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# 40 Years of Surgical Education in Kenya; What Does the Future Hold?

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## Summary

Surgical education structure and systems worldwide have changed gradually to incorporate not only the traditional competencies of medical knowledge, patient care and technical skills but other non-technical skills of communication, systems based practice and professionalism. Until recently, it was anticipated that these non-technical skills were learnt in the same apprenticeship manner as the other surgical skills were achieved. However, great efforts are presently being expended to incorporate these non-technical skills into curricula, with the same level of evaluation and feedback as the other more traditional skills. Even at the leadership levels of surgical communities and surgical societies, professionalism is now recognized as a priority skill for surgeons worldwide. The implementation of this new skill

will likely increase trust between surgeon and patient and hopefully improve the standards of patient care and safety. In Kenya, there have been suggestions of mistrust including increased litigation and adverse media reports on doctor's conduct. These suggest that we have an opportune moment to consider changing the system to return trust in the healing profession. This paper discusses why the Kenyan surgical society and other medical professional bodies should seize the opportunity to ensure the standards of training in Kenya incorporate professionalism in order to ensure better improved skill set for the present medical graduates.

**Keywords:** Medical Education, Non Technical Skills, Professionalism

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## Introduction

Before the 19th century, surgical education used apprenticeship and self-training as modes of training (1-4). The duration of the training ranged from five to seven years and the age of commencement of training was as early as 12 years (5). Training consisted of observation of surgery at the operating room and imitation of what was observed. Formal evaluation in the form of examinations began in the 14th century in England and licensing was done by the clergy (1). The development of surgery into a profession developed slowly in both North America, England, Germany and France (6). While Dr Halstead was a strong influence on the changes that formalized the structure of surgical education in the USA, he was strongly influenced by German surgical education of the time (7-9). Surgical education systems across nations continue to influence each other. More recently, African and Asian medical

education systems have been largely influenced by the European system, specifically the English structure (10-12). The Halsteadian model used in the United States has the largest body of literature associated with it.

There were three main principles of the Halsteadian model: Intense and repetitive opportunities to take care of surgical patients under the supervision of a skilled surgical teacher, acquiring an understanding of the scientific basis of surgical disease, acquiring skills in patient management and technical operations of increasing complexity with graded enhanced responsibility and independence (7). The structure introduced by Halstead at John Hopkins was pyramidal and taken from Europe, where one professor dominated and the others had to wait to advance (4). The structure was such that there would be 8 students, 4 in junior grade while among the senior four only one was assured of a position, the three had to wait. However, this was changed to

a rectangular form by Dr Churchill in Massachusetts where the structure was flexible enough to allow changes over time (4,13).

The training of a surgeon in Kenya starts with the training of the medical doctor who gets admitted to medical school by virtue of passing exams at the end of secondary education. In medical school, students went through the anatomy, physiology, biochemistry, pathology, microbiology, pharmacology, public health, and clinical studies in pediatrics, internal medicine, surgery and obstetrics and gynecology. To be admitted for surgery they had to have completed internship and practiced as a general doctor for 2 to 3 years. The trainees took a preclinical year to go through anatomy, physiology and pathology and then 2 and half years of clinical studies in general surgery, urology, neurosurgery, cardiothoracic, pediatric surgery, plastic surgery, otorhinolaryngology and orthopedic surgery. This is similar in content to what is described in the surgical education in the United States in 1921 as well as a modification of what Creech suggested in his Presidential address in 1967 (14,15). The structure however, was much the pyramidal system.

The profile of the Kenyan surgeon of earlier years was that of an omni-surgical practitioner with a good general scientific education, a well-developed social conscience and very broad clinical abilities. The surgeon would be capable of caring for patients in all major emergency surgical disciplines and were expected to be proficient in elective general surgery, pediatric surgery and orthopedics. This was due to the fact that they would be based in the district hospital where there were no surgical specialists in these disciplines.

## Changes in the System

In the United States, a survey conducted by the Council on Medical Education in 1910 revealed that medical education was of poor quality triggering reforms. The report of that survey, also called Flexner's Report led to the improved standards, organization, and curriculum of North American medical schools (16). The reform was driven by the Clinical Congress of Surgeons of North America the precursor of the American College of Surgeons in 1913 (17,18). Similarly, in the United Kingdom the drive to change was led by the chief medical officer, Dr Calman in order to fit in the European Union system. While initially the trainee surgeon was awarded the Fellow of the Royal College of Surgeons of either England, Edinburgh or Ireland and then trained for further four years, this changed to a system where one trained for two years to attain the Membership and then a further four

years for the Fellowship (19). In both North America and England, the changes were driven mainly by the surgical societies or their equivalent, with little input from the Universities (4,17,20).

