Lewis Olsson – Second Degree Bursary 2022 – OMFS in Malawi

Introduction

The Second Degree Bursary Project should make a "contribution to OMFS in the widest sense". My ~~below~~ project offers much in the way of shared learning at an international level.

As a 4th year medical student, I took the opportunity of an elective period in summer 2022 to experience OMFS in Blantyre, Malawi. Malawi is one of the world's poorest countries, and the delivery of an OMFS service faces a number of challenges.[1]

With a population of 19 million, there is only one OMFS surgeon for the entire country. In addition, equipment supply relies heavily on donations from high income countries.

There is also a paucity of dentists – with 43 serving the whole population. To address this shortfall, the first dental school in Malawi was opened in 2019. This involved close collaboration between the Malawian Ministry of Health, the Scottish Government, University of Glasgow, and Kamuzu University. The dental school offers a five-year Bachelor of Dental Surgery (BDS) programme.

The overall **aims** of my elective project were:

- to gain experience in the delivery of healthcare in a low income country.
- to observe the differing pathology and injuries which presents to the Malawian OMFS service.
- to gain hands-on clinical experience in OMFS in a resource-limited setting.
- to provide a week-long OMFS symposium to the senior (3rd year BDS) dental students.
- to provide teaching on oral mucosal lesions to local dentists as a formal CPD session.
- to raise awareness of OMFS as a specialty within the cohort of Malawian dental students.

Methods

The elective project took place over four weeks, between July and August 2022.

There was extensive planning and organising of the project, lasting many months. This included:

- reaching out to and liaising with the OMFS surgeon in Malawi
- contacting the Kamuzu University Dental School
- submitting proposal to University of Glasgow for approval
- completing and submitting risk assessment to University of Glasgow
- registering as a temporary registrant to the Malawian Ministry of Health
- planning flights and accommodation
- seeking travel health advice
- preparing lectures and gathering teaching resources (e.g., suturing kits)

Once in Malawi, I was welcomed by the OMFS team at the QECH, Blantyre – working with them Monday to Friday for weeks 1, 3 and 4 of my trip. This involved assisting with cases in theatre, dentoalveolar lists and outpatient care..

Week 2 of my trip took place in Lilongwe, Malawi's capital city and the location for the 3rd year of the BDS programme. I had been asked to provide an OMFS symposium - mapped in line with the curriculum's intended learning outcomes (ILOs) for maxillofacial surgery. The week's timetable is shown in table 1.

Table 1 -OMFS symposium teaching timetable

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Morning	***Exodontia Principles*** (lecture)	***Basics of OMFS*** (lecture)	***Oral Mucosal Lesions*** (lecture)	***Exodontia Clinic***	***Suturing Workshop***
Afternoon	***Exodontia Instruments and Technique*** (phantom head lab)	***Maxillofacial Examination Skills*** (lecture and practical)	-	***Exodontia Clinic***	-

Findings and Discussion

Design and delivery of OMFS service

It is firstly important to consider the general delivery of healthcare in Malawi. The majority of care is via government facilities (63%), which are free at the point of use. Healthcare is also delivered by the Christian Health Association of Malawi (26%) for a small user fee, and in private hospitals (11%).[2] Government spending on healthcare falls below the average for the Sub-Saharan region, at 39 USD per capita.[3]. As a result of this, there is a large unmet need for surgical care in Malawi.[4]

It would not be controversial to say that the OMFS service is Malawi is vastly different to that of the UK. With one surgeon providing care, there is a complete mismatch in terms of supply and demand in OMFS care. The OMFS service is based out of the dental department at QECH. In the dental department, care is provided via an acute service offering mostly dental extraction.

There did not appear to be a well-organised delivery of OMFS care, with patients self-presenting in most cases, many with advanced pathology. There were no organised clinics, and the service could only try and respond to whatever presented and make the most of the limited resources available. This was demonstrated by the treatment of significant cervicofacial infection under local anaesthetic in the outpatient clinic.

Theatre time was hard-fought between different specialties, but typically 2 or 3 sessions were available per week. Operating lists seemed again to just react to the most urgent priority, and often changed at the last minute. The OMFS surgeon would normally have assistance in theatre from dentists or dental therapists; theatre nurses would often have little in the way of specific OMFS experience.

PPE and equipment was disinfected and handwashing facilities were adequate. The ward conditions were cramped and lacked many of the standards of hygiene and infection control which are familiar to those working in the UK. It would not be too unusual for patients to have to wait many months for their operations – so would be admitted onto a ward for this time, as they were unable to afford more than one journey to the hospital.

