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Surgical registrars' perceptions of surgical training and capacity in Zambia: Results from three COSECSA affiliated training hospitals

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ABSTRACT

Background: Surgery is a vital component of a comprehensive health system, but there are often personnel limitations in resource constrained areas. Zambia provides post graduate surgical training through two systems to help address this shortage. However, no studies have analyzed surgical trainees' perceptions of these programs.

Methods: Surgical registrars at COSECSA affiliated hospitals in Zambia were surveyed about their programs. Responses were analyzed to identify key strengths and challenges across several categories including: operative training, clinical training, educational experiences, and career plans.

Results: Registrars report having significant independence and receiving broad and high quality operative training. They note specific challenges including limitations in specialty training, resources, and infrastructure.

Conclusions: Zambian training programs have the potential to increase number of surgeons in Zambia by a significant amount in the coming years. These programs have many strengths but also face challenges in their goal to expand surgical access in the country.

1. Introduction

There is increasing interest in surgical capacity as a component of a comprehensive health system.[1] The work by the Lancet Commission on Global Surgery, published in 2015,[1] revealed that 5 billion people still lack access to the most basic, essential surgical services. Conditions requiring surgical care account for an estimated 19.2% of the global burden of disease, but unfortunately, the delivery of surgical services within sub-Saharan Africa can sometimes be challenging.[2–4]

These challenges are frequently due to the complex intersection of inadequate infrastructure, high economic costs, sociocultural factors, and lack of trained personnel.[4,5] Contributing to this global crisis is the lack of comprehensive data on many of these factors.[6–8] The available studies show a large unmet need for surgical care with surgical workforce deficiencies often being a key issue.[1,8–10]

An example of this problem is the Republic of Zambia. Zambia has over 15 million people with a life expectancy at birth of slightly over 52 years but has less than 2 physicians per 10,000 people[11]; as compared to South Africa which has slightly less than 1 per 1,000[12] and the United States which has more than 2 per 1000.[13] By recent estimates there are approximately 80 surgeons in the entire country[14] who are mostly concentrated in a few urban centers. Beyond this there are limited data regarding the current surgical capacity of the country and almost no data on the systems in place to train surgeons.

Currently there are two systems for training surgeons in Zambia. The first, and oldest, is based within the university system and trains post graduate students in a variety of surgical specialties

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through a Masters of Medicine program (M. Med.).[15] The second system was established by the College of Surgeons of East, Central, and South Africa (COSECSA) which oversees accredited training programs at several hospitals within the country. COSECSA's "primary objective is to advance education, training, standards, research and practice in surgical care in this region.[16]" COSECSA trainers teach registrars at accredited hospitals, and they follow a standardized course of study with educational materials and examinations provided by COSECSA.[17] Furthermore, COSECSA enrollees have tracked case logs for a variety for surgical procedures ensuring they gain the proper experience. Despite being two separate programs, in Zambia, the M. Med. and COSECSA programs train their post graduates at many of the same hospitals, share many of the same faculty, and at some hospitals post graduates are enrolled in both programs.

Enrollment in either program is not possible until after trainees have completed their medical school training and a mandatory period in general practice. Individuals then apply for enrollment in a post graduate program and begin a several year training period in one of several surgical specialties. Regardless of their chosen specialty, registrars are required to complete fundamental rotations in the core surgical specialties to give them broad operative training (e.g., orthopedics registrars complete rotations in emergency general surgery), and there is frequent mixing between the various specialty faculty/registrars due to the small sizes of the training programs. Completion of the COSECSA or M. Med. program requires passing a final licensing exam, and afterward individuals may move on to the senior registrar level and subsequently apply for consultant/faculty positions as they become available or move into postings in district hospitals and clinics.