The surgical training in Kenya has also evolved. There are now trainings in all specialties; otorhinolaryngology, cardiothoracic, neurosurgery, pediatric surgery, aesthetic, plastic and reconstructive surgery and orthopedic surgery. Orthopedic surgery have fully fledged departments in both the University of Nairobi and Moi University. Surgical training occurs not only at the university level as a Masters of Medicine (MMed) but also at collegiate level by the College of Surgeons of Eastern Central and Southern Africa (COSCESA).

The curriculum of the University of Nairobi in general surgery has evolved to reduce the amount of time spent in orthopedics and to remove otorhinolaryngology and ophthalmology altogether. Students in orthopedics are not assessed in general surgery and other specialties though their students rotate in these areas. These changes have affected only the duration and the content of the training with little impact on the focus on medical knowledge, patient care or technical skills.

In his Presidential speech to the American Surgical Association in 1935, Archibald comparing the European, North America and Australasia systems of surgical training mentioned that the teaching of moral of the surgeon was emphasized in America and Australasia while in England they emphasized medical knowledge in terms of basic sciences. Operative ability was not a requirement in England but was in North America and Australasia (6). Now in the 21st century, North America, Australasia and Europe have now divided the core content of the curriculum into six competencies with medical knowledge and technical skills just being two of the six of them (7). Work hours for surgical residents have also greatly reduced.

The surgeon who was once seen as the person with only surgical knowledge and skills is now being seen as a leader, a manager and a communicator. These changes as was alluded to earlier were brought by the societies who took the lead by conducting research and lobbying governments and the society at large for change of policies to restore trust in the profession. These efforts led to the formation of external examination bodies independent of surgical societies and training institutions in the United States, Australasia, and England. Although in Germany, there is no external examining body to the training institutions, there is accrediting body which ensures standards are attained and maintained.

The 21st century has its challenges of increased technology and desire to create a better environment

for care of the patient by the trainee. There is increasing emphasis on efficiency in the learning process. Learning in a simulated environment has offered the chance to deconstruct complex tasks providing an opportunity to be familiar with instruments, improve dexterity, and offering chances for the trainee to repeatedly improve on errors without endangering patients. It has been demonstrated that simulation-trained surgeons make fewer errors on actual patients and some have argued that it is morally wrong to train surgical trainees on patients directly (21–23). There is also robust use of laboratory for cutting edge research that translates into new surgical techniques, drugs and devices all performed with surgeons in partnership with industry (22,24).

The departments of surgery in most western schools of medicine have created infrastructure for surgical education. They have a program director (PD) who ensures effective monitoring of the learning process and chairs a committee on resident education. Coordinators under the supervision of the PD help run the program. PDs also rely on the support of the chair of surgery (23,25). This ensures the PD focuses on surgical training and monitors the formative evaluation of students freeing the chairs of surgical departments to handle administrative duties.

While visiting three surgical training sites in the United States; Massachusetts General Hospital, Brigham and Women Hospital and Emory University Hospital, under the scholarship of the American College of Surgeons the author witnessed all these points mentioned about surgical education in the United States.

The US is a leader in many surgical areas because the education system is designed to produce leaders who think beyond the patient they are taking care of or one's practice. They instead think about the whole population of patients and the practice in the entire country. While some surgeons opined that this could be a cultural issue rather than method of education, but it is also possible that education has led to the culture of leadership. While in Kenya we still focus on the production of a surgeon who is only a clinical practitioner, the world has moved to produce a clinician, a leader, a teacher and patient advocate.

In Kenya, we are faced with challenges that call for changes. The public seems to have lost trust in the profession. Patients with minor surgical issues like hernia are seeking treatment in countries like India and there is an increase in reporting of mistreatment of patients by doctors. We have two systems of training surgeons, the collegiate and the universities without any standardizing exams. Surgeons who have trained outside the country are licensed with only a few

surgeons verifying by word of mouth the qualification and skills of the said surgeons. There are now over ten medical schools and all have unknown student to faculty ratios. The curricula for surgical training seem unachievable given the system at the disposal of surgical residents. The country is currently reviewing the primary education system and there are calls to review higher education training to align it with market needs.