Surgical equipment was often lacking. This was a leading reason for the delay in a number of patients' treatment journeys. Titanium mini-plates and screws were in short supply, with planned operation dates often based around when the next donation arrived.

Despite this, a basic trauma service was still maintained. It was impressive to see the use of stainless steel wire in fixation of fractures which I had never came across before.

As far as reconstructive surgery went, I assisted in several mandibular reconstructions by way of rib grafting; this appeared to be a favoured technique in this OMFS service. Reasons for this may include the advantages of: relatively simple harvesting technique; low donor site complication rate; good cosmetic outcome; reduced operating time. The literature reports a similar 1-year survival between rib graft versus free flap tissue transfer in mandibular reconstruction.[5, 6]

As there are so few dentists in the country, much of the care is provided by dental therapists. Rates of dental disease are high, so again there is a colossal supply/demand mismatch.[7] What may be considered "complex" extractions in the UK were routinely and competently managed by the dental therapists. Again, equipment was limited, and I witnessed the resourceful application of forceps outwith their designed utility. The service was very busy, with queues of patients waiting on the clinic opening at 7.30am, and more presenting throughout the day. The service ran very slickly: a patient would be brought onto the chair, point to the tooth, local anaesthetic would be administered, and the tooth would be removed whilst the next patient stood at the door, eager to be treated. In my first afternoon in this clinic I had treated six patients in 20 minutes. The nurses operated a conveyor belt of decontamination and instrument supply. Note-keeping was rarely little more than a scribble. Patients seemed to leave satisfied – with pain and infection relieved.

Pathology and injuries presenting to the OMFS service

There were a number of differences in the workload of the OMFS service compared to the UK.

Odontogenic tumours are known to be more prevalent across Africa.[8] Anecdotally, this matched my experience in Malawi. Within my first morning I had seen more ameloblastoma cases than in five years as a junior in OMFS in the UK. Patients would often present at a late stage, and therefore tumours would be massive – causing significant deformity and impairing oral intake. Indeed, one of the most memorable patients I encountered during my time in Malawi was a 20-year-old female, presenting to the acute dental service with a 5-year history of an expanding mass right mandible. On examination, it was approximately grapefruit sized. Histopathology confirmed an ameloblastoma. (See appendix 1).

Oral squamous cell carcinoma (OSCC) in Sub-Saharan Africa appears to have different epidemiology than that in the UK. Median age of onset is reportedly younger, at around 40-50 years. In patients who have HIV, OSCC presents at a younger age. Approximately 50% of patients with OSCC do not smoke or drink alcohol. These differing demographics imply other risk factors are associated with OSCC in Malawi. However, it is important to note that data for the region is poor quality.[9]

Trauma surgery also made up an important part of the OMFS service, with RTC being the mechanism of injury in half of cases of all trauma presenting to hospital.[10] Malawi has one of the highest rates of road traffic collisions (RTCs) in the world – 31 deaths per 100,000 population per year (cf. UK at 2.9 deaths).[11] Additionally, there is a high prevalence of interpersonal violence (IPV) across Malawi, particularly in urban areas: IPV is thought to be the mechanism in up to 35% of cases of trauma. In my observing, trauma cases were operated on when theatre availability and equipment pressures allowed – it was not abnormal for mandibular fractures to wait up to four weeks before being managed. Data regarding maxillofacial injury patterns in Malawi is scarce, and I would be unable to make any meaningful comment on how it differs from UK.

Gain hands-on clinical experience in a limited resource setting

I participated in several operations in the OMFS theatre, including mandibulotomy, ORIF mandibular fractures, ORIF zygomatic-orbital complex fractures, and multiple dentoalveolar procedures. As expected, basic operative principles remained the same.

I was struck by how simple, evidence-based and low-cost interventions were not utilised in theatre. WHO surgical checklist, pre-operative briefing and surgical pause were not routinely practised. This may have been responsible for several occasions where equipment was not recognised as unavailable until midway through an operation.

OMFS symposium teaching

Week two of my elective project took me to Lilongwe, the capital city, and the home campus for year 3 of the BDS programme. There were 10 students in the year, and these students are the first cohort to make their way through the BDS programme.

The aims of the week were to provide OMFS teaching based around the course's ILOs. I covered many important elementary aspects of OMFS including the principles of exodontia, maxillofacial history and examination, management of cervicofacial infection, oral cancer recognition and management.

Teaching was delivered in sessions throughout the week, with a mix of lectures, practical, phantom head and clinical teaching.

Highlights of the week included 9 out of 10 students extracting their first tooth and the suture skills session (taught on banana skins).

