PERSPECTIVE

Improving access to hearing care services and professionals in Africa through task sharing: The Malawian experience

Wakisa Mulwafu[1], Johannes J. Fagan[2]

1. Department of Surgery, College of Medicine, Blantyre, Malawi
2. Division of Otolaryngology, University of Cape Town, Cape Town, South Africa

Correspondence: Prof. Johannes J. Fagan (johannes.fagan@uct.ac.za)

East Cent Afr J Surg. 2019 Apr;24(1):78–81
https://dx.doi.org/10.4314/ecajs.v24i2.1

Abstract

A task sharing model to improve access to audiology and ENT services is presented that has been successfully introduced in Malawi to overcome the shortage of specialist care. The Malawian experience also clearly demonstrates that with appropriate training, endoscopic myringoplasty can be successfully performed by mid-level health workers. Based on the Malawian experience, we recommend that developing countries with skills shortages should embrace task sharing with mid-level health workers assuming roles traditionally reserved for medical doctors, audiologists and otolaryngologists, including endoscopic myringoplasties, to improve access to hearing care services.

Keywords: audiology, otorhinolaryngology, ENT, hearing loss, conductive hearing loss, myringoplasty, task sharing, community health workers, mobile health units, Malawi

Introduction

Malawi has a severe shortage of quality ear and hearing services[1]. Even when such services are available, utilisation remains poor[2,3].We present a task sharing model that has been successfully introduced in Malawi to improve access to audiology and ENT services to overcome the shortage of specialist care and propose it as a model to be used elsewhere in developing countries.

Malawi has an extensive and comprehensive health infrastructure consisting of Village Clinics, Health Centres, and District and Central Hospitals linked through a referral system. Despite this good infrastructure, Malawi has a severe shortage of health workers of all types, making it difficult to provide care to the population, especially in rural areas. Almost 80% of all specialist positions are unfilled, and the Ministry of Health (MOH) is aware that it will not be possible to meet its targets to improve the quality of healthcare if it continues with its current recruitment and training strategies. Consequently, there is a vital need to adopt novel approaches to training of health personnel to meet the Essential Health Package (EHP) goals of the Malawi Ministry of Health[4].The EHP aims to improve access to quality health care for every Malawian at his/her first contact with the healthcare system. The greatest present barrier to this is the critical shortage of human resources for health, which has contributed enormously to increased pressure on the health delivery system.

With only two resident otolaryngologists for its population of 19m, Malawi has introducedseveral initiatives to improve access to ear and hearing services for its extremely underserviced population. One such initiative is ***tasksharing****i.e.* clinical servicesthat would normally be provided by doctors, ENT specialists and audiologists, now delivered by Health Surveillance Assistants (HSAs, Malawi's Community Health Workers) and mid-cadre healthworkers including Ear Nose and Throat (ENT) Clinical Officers, and Audiology Clinical Officers.

Health Surveillance Assistants

HSAs provide health services at community level, and work in health posts, dispensaries, village clinics, and maternity clinics. Each HSA serves a catchment population of 1,000 people. Malawi currently has 7,932 HSAs supported by 1,282 Senior HSAs[5].HSAs mainly provide promotive and preventive healthcare through door-to-door visitations, village and outreach clinics and mobile clinics.

Mulwafu et al previously reported in 2015 about the task sharing work of 29 HSAs, all trained by the 1st author (WM) using the *WHO Basic and Intermediate Training Modules on Primary Ear and Hearing Care*[6].This training was found to be effective in terms of improving HSAs' knowledge of ear and

Figure 1. District and central hospitals currently with qualified ENT Clinical Officers

hearing care and formed part of a Key Informant Method (KIM) population-based study conducted in the Thyolo district to assess the prevalence and causes of hearing impairment (KIM Hearing study).

HSAs work in their communities to identify people with ear and hearing conditions. They are salaried,formal employees of the Environmental Health Department within the MOH. The Environmental Health Department has different cadres of staff, from management (District Environmental Health Officer, DEHO) to environmental health officers (EHOs) at supervisory and programme levels. Although Assistant Environmental Health Officers formally supervise the HSAs, more experienced Senior HSAs, also called HSA supervisors, provide most of the direct supervision to HSAs.

Clinical officers

General clinical officers undergo 3-years' training after leaving high school and are awarded a *Diploma in Clinical Medicine*. Following completion of training, they deliver medical services at a secondary healthcare level e.g. most caesarean sections at district hospitals are done by clinical officers. The delivery of clinical services in Malawi is heavily dependent on clinical officers who play a central role at every level of medical facility, from Health Centres to Central Hospitals. Some clinical officers are upgraded to subspecialties like ENT, Ophthalmology, Orthopaedics and Anaesthesia.