Like it was in Abraham Flexner's time, the coming together of surgical associations, the Kenya Medical Association, training institutions and medical regulatory bodies would be a good start. It falls of the surgical society to take leadership in this to define what type of surgeon we need at this point in Kenya.

## Conclusion

The field of surgery is characterized by changes in the understanding of surgical disease and the advent of new procedures and technologies. There is public demand for greater accountability and patient safety with more scrutiny in surgical training institutions. Professional bodies should therefore demand requirements for oversight in the training programs so as to improve training standards. This would result in better skills and competencies for surgical graduates leading to better surgical care for Kenyan patients. We need urgently to innovate the structures, systems and content of the surgical education in Kenya in order to meet the challenges of the 21st century to ensure those graduating are professional, technically competent, and versatile surgeons.

## References

1. Clarke E. History of British medical education. *Med Educ.* 1966;1(1):7–15.
2. Pool EH. Address of the President: The Making of a Surgeon. *Ann Surg.* 1936;104(4):481.
3. Debas HT. Surgery: A Noble Profession in a Changing World. *Ann Surg.* 2002;236(3):263.
4. Pellegrini CA. Surgical Education in the United States: Navigating the White Waters. *Ann Surg.* 2006;244(3):335.
5. French RK. *Barbers and Barber-Surgeons of London: A History of the Barbers' and Barber-Surgeons' Companies.* 1981 (cited 2015 Dec 30); Available from: <http://philpapers.org/rec/FREBAB-2>
6. Archibald EW. Address of the President: Higher Degrees in the Profession of Surgery. *Ann Surg.* 1935;102(4):481.
7. Polavarapu HV, Kulaylat AN, Sun S, et al. 100 Years of Surgical Education: The Past, Present, and Future. *Bull Am Coll Surg.* 2013;98(7):22.

8. Dumon KR, Traynor O, Broos P, et al. Surgical Education in the New Millennium: The European Perspective. *Surg Clin North Am.* 2004;84(6):1471-91.
9. Rutkow IM. William Stewart Halsted and the Germanic Influence on Education and Training Programs in Surgery. *Surg Gynecol Obstet.* 1978;147(4):602-6.
10. Monekosso GL. The Teaching of Medicine at the University Centre for Health Sciences Yaounde, Cameroon: It's Concordance with the Edinburgh Declaration on Medical Education. *Med Educ.* 1993;27(4):304-20.
11. Singer C, Holloway SWF. Early Medical Education in England in Relation to the Pre-History of London University. *Med Hist.* 1960;4(1):1-17.
12. Nara N, Suzuki T, Tohda S. The Current Medical Education System in the World. *J Med Dent Sci.* 2011;58(2):79-83.
13. Grillo HC. Edward D. Churchill and the "Rectangular" Surgical Residency. *Surgery.* 2004;136(5):947-52.
14. Roberts JB. The Making of a Surgeon. *Ann Surg.* 1921;74(3):257.
15. Creech Jr O. Presidential Address: The Surgical Residency Revisited. *Ann Surg.* 1967;166(3):303.
16. Ludmerer KM. Learning to Heal: The Development of American Medical Education. Basic Books; 1988.
17. Davis L. Fellowship of Surgeons: A History of the American College of Surgeons. CC Thomas; 1960.
18. Chapman CB. "The Flexner Report" by Abraham Flexner. *Daedalus.* 1974;105-17.
19. Craven JL. Changes in Surgical Training in the United Kingdom and the Possible Consequences for African Trainees. *East Cent Afr J Surg.* 2007;5(2):71-4.
20. Cope Z. The Royal College of Surgeons of England: A History. CC Thomas; 1959.
21. Satava RM. Surgical Education and Surgical Simulation. *World J Surg.* 2001;25(11):1484-9.
22. Scott DJ, Cendan JC, Pugh CM, et al. The Changing Face of Surgical Education: Simulation as the New Paradigm. *J Surg Res.* 2008;147(2):189-93.
23. Korndorffer JR, Stefanidis D, Scott DJ. Laparoscopic Skills Laboratories: Current Assessment and a Call for Resident Training Standards. *Am J Surg.* 2006;191(1):17-22.
24. Kapadia MR, DaRosa DA, MacRae HM, et al. Current Assessment and Future Directions of Surgical Skills Laboratories. *J Surg Educ.* 2007;64(5):260-5.
25. Nasca TJ, Philibert I, Brigham T, et al. The Next GME Accreditation System-Rationale and Benefits. *N Engl J Med.* 2012;366(11):1051-6.