Given the importance of these programs in addressing the surgical workforce shortage, it is vital to understand their current capabilities and limitations; especially as viewed from those enrolled in them. This allows for targeted efforts to build upon current strengths and address challenges with the goal of expanding surgical access in Zambia. To this end, several of COSECSA's Zambian members initiated this study in partnership with the NYU School of Medicine's International Health Program to evaluate surgical trainees' perceptions of their training program with a focus on gaining fuller insight into the following: operative loads, inpatient and outpatient clinical experiences, educational endeavors, future career plans, and challenges and benefits of the current training programs and training environments. Both the NYU Langone Medical Center Institutional Review Board and University of Zambia Biomedical Ethics Committee approved this study.

2. Materials and methods

2.1. Study design and description

This study was composed of two components. The first was a multi-site cross sectional survey of surgical registrars at several Zambian hospitals. The second was a series of structured focus groups. Participants were required to fill out standardized consents before participating in any aspect of the study and participation was entirely voluntary.

2.2. Study locations and population

This study was conducted at three COSECSA affiliated training hospitals within Zambia: University Teaching Hospital (UTH), Ndola Central Hospital (NCH), and Livingstone Central Hospital (LCH). The only other COSECSA affiliated hospital in Zambia with active registrars, Nchanga South Hospital in Chingola, was not visited due to time constraints and at the time of the study had only two registrars. While only COSECSA accredited hospitals were targeted, M. Med. programs were also in place at two hospitals which allowed for the surveying of M. Med. registrars as well.

UTH is a government hospital in the capital Lusaka and is Zambia's largest with over 1800 beds. It is the sole tertiary referral hospital in the country and has the largest number of surgical personnel and services. Additionally, UTH is affiliated with the University of Zambia School of Medicine and serves as its primary teaching hospital. It hosts its M. Med. program and has the largest number of COSECSA and M. Med. registrars across multiple surgical specialties. NCH, the second largest government hospital in the country, is located in Ndola and has over 850 beds. It has the second largest training program in the country and is affiliated with the Copperbelt University School of Medicine and hosts its M. Med. program. LCH is a smaller government hospital in the city of Livingstone with 325 beds and has no university affiliation or M. Med program. NCH and LCH both serve as central referral hospitals for their provinces.

Despite the focus being on COSECSA trainees, given the overlap with the M. Med programs, both M. Med and COSECSA trainees were surveyed with the goal of surveying all available registrars at the hospitals visited.

2.3. Registrar survey

34 registrars were administered a standardized survey using the Qualtrics Offline Surveys application on encrypted iPads or iPhones. There were 63 questions divided into five key areas: demographics, operative training, clinical experiences, educational activities, and career goals. The operative training section had questions relating to caseloads, attending/consultant physician supervision, operative simulation training, and types of procedures performed. The procedure questions were taken from the Surgeons OverSeas' PIPES survey, which is itself based on the WHO's Tool for Situational Analysis to Assess Emergency and Essential Surgical Care.[18,19] The list of operations represents a broad spectrum of essential surgical services. The clinical experiences section included questions involving participation in and educational quality of outpatient clinics, inpatient and outpatient hours worked, call schedule, and daily activities. The educational activities section had questions about the quantity and quality of lectures/didactics, non-operative simulations, journal clubs, morbidity and mortality conferences, use of internet for accessing educational materials, and amount of dedicated educational time free from clinical duties. The final section asked about participants' plans to continue to practice surgery and to practice in Zambia upon completing their training. Questions related to the quality of various activities used Likert scales: poor, fair, good, very good, and excellent. The entirety of the survey is available upon request. Study co-investigators were present to clarify any questions from registrars regarding the survey. All responses were kept anonymous via the iPads, and no personally identifying information was associated with the surveys to protect participant confidentiality.

2.4. Focus groups

Standardized focus groups were conducted at all the sites. Participation in the focus groups was entirely voluntary. Three focus groups were conducted with 8 participants at UTH, 7 at NCH, and 4 at LCH. All focus groups consisted of a lead moderator who asked the questions, guided group discussion, and asked for clarification as necessary and an assistant moderator who handled recording and transcription of the session. All sessions consisted of a standardized single engagement question asking why

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