ORIGINAL RESEARCH PAPER

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

A TEMPLATE FOR SURGICAL RESIDENCY TRAINING PROGRAM (SURGICAL POSTGRADUATE TRAINING) IN DEVELOPING COUNTRIES.

77.	al of	Sai
Jour		Clent
jen 🤇		V
	\searrow	چ 🛆
401	<i>"</i> V	DIE
		4

Surgery							
Ajao Oluwole Gbolagunte*	M.D Department of Surgery, University College Hospital, Ibadan, Nigeria *Corresponding Author						
Alao Adekola	M. D. State University of New York, Upstate Medical Center, Syracuse, New York, USA.						

ABSTRACT

Background: Many doctors who trained in developing countries always travelled to developed countries for specialization. After specialization, many of them do not return to their countries of origin but stay put in the host countries, and get absorbed into the health delivery system of the host countries. To stop this exodus of much needed man-power in the developing countries, many of these developing countries devised their own postgraduate programs so that there will be no need for doctors that aspire to specialize to leave the country any more. This review article is to assess the quality of the various postgraduate programs in the Third World countries.

Study design: The postgraduate programs in some developing countries like Nigeria, Ghana and some countries in the South Pacific were studied and compared with some programs in the developed countries like the United States of America and Canada. There are differences in these programs. We therefore attempt to identify the weaknesses of the programs in the developing countries and make suggestions in some aspects of the programs so as to produce Residency training programs that will satisfy the needs and the peculiarities of the developing countries, and yet measure up to international standards.

Results and findings: Many of the postgraduate programs in the developing countries, as they are now, fall far short of international acceptable standard. There are essentially two main reasons for this: some of the programs are directly under the control of the Governments in those countries, where the priorities are more economic than quality. Also, there is this notion among the doctors in the developing countries that surgical postgraduate training must be treated like preparation for a university PhD degree, even though university Senate has no in-put in awarding fellowship certificate. In the Third World countries, it is felt that "special breed" of surgeons must work in the university environment because it is considered "prestigious" to work in the universities. Surgical residency training by doctors is often confused with Medical school training by medical students.

Conclusion: Even though the aim to retain doctors in their countries can be said to have been achieved, it came at a great price because the programs are very different from the well established residency training program as introduced by William Halsted and Churchill. This gives rise to a program comparative to residency training in the specialty of General Medical Practice, which is very different and of lower standard than internationally accepted surgical residency training program. It also equates the training, in some aspects, to that of a university Master's and PhD degrees.

Abbreviations: RTP, Residency Training Program; LSP, Local Specialist Program; GCPS, Ghana College of Physician and Surgeons; NPGMC, National Post Graduate Medical College; WACS, West African College of Surgeons; LST, Local Surgical Training; MCQ, Multiple Choice Questions; OSCE, Objective Structured Clinical Examination; SRTP, Surgical Residency Training Program; MMed, Master's degree in Medicine.

KEYWORDS

Surgical residency training: Developing Countries: Nigeria: Ghana: West African College of Surgeons: National postgraduate medical college, United States of America, Canada.

INTRODUCTION:

Many medical doctors who graduate from Third World medical schools, go to developed countries to specialize, but often fail to return to their countries of origin after acquiring the specialists training. They get absorbed into the health delivery system of their host countries and their services are therefore lost to their countries of origin.

To stop this exodus of much needed doctors, many Third World countries have therefore developed their own local Residency Training Program (RTP) or Local Specialist Program (LSP) to retain their doctors and to discourage them from going abroad to developed countries for specialist training.

Unfortunately, many of these locally designed RTP and LSP fall far short of international practices, thus producing specialists of questionable skills, and specialists in name only.

The purpose of this paper therefore is to highlight the flaws of some of these local surgical postgraduate training and to suggest ideas for the correction of the flaws so as to produce an internationally acceptable postgraduate training in the developing countries. Our aim therefore, is to merge some aspects of the programs in the developed countries with the established local programs to produce a template of Residency training program for developing countries that will measure up to international standards, and yet, satisfy the local needs.

MATERIALS AND METHOD

The information for this write-up is gathered from the practices of National Postgraduate Medical College of Nigeria (NPGMC)⁽¹⁾. West African College of Surgeon (WACS)⁽²⁾. Ghana College of Physicians and Surgeons (GCPS), and some countries in the South Pacific. The post-graduate program of West Africa College is opened to Medical

Practitioners who are fully registered. There are twelve countries that participate in the program. They are Nigeria, Ghana, Cote D'Ivoire, The Gambia, Liberia, Sierra Leone, Republic of Benin, Mali, Togo, Senegal, Burkina-Faso and Niger. Additional information was obtained from articles from English-speaking countries (including some unpublished data) and personal experience of one of the authors who has been participating in the programs of two of the Colleges for over 40 years.

