

# Factors Involved in Selection of a Career in Surgery and Orthopedics for Medical Students in Malawi

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## Abstract

### Aims

There is a critical shortage of Orthopedic Surgeons in Malawi as well as all countries in sub-Saharan Africa. To date, there is no published literature that has investigated surgical or Orthopedic career selection amongst African medical trainees. With the goal of facilitating recruitment into Surgery and Orthopedics in Malawi, we explored the key aspects of Malawian Medical Students' choice of careers in surgical disciplines.

### Methods

An on-line survey of all students in clinical years at the College of Medicine in Blantyre, Malawi was performed. The survey was anonymous and constructed de novo by a stringent process including Item Generation, Item reduction, Survey composition, Pre-testing, Assessment of Validity by a recognized survey expert, Pilot testing in on-line format by several Malawian Medical Students, and then formal survey testing.

### Results

Surgery was the most popular specialty choice among the medical trainees (46%). General Surgery was the popular surgical specialty (27%), followed by Neurosurgery (22%) and Orthopedics (19%). The majority of students (67%) feared occupational exposure to HIV but this did not appear to be a factor in specialty choice ( $p=0.9$ ). Students with Orthopedic mentors were significantly more likely to choose Orthopedics as their first choice surgical specialty ( $p = 0.01$ ). Despite limited resources and surgeons in sub-Saharan Africa, surgical specialties are desirable career choices.

### Conclusions

This is the first evaluation of factors involved in surgical or Orthopedic career selection in any African context. Future initiatives to improve exposure and mentorship in Orthopedics are fundamental to recruitment into the specialty.

### Introduction

With a population of 14 million people, Malawi is faced with severe shortage of Surgeons in all subspecialty areas. Of the 29 General Surgeons in Malawi, only five are Malawian. Currently there are nine Orthopaedic Surgeons for 14 million people and only one of these surgeons is Malawian. The majority of Orthopaedic care is provided by 82 non-physician Orthopaedic Clinical Officers who provide mainly non-operative trauma care as well as some basic operations. The College of Medicine in Malawi has a 5-year undergraduate medical program with an intake of 60 students per year. There is a post-graduate training programme in Orthopaedics in Malawi, however currently there are no Malawian Orthopaedic Registrars/trainees registered in the programme. Since the start of the Orthopaedic training programme in 2002, two trainees have completed the

programme. One further non-Malawian is currently nearing the end of Orthopaedic training.

Several theories have been suggested informally by surgical personnel in Malawi regarding the cause for the apparent lack of interest in surgery and Orthopaedics amongst medical trainees. These have included factors such as fear of occupational HIV exposure, lifestyle, and lack of resources to treat patients. In Western countries, surgical career selection has been evaluated and lifestyle has been cited as a key deterrent from a surgical career.<sup>1-3</sup> In the African context, there is very little known about medical trainee career selection.<sup>4-8</sup> Furthermore, there is no published literature to date that has investigated surgical or Orthopaedic career selection amongst African medical trainees. Additionally, to date there has never been an evaluation of career selection amongst medical students in Malawi. With the goal of facilitating recruitment into Orthopaedic Surgery in Malawi, we undertook this study in an effort to evaluate the desirability of various surgical and non-surgical specialties. We also wanted to explore Malawian Medical Students' rationale in choosing a particular specialty, specifically Surgery and Orthopaedics.

### Materials and Methods

An anonymous on-line internet survey was constructed de novo through a described structured process.<sup>9</sup> This included Item Generation in the form of a literature review from the developing world as well as Western nations, informal focus groups with Malawian Medical Students, and interviews with the single Malawian Orthopaedic Surgeon as well as foreign Surgeons from other African nations and the United Kingdom. Following this, Item Reduction was performed to eliminate any redundant areas of questioning. The survey was then composed and formatted. We used a 35-item survey to collect demographic data and career preferences as well as a Likert scale format to examine student views and opinions. The survey was then pre-tested by several visiting British Medical Students and further input was given by the Malawian Orthopaedic Surgeon. An Assessment of Validity was then performed by a recognized survey content expert. Further modifications were made and the survey was Pilot-Tested in on-line format by several Malawian Medical Students. Minimal clarifications were required and we proceeded to formal distribution and survey testing.