Table 1. Cadre which operated on patients undergoing endoscopic myringoplasty at QECH

Surgeon	Ears, n (%)
ENT Clinical Officer	60 (72%)
Medical Officer	5 (6%)
Assisted by Consultant	14 (17%)
Consultant only	4 (5%)
Total	83

Ear Nose and Throat (ENT) and Audiology Clinical Officers

ENT & Audiology clinical officers provide excellent support for government efforts to develop human capital to deliver its EHP. The training programme was introduced by the 1st author (WM) in 2010toexpand the otolaryngology health workforce in a relatively short period, as, even were a large number lot of ENT surgeons to be trained, it was considered unlikely that many would work in district hospitals and serve rural communities.

These clinical officers receive 18 months' training in addition to 2-years' training as Medical Assistants and are awarded a *Diploma in ENT and Audiology*. The introduction of the clinical officer training programme was preceded by four essential steps i.e. convening a curriculum conference in July 2010 to develop a curriculum; approval by the host clinical officer training institution (Malawi College of Health Sciences); approval by the Ministry of Health; and approval by the Medical Council of Malawi in November 2010. Training modules for the diploma course in ENT and Clinical Audiology had to be written and included basic principles and procedures of ENT patient care, ENT pharmacotherapeutics, ENT conditions and diseases, clinical audiology, ENT surgery and community ENT[7].

Twenty-seven ENT Clinical Officers and four audiology officers have been trained to date to deliver ear and hearing services at district and central hospitals and to help improve access to services. They are salaried formal employees of the Clinical Directorate of the MOH, and are deployed in district (secondary) hospitals, with some deployed at central (tertiary) hospitals*(Figure 1)*.The ENT Clinical Officers are expected to be equipped at least with an otoscope and a headlight, although even this basic equipment can be difficult to obtain. Even though the effectiveness of ENT Clinical Officers has not been formally assessed, other studies have shown that Clinical Officers who perform the bulk of emergency obstetric operations at district hospitals in Malawi have comparable postoperative outcomes to those of medical officers[8].

Task sharing endoscopic otologic surgery

It is impossible for 2 ENT surgeons in a country with 17million people to attend to even a fraction of patients with clinically significant perforated tympanic membranes. Endoscopic myringoplasty is however well suited to be done by clinical officers, as diagnosis and clinical decision-making

Table 2. Outcomes of endoscopic myringoplasty at 6 weeks and 3 months

Outcome	All surgeons		Clinical officers	
	6 weeks	3 months	6 weeks	3 months
Graft taken	47 (73%)	44 (96%)	38(83%)	29(97%)
Graft medialised	3 (5%)	0	2(4%)	1(3%)
Graft failure	14 (22%)	2 (4%)	6(13%)	0
Total	64	46	46	30

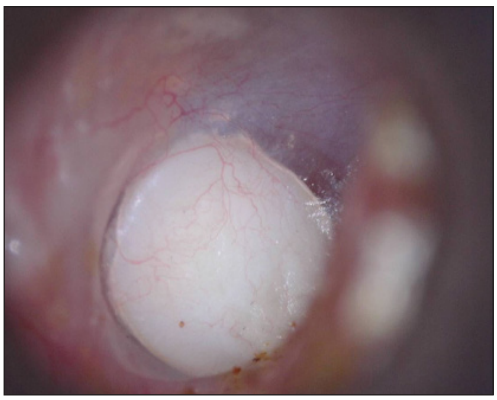

Figure 2. Photo of a tympanic membrane after endoscopic myringoplasty done by an ENT Clinical Officer

are straightforward, the indications for surgery being recurrent otorrhoea and/or conductive hearing loss. An endoscope costs a fraction of an operating microscope, is easily transportable and hence can be used in ear surgery camps conducted in remote places, and the camera stack can be shared with other disciplines such as general and orthopaedic surgery and gynaecology. Some Malawian ENT clinical officers have therefore been formally trained to do endoscopic myringoplasties to restore hearing. They were trained during an "ENT week"with the assistance of visiting ENT surgeons from Bradford and Leicester in November 2016 and they continued to receive on-going supervision from the first author

Outcomes of endoscopic myringoplasty by clinical officers

A prospective cohort of 83 patients underwent endoscopic myringoplasty at Queen Elizabeth Central Hospital (QECH) in Blantyre, Malawi between March 2017 and February 2018. Patients were consecutively included in the study. The mean age of patients was 24 years (SD=13.9) and ages ranged between 8 and 65 years. There were 43 females (52%) and 40 males (48%).*Table 1* summarises who performed the surgery.

