.1	1	0.1
Tanzania	36	11	0.031	0	0	2	0.006
Uganda	28	16	0.057	1	0.004	2	0.007
Zambia	12	2	0.017	1	0.008	0	0
Zimbabwe	14	6	0.043	0	0	1	0.007
Total	521.7	496	0.095	525	0.101	1,182	0.227
UK	61	614	1.0	2,500	4.1	10,000	16.393

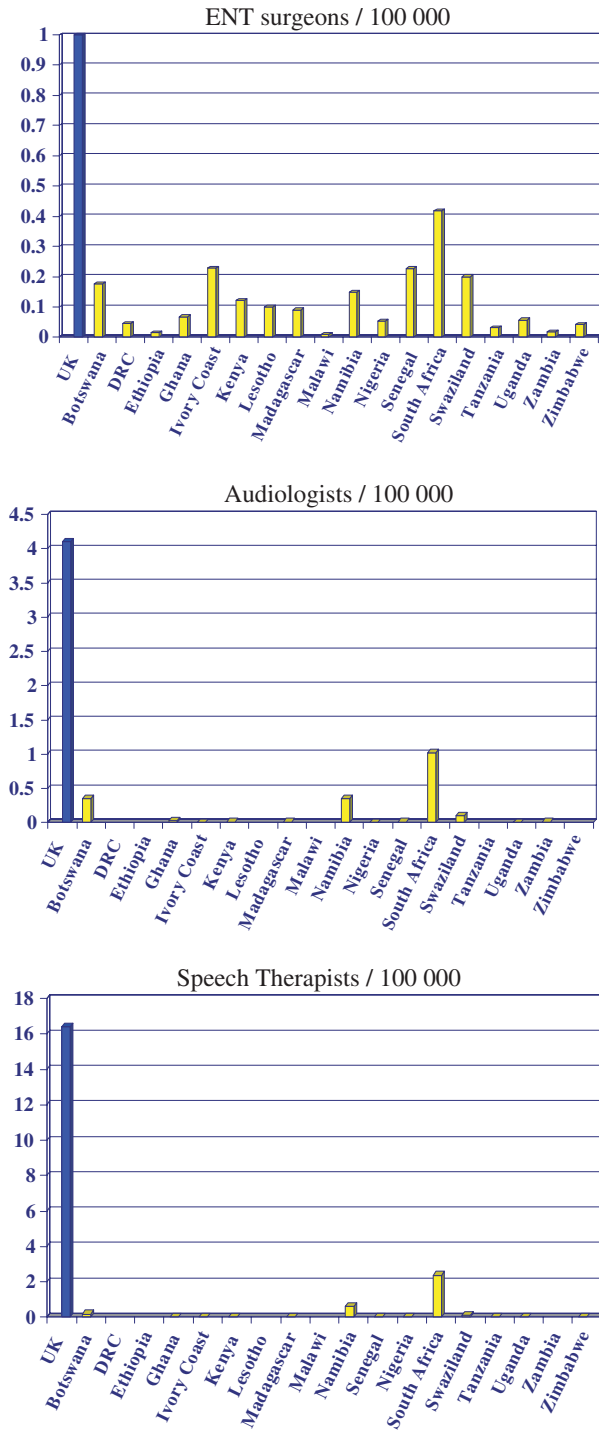


Fig 2 (a, b, c). Comparisons of ENT surgeons, audiologists, and speech therapists/100 000 people, with the UK.

the wealthy world, with limited input by those most affected, leading to programs which may not serve short- or, indeed, long-term health development needs. Efforts to address specific health challenges lie in the realm of innovative, targeted interventions, based on careful

analysis of the problem, and designed by those who have practical experience of, and insight into, appropriate and effective solutions.

It is common knowledge that all the countries surveyed in this study have an enormous ENT-related BOD. This audit presents a disturbing picture of under-resourced, understaffed, and outdated ENT, audiology, and speech therapy services in Africa. Patients still die from simple ENT infections and curable cancers, and do not have access to the most basic hearing tests or hearing rehabilitation. The audit also highlights the lack of training facilities, critical to improving the shortage of qualified staff.

This survey demonstrates the paucity of specialized services and training facilities. While we acknowledge the great importance of non-specialist ENT, audiology and speech services provided by nurses and other medical personnel, it is only through the leadership, training, research, and specialized clinical services provided by a critical mass of resident, well-trained specialists in these fields, that these services will become self-sustaining and countries may one day become independent of foreign medical assistance.

What is clearly needed is a comprehensive, multi-pronged, multinational program to improve the quality of, and access to, ENT, audiology, and speech therapy services in Africa. Such a program has to be carefully planned to take into consideration political, infrastructural, and staffing realities, and will have to be planned jointly with local medical practitioners, academics, academic institutions, governments, and international donor and health organizations in order to be effective, cost-effective, and sustainable.