All medical students in their clinical rotation years (3-5) were given a 4 week period to voluntarily participate in the survey. The survey was administered in English, which is the language of instruction at Malawi College of Medicine. All students had good access to the internet. We received clearance to proceed with the survey from the College of Medicine Research and Ethics Committee (COMREC) at University of Malawi. Data was analyzed using Pearson Chi-square testing.

## Results

Of the 147 students in clinical years 3-5 in the College of Medicine, 70 participated in the survey giving a response rate of 48%. The average age of respondents was 22.3 years and females represented 17% of respondents. Females represented 28% of the actual population of potential respondents.

Thirty-six percent of respondents were third year students; fourth and fifth year students represented 42% and 22% respectively. The majority of students reported growing up in an urban area (77%) with the rest reporting a rural origin. All female respondents were from urban areas. Surgery was the most popular specialty with 46% of students indicating it as their first choice area. The next most popular choices were Internal Medicine (16%), Paediatrics (15%), Pathology (6%), Obstetrics & Gynaecology (4%), Radiology (4%), General Practice (1%), Anaesthesia (0%) and Psychiatry (0%). Seven percent of students were undecided regarding a first choice specialty. (Figure 1)

Results across years were quite similar with first choice area as surgery for 44% of third year students, 45% of fourth year students and 50% of final year students. One third of female respondents identified surgery as their first choice specialty. Amongst the surgical specialties, 27% of students chose General Surgery as their first choice subspecialty, followed by Neurosurgery (22%), Orthopaedics (19%), Cardiothoracic Surgery (18%), Ophthalmology (4%), Plastic Surgery (2%) and Ear Nose Throat Surgery (2%). Seven percent of students disliked surgery (Figure 2).

Among respondents, only 28% indicated that they had received career guidance in Medical School and 7% of students stated their families were influencing them to enter a certain specialty. Twenty-eight percent of students would prefer to do their Registrar/Residency training outside of Malawi even if this meant choosing a less desirable specialty. Eighty-four percent of students felt that the ability to improve the quality of life for patients within a specialty was an important factor in their career choice. Lifestyle was identified as an important factor in specialty selection as 80% and 83% of students indicated this was an important consideration at both the training level and consultant level respectively. Only 16% of students felt that Orthopaedic training would take too long to complete and 23% believed they would have to work too many hours as an Orthopaedic Surgeon.

Employment options and the availability of Consultant jobs were major concerns to 87% of students. The majority of respondents (75%) thought they would have good employment options as an Orthopaedic Surgeon in Malawi. Overall, 70% of students cited financial remuneration as a key factor in their choice of specialty. Twenty-five percent of students believed Orthopaedic Surgeons are well paid compared to other specialties, whereas 68% of students were undecided on this issue.

Amongst students, there was a genuine concern of occupational exposure to HIV. For those trainees who selected Surgery as their first choice specialty, 67% indicated they were worried about acquiring HIV through a scalpel or needle stick injury. However, 68% of non-Surgery oriented students also indicated this concern. As such, fear of acquiring HIV by occupational injury did not appear to be a deterrent from choosing Surgery as a specialty choice ( $p=0.9$ ).

Mentorship was a substantial influence on specialty selection as the vast majority of students (92%) stated that positive mentors are a key factor on their choice of career. However, only 10% of students were able to identify a Surgery mentor and 14% were able to identify a mentor in Orthopaedics. Students who could identify a mentor in Orthopaedics were significantly more likely to choose Orthopaedic Surgery as their first choice specialty ( $p=0.01$ ).