I felt really privileged to be working with these dental students – they are, after all, trailblazers in being the first cohort to study dentistry in Malawi. As a general rule, dental students are fairly high-achieving people the world over – but as I reflect on the fact that these 10 students were selected in a country with a population of 19 million people, I feel it is important to emphasise that BDS 3 are the crème de la crème. These enthusiastic individuals were welcoming, engaged and entertaining from the get-go. I found myself constantly impressed: their knowledge for the stage that they are at is excellent and they displayed a mature and conscientious approach to their learning over the course of the week.

CPD teaching to group of local dentists

I was delighted to be invited to provide some teaching to a group of local dentists for their CPD requirements. I gave a comprehensive lecture based around oral mucosal disease, utilising the local literature to ensure that my teaching was relevant to them as practitioners in Malawi. There was some focus on HIV-related lesions, malignant and potentially malignant mucosal disease and we discussed the principles of management of OSCC.

I found that the dentists were very enthused to learn, however reported their frustrations at the lack of any cohesion or fraternity within the Malawian dental profession. I feel this is in contrast to my experiences in the UK where the medical/dental and particularly the OMFS community are active in shared learning and development.

Also, when developing my teaching resources, I found that much of the international literature and educational resources around oral pathology is very Western: clinical images are rarely of black patients – and this proved quite a challenge to sourcing relevant images for teaching purposes. I would suggest that underrepresentation in medical/dental education resources may be an important contributor to health inequalities across different ethnic groups.

Raising awareness of OMFS as a specialty within the cohort of Malawian dental students

When embarking on my elective project, I recognised that I was in a privileged position to be working with the only OMFS surgeon in the country. As my elective project came to an end I was able to reflect that the OMFS service is clearly massively understaffed and poorly-equipped to provide the volume of care which is required by the country. It will require decades of training and investment to meet this demand, but I hope that my being there and providing some engaging, interesting and fun teaching to the dental students would perhaps spark an interest in the specialty. I left suturing kits and materials (kindly donated by Glasgow Dental Hospital) with the hope that students could make use of them to gain confidence in basic surgical skills.

Conclusions and take-home learning

In conclusion, I spent four weeks immersed in the OMFS service in Malawi. Through this experience I was able to gain insight into the realities and practicalities of developing a service in a low-income country.

My elective experience highlighted several positive elements in the Malawian OMFS service. Given the limited equipment, the surgeon was very skilled at the use of wire for reduction and fixation of bony fractures – a technique that many surgeons in the UK are not overly fluent with. Also, the lack of dental surgeons means that dental therapists must upskill in order to meet the demand for dental service provision – the dental therapists in Malawi are able to perform difficult extractions that many UK dentists would struggle with. A phrase that I heard a number of times from the OMFS surgeon was “it may not be perfect, but the job gets done” – and I feel that perfectly encapsulates the spirit of the Malawian OMFS service. In clinical circumstances where doing nothing would harm the patient, procedures are done to the best of the operator’s ability and maximising the resources that are available.

The UK is not considered a resource-poor country, so by witnessing the situation in Malawi I was forced to reflect on just how good the OMFS service back home is. Despite years of financial cuts to healthcare, we have a free system that remains the envy of most nations around the world. By the end of my elective, I felt gratitude for the NHS like never before. At a time where the NHS is considered by many to be on its knees, and when I encounter frustrations in the day-to-day workings of an NHS OMFS service, I have found myself thinking back to how the situation in many places across the world is far more challenging.

This trip also demonstrated to me the importance of involving the right people when delivering a service or developing a project. Malawi is a country which has multiple hurdles and challenges to things such as healthcare provision, foundation of a dental school, service development or implementation of a national oral health strategy. Despite this, a small group of leaders have successfully made inroads in all three of these areas – and this is testament to their skill, commitment, and passion to ultimately serve Malawians. I fully expect there were many roadblocks

and much frustration in getting to this point, but what I saw was individual flair and collaborative effort at all levels of the system.

Finally, I was honoured to have spent time with the BDS students. I hope to have, in some small way, fostered an interest in OMFS within the group.

Acknowledgements

Many people helped contribute to making elective project in Malawi so worthwhile: Prof. Bagg, Dr. Mchenga, Dr. Chimimba, the local dentists in Blantyre and Lilongwe, BDS 3 students, Nelson Nyoloka, the theatre staff at QECH, Precious (KUHeS driver), and all the patients.

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Appendix 1: photos from the project

Figure 1 - Assisting in theatre at QECH

Figure 2 - Suturing workshop

Figure 3 With the local dentists, following a CPD morning

Figure 4 With the BDS 3 year group

Ameloblastoma case, with costochondral graft reconstruction