Vorobiof and Abratt reported that 21 African countries do not have radiation therapy facilities (7). Hence, reliance in these countries has to be placed on a purely surgical approach to cancers of the head and neck. Our study also highlights the lack of modern equipment and reliance on outdated surgical techniques. For these reasons, ENT surgeons in poorer countries are compelled to practice lower-technology, lower cost type surgery compared to their counterparts in the Developed World. This chiasm between high technology, high-cost medical practice in the First World versus lower technology, lower cost medical practice in the Developing World, is rapidly increasing, and will continue to accelerate. It is unlikely that the poor who live in the Developing World will ever have ready access to new, high technology, high-cost medical advances. With changing medical practice in the First World due to advances such as imaging, chemotherapy, irradiation, neuronavigation, robotics, minimally invasive surgery, interventional angiography, genetics, and pharmaceuticals etc, younger generations of First

Table 2. Training programs

Countries	Medical schools		ENT surgery	Audiology	Speech
	Total number	Number with ENT training	Number of ENT surgeons who qualify p.a.	Training program?	Training program?
Botswana	0	0	0	No	No
DRC	4	1	1	No	No
Ethiopia	6	0	0	No	No
Ghana	3	2	1-2	No	No
Ivory Coast	2	1	8	No	No
Kenya	2	1	4	Yes	No
Lesotho	0	0	0	No	No
Madagascar	2	1	0	No	No
Malawi	1	0	0	No	No
Namibia	0	0	0	No	No
Nigeria	36	19	4	No	No
Senegal	2	1	5	No	No
S Africa	8	8	6	Yes	Yes
Swaziland	0	0	0	No	No
Tanzania	5	2	2	No	No
Uganda	3	1	1-3	No	No
Zambia	1	0	0	No	No
Zimbabwe	1	0	0	No	No

Table 3. Countries with access to ENT services outside major cities

Availability of State ENT services outside major cities			
Nil	Very poor	Poor	Good
9	3	5	1

World medical practitioners have become unfamiliar with medical and surgical care appropriate to the Developing World, even though it might have been the standard of care in the First World as recently as 10 years ago. Diseases such as leprosy, tuberculosis, HIV, malaria, rheumatic fever, complicated mastoiditis and sinusitis, etc. are essentially diseases of the Developing World and are rarely encountered in the First World. Consequently,

Table 4. Countries with access to hearing-related services

Audiology and otologic surgery	Availability in State service			
	Nil	Poor	Good	Excellent
Audiology	5	9	3	1
Auditory brainstem reflexes (ABR)	13	3	1	1
Hearing screening: newborn	16	1	1	0
Hearing screening: schools	12	3	3	0
Hearing screening: industry	11	5	2	0
Hearing aids	9	7	2	0
Myringotomies, ventilation tubes	4	10	3	1
Tympanoplasty	4	8	5	1
Mastoidectomy for cholesteatoma	2	10	5	1
Mastoidectomy for mastoiditis	3	9	5	1
Middle ear (ossicular) prostheses	14	3	1	0
Bone anchored hearing aids	17	0	1	0
Cochlear implants	17	1	0	0

Table 5. Countries with head and neck oncologic surgery

Head and neck oncologic surgery	Availability in State service			
	Nil	Poor	Good	Excellent
Total laryngectomy	5	8	3	2
Speech prosthesis post-laryngectomy	13	3	2	0
Partial laryngectomy	11	5	2	0
CO ₂ laser surgery	16	1	1	0
Parotidectomy	3	5	7	3
Radical neck dissection	6	7	4	1
Modified neck dissection	5	7	5	1
Selective neck dissection	7	6	5	0
Commando resection	9	6	3	0
Total maxillectomy	6	6	4	2
Craniofacial resection	13	3	2	0
Pedicled flaps e.g. pectoralis major	9	5	4	0
Free microvascular flaps	13	4	1	0
Mini and microplates	6	9	2	1
Fine needle aspiration	3	9	3	3
Frozen section	12	3	3	0

Table 6. Countries with sinus and rhinologic surgery

Sinus and rhinologic surgery	Availability in State service			
	Nil	Poor	Good	Excellent
Endoscopic ethmoid sinus surgery	12	3	3	0
External ethmoidectomies	5	4	7	2
Inferior meatal antrostomies	6	5	5	2
Caldwell Luc/radical antrostomy	4	4	8	2
Cosmetic rhinoplasty	14	4	0	0

Table 7. Countries with modern ENT equipment (NR = no response)

High cost equipment & services	Availability in state service			
	Nil	Poor	Good	Excellent
Flexible nasopharyngoscope (NR: 1)	9	4	3	1
Operating microscopes	0	10	7	1
Otology drill (NR: 1)	3	8	4	2
CO ₂ laser	16	1	1	0
Ultrasound of neck	5	4	6	3
CAT scanning (NR: 1)	2	2	6	6
MRI scanning	12	3	1	2
PET scanning	17	1	0	0
Radiation therapy	7	6	3	2

medical practitioners in Developing World countries can no longer turn to centers of excellence in the First World for guidance about sound, lower technology, lower cost healthcare.

It is therefore crucial that we acknowledge the existence of *two tracks of medical practice* i.e. a higher technology, higher cost First World medical practice versus a lower technology, lower cost Developing World medical practice. Developing World medicine and surgery should be recognized and fostered as very important fields of clinical practice, teaching, and research that cater for >50% of the world's people. Centers of excellence in the Developing World need to be fostered and need to take the lead in terms of teaching, training, and research in Developing World medical practice.

A *Developing World Forum for ENT Surgery, Audiology, and Speech Therapy*, directed and driven by Africa and the Developing World, but supported by the First World, should be established, and should develop a *comprehensive intervention* to turn around the severe shortage of clinical services and expertise in Africa and the Developing World. A key element would be to establish and/or strengthen centers of clinical, teaching, and research excellence in the Developing World. Teaching institutions in the First, but in particular in the Developing World should provide specialist training and clinical fellowships to under-resourced countries, with an emphasis on staff training at teaching hospitals.

But the answers to the challenge of Africa's health and that of global health inequity also lie with global health policies and practices, including developing new norms and standards for health care which serve the interests of the global community, and are based on the current realities of global health, and which strive to advance efforts to promote health equity.

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