Many students seemed to be underexposed to Orthopaedics from a knowledge base as well as career exposure standpoint, with only 33% of students indicating they had sufficient exposure to Orthopaedics to make an informed career decision. Seventy-one percent of students stated they would like more exposure to Orthopaedics as a Medical Student or Intern.

## Discussion

Malawi has a critical shortage of Orthopaedic Surgeons with 0.06 per 100,000 people. This is in grave contrast to Western nations like Canada where there are 3.1 Orthopaedic Surgeons for every 100,000 people,<sup>10</sup> the United Kingdom (6.6 per 100,000)<sup>11</sup> and the United States (7.6 per 100,000).<sup>12</sup> With the view of facilitating recruitment into Orthopaedic Surgery in Malawi we undertook this study to understand the critical elements of medical trainees' choice of specialty and their rationale in choosing an Orthopaedic career.

While there have been many studies in the literature evaluating medical student specialty career selection in Western nations, there is very minimal literature exploring this area in an African context.<sup>4,5,8,13</sup> Surgical career selection amongst trainees has been evaluated in the United States, Europe and Australia by several authors.<sup>1,14,15,16</sup> However, there is very little known on this topic in an African setting. In Nigeria, previous literature has indicated that 21-41% of Medical Students favor Surgery as a first choice specialty.<sup>4,8</sup> In South Africa, the crisis of unfilled Consultant posts in General Surgery and decline in application for Registrar positions led to various interviews of trainees and Consultants, of which the collective views have been reported.<sup>6,7</sup> Factors such as lack of financial remuneration and unattractive lifestyle were cited as key elements deterring trainees from a General Surgery career in South Africa.<sup>6</sup> This is the first study to date evaluating factors involved in surgical and Orthopaedic career selection amongst trainees in any African setting.

Our findings clearly indicate that Surgery is the most popular career choice amongst Malawian Medical Students, which is promising for the future, despite evidence in South Africa to indicate surgery is losing popularity.<sup>6</sup> This is in contrast to Psychiatry, also a notably underserved specialty in Africa, which no students indicated as their first choice specialty. We do recognize possible non-response bias in our survey with a response rate of 48% which may have resulted in an overestimation regarding the popularity of Surgery and surgical subspecialties. Our survey response rate is comparable to other surveys of Medical personnel in an African setting.<sup>5</sup>

Our findings indicate that mentorship is likely the most important element in choice of a career. We also found mentorship to be a statistically significant factor in students' choice of a career in Orthopaedic Surgery. This is consistent with findings in a Western context, where positive

interactions with attending Surgeons is believed to favorably influence students towards careers in Surgery.<sup>17</sup> In addition to mentorship, our findings in an African setting also identify the need for more exposure to Orthopaedic Surgery within Medical School since the majority of students indicated they were uninformed about many details of the Orthopaedic profession. Practically, this is difficult to implement since the clinical demands on the single Malawian Orthopaedic Surgeon and the few foreign Surgeons are overwhelming. Some students suggested a role for scheduled career talks by Consultants within the various surgical specialties to increase student exposure.

We expected to identify some cultural and social factors unique to a Sub-Saharan African setting that would contribute to specialty selection. Students from Rural and Urban origins were equally likely to choose Surgery, while family influence and expectations had virtually no role on students' specialty choice. While financial remuneration and employment options were important to students, these did not appear to be the main factors in choice of specialty. There was a strong desire on the part of students to improve the quality of life and implement effective treatments for their patients. Given an HIV prevalence of 11.9% in Malawi,<sup>18</sup> we suspected that the risk of occupational HIV exposure might deter Medical Students from selecting a career in Surgery, however our results do not support this. Indeed, the majority of students were concerned about this but students picking non-surgical careers were not any more likely to indicate this fear.