Tragal cartilage-perichondrium was used in all cases, and the surgery was done under general anaesthesia *(Figure 2).*The results of endoscopic myringoplasty, reflected in terms of closure of the perforation, are summarised in *Table 2.*

Even though some patients were lost to follow-up, the results at 6 weeks and 3 months, both overall and by the clinical officers, compare favourably with that reported in the literature. The *Royal College of Surgeons* suggested that a success rate of 65% should be expected[9], and a study in 2002 reported a success rate that ranged between 74% (small perforations) and 56% (large perforations) among British surgeons[10]. Success rates for closure of tympanic membrane perforations were reported in two separate studies as 78 % [11] and 71% [12] at the Groote Schuur teaching hospital in Cape Town. The QECH results clearly demonstrate that with appropriate training, endoscopic myringoplasty can be successfully performed by mid-level health workers in developing countries. The study had some limitations. The follow-up period was generally short (3 months). This is an on-going study so we expect longer follow-up period in our cohort of patients. The majority of the studies on endoscopic myringoplasty have followed up patients for ranging between 6 months and 1 year[13,14,15]

Recommendations

Based on the Malawian strategies and experience to overcome extreme shortages of trained healthcare practitioners, we recommend that developing countries with skills shortages should embrace task sharing with mid-level health workers assuming roles traditionally reserved for medical doctors, audiologists and otolaryngologists, including endoscopic myringoplasties, to improve access to hearing care services.

References

1. Mulwafu W, Ensink R, Kuper H, Fagan JJ. Survey of ENT services in Sub-Saharan Africa: Little progress between 2009 and 2015. Global Health Action. Volume 10, 2017 - Issue 1 http://dx.doi.org/10.1080/16549716.2017.1289736
2. Bedford J, Mackey S, Parvin A, Muhit M, Murthy GV. Reasons for non-uptake of referral: children with disabilities identified through the Key Informant Method in Bangladesh. Disability and Rehabilitation. 2013 Dec 1;35(25):2164-70.
3. Bright T, Mulwafu W, Thindwa R, Zuurmond M, Polack S. Reasons for low uptake of referrals to ear and hearing services for children in Malawi. PloSOne. 2017 Dec 19;12(12)
4. Malawi health sector strategic plan, 2011-2016: moving towards equity and quality. Lilongwe, Malawi: Ministry of Health, [2011] http://www.nationalplanningcycles.org/sites/default/files/country_docs/Malawi/2_malawi_hssp_2011_-2016_final_document_1.pdf
5. Government of Malawi. Guidelines for the management of health

surveillance assistants in Malawi. Lilongwe, Malawi: Ministry of Health, 2014

6. Mulwafu W, Kuper H, Viste A, Goplen FK. Feasibility and acceptability of training community health workers in ear and hearing care in Malawi: a cluster randomised controlled trial. BMJ open. 2017 Oct 1;7(10):e016457.
7. Mulwafu W, Nyirenda TE, Fagan JJ, Bem C, Mlumbe K, Chitule J. Initiating and developing clinical services, training and research in a low resource setting: the Malawi ENT experience. Trop Doct. 2014 Jul;44(3):135-9
8. Chilopora G, Pereira C, Kamwendo F, Chimbiri A, Malunga E, Bergström S.Postoperative outcome of caesarean sections and other major emergency obstetric surgery by clinical officers and medical officers in Malawi. Malawi Med J. 2016 Sep;28(3):94-98
9. Ryan RM, Brown PM, Cameron JM, Fowler SM, Grant HR, Topham JH. Royal College of Surgeons comparative ENT audit 1990. Clin Otolaryngol Allied Sci1993; 18:541-546.
10. Lee P, Kelly G, Mills RP. Myringoplasty: does the size of the perforation matter? Clin Otolaryngol Allied Sci 2002; 27:331-4
11. Black JH, Wormald PJ. Myringoplasty - effects on hearing and contributing factors. S Afr Med J 1995; 85:41-3
12. Becker J; Lubbe D. Success rate of myringoplasty at Groote Schuur Hospital. S Afr Med J 2011; 101:740-2
13. Ayache S. Cartilaginous myringoplasty: the endoscopic transcanal procedure. Eur Arch Otorhinolaryngol. 2013 ;270(3):853-60.
14. Ozgur A., Dursun E., Erdivanli O.C., Coskun Z.O., Terzi S., Emiroglu G., Demirci M. Endoscopic cartilage tympanoplasty in chronic otitis media. Journal of Laryngology and Otology 2015; 129 (11) 1073-1077,.
15. Karhuketo TS, Ilomäki JH, Puhakka HJ. Tympanoscope-assisted myringoplasty. ORL J Otorhinolaryngol Relat Spec. 2001;63(6):353-7

Peer Reviewed (Uncorrected Proof)

Competing Interests: None declared.

Received: 22 Jan 2019 • **Revised:** 8 Aug 2019

Accepted: 8 Aug 2019 • **Published**: 21 Oct 2019

Cite this article as: Mulwafu W, Fagan JJ. Improving access to hearing care services and professionals in Africa through task sharing: The Malawian experience. E Cent Afr J Surg. 2019;24(2):78-81. https://dx.doi.org/10.4314/ecajs.v24i2.1.