In summary, we believe that the future is promising for increasing the number of surgeons and specifically Orthopaedic Surgeons in Malawi. There is evidence that the majority (60%) of graduates from the College of Medicine in Malawi stay in the country.<sup>19</sup> Thus we suggest that as time progresses and trainees are successfully recruited into Orthopaedics, the process of mentorship will gain momentum exponentially. Future directions need to focus on mentorship both formally and informally, as well as securing funding for positions in post-graduate training in surgery. Furthermore, more exposure to Orthopaedics in the undergraduate medical program in the College of Medicine has been requested by Medical Students. Since remuneration appears to also be an important factor in specialty selection, we must also ensure that Surgeons are compensated appropriately relative to non-surgical medical specialties. We suggest that these findings may be reflective of many countries in sub-Saharan Africa, recognizing that there are unique political, ethnic, economic and social influences that are involved in various regions of the continent. Our hope is that this study will be a contribution to improving the musculoskeletal health for the 906 million people currently living in Sub-Saharan Africa and the generations proceeding.<sup>20</sup>

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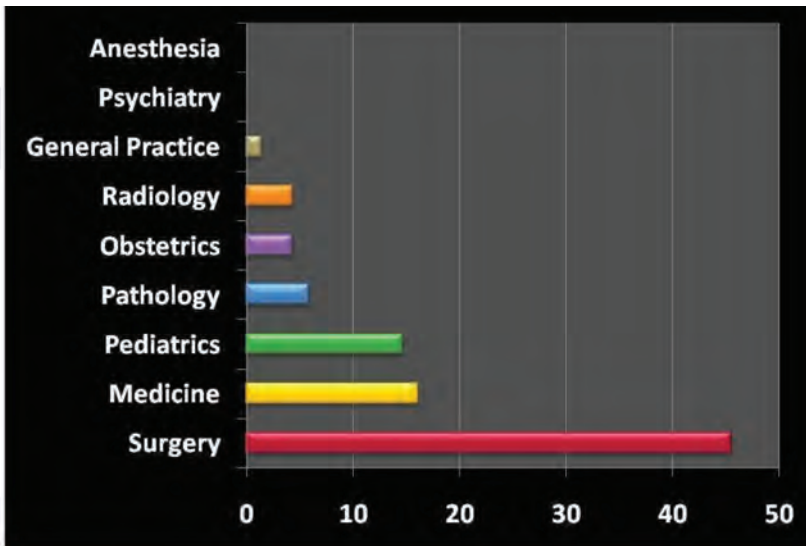


Figure 1: Medical Students' most preferred specialty by percentage of respondents. 158x107mm (150 x 150 DPI)

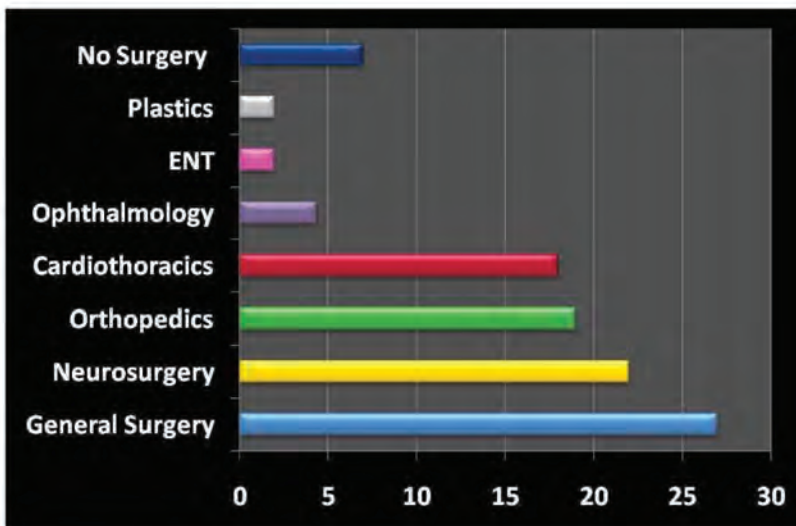


Figure 2: Medical Students' most preferred surgical specialty by percentage of respondents. 159x104mm (150 x 150 DPI)