The local surgical postgraduate trainings of these Colleges were compared with those of some developed countries which were regarded as having the best RTP^{(3)(4).} These programs in the developed countries were based on William Halsted's program introduced in 1904 ^{(3)(4),(5)} and modified by Churchill ^(6–8). The differences in the programs are highlighted with emphasis on the innovations introduced by the developing countries. Suggestions are made as to how to improve on the standards of RTP and LST in the developing countries.

FINDINGS AND SUGGESTIONS FOR IMPROVEMENT.

Primary Examination: In some developing countries, after graduating from Medical School and serving a year of Housemanship (Internship), a doctor who wants to undergo a RTP has to sit for, and pass a Primary Examination⁽¹⁾⁽²⁾. This Primary examination is based purely on the knowledge of Anatomy, Physiology, Biochemistry and Pharmacology. These are the subjects taken full-time for two preclinical years at the commencement of Medical training and already passed by the candidate. Without passing these pre-clinical subjects, medical students will not be allowed to go for the clinical years in the hospitals, and therefore cannot graduate as doctors. In a program of course-work evaluation, if one passes the Course, one is not expected to be tested in the Course after 4 years! Naturally, the failure rate is high ⁽⁹⁾ since the focus of the doctors wanting to be enrolled in a RTP has now shifted from Basic science to Clinical science although some try

Submitted : 19 th July,2019	Revised : 27 th August,2019		ccepted : 14 th September,2019	Publication : 01 st November, 2019		
		-	International Journal of S	cientific Researcl	h -	15

Volume-8 | Issue-11 | November - 2019

to justify it by saying, "Basic science is the backbone of Medicine". This does not seem to be a professional way of thinking. Well, what is the "spinal cord" of Medicine? The process is even more illogical because if the candidate cannot get an admission into a RTP even after passing this Primary because of lack of space, the validity of the Primary Examination lapses after 5 years and he has to re-take it and start the process all over again! The effect of this policy is to make the newly graduated doctors concentrate more on theoretical and rote learning at the expense of clinical subjects so as to pass the Primary examination. This process is also frustrating to the candidates who by now are more clinically oriented than basic science oriented.

United States and Canada do not have this type of Primary examination, yet their Residency Training Programs and Fellowship programs are adjudged to be among the best in the English-speaking countries. United States has been said to have the best RTP and Fellowship programs in the world⁽³⁾.

Suggested admission policy:

The Primary Examination for admission into a RTP in the Third World should therefore be jettisoned. If it is necessary to select only a limited number of candidates for admission into the program because of lack of space, then, a One-Best-Answer, and 5-Choice- item format of Multiple Choice Questions (MCQ)⁽¹⁰⁾ or an Objective Structured Clinical Examination (OSCE)⁽¹¹⁾ based on an elementary principles of clinical surgical knowledge, and not pure basic Science knowledge, can be used for selection of the best applicants. This should be an inhouse examination depending on the needs of each individual hospital. It should not be centralized. While some institutions may not need to conduct the examination because they can accommodate all the applicants, others may need to conduct the examination because there are too many applicants for spaces available.

Thesis/Dissertation: Many surgical post-graduate programs designed by the Third World countries incorporate the submission of Thesis or Dissertation before full certification. This is not done in developed countries where practically all the breakthroughs in medicine emanate from, and where the aim of postgraduate training in medicine is clearly understood. The reason for this in developing countries is because the organizers of the program equate clinical postgraduate training to a university Master's or PhD degree training. Therefore for "acceptance" by their university colleagues with Master's and PhD degrees in Arts and Sciences, they incorporate submission of theses to their local surgical postgraduate training, which is totally a clinical training, so that they can also say, "Our residents are also doing research". But this "research" expected from the Residents is only for the sake of showing their colleagues in the university system that our postgraduate program also contains "research" like a PhD degree program. But this is not how to conduct meaningful clinical research in Medicine. In fact in the old curriculum of one of the Colleges, ⁽¹⁾ it states, "... (The research) does not need to break new grounds...." Because it is obvious that such "research" from many young doctors aspiring to be specialists "cannot break new grounds". This sentence has now been deleted in the new curriculum (1) because of the oxymoronic nature of the situation. If a "research" cannot break new grounds, why doing it at all? Yet it is understood that while a university Senate is responsible for the award of Master's and PhD degrees, university Senate has no input whatsoever in certifying a doctor as a specialist surgeon. Because of this misconception It is therefore common in some Third World countries to see the award of Diploma, or Master's degree (MMed), or Membership for doctors who have undergone some years of training without completing the requirement for a full specialist training in a specialty.

Compelling doctors undergoing specialist training to submit thesis is diversionary, since it is usually a sham research that can be produced under the circumstances. Unfortunately, the time that should have been spent in the Operating Room to improve on their surgical skills and to learn new surgical techniques; and the time they should have spent in managing surgical patients with or without complicatios, which are the main objectives of Residency training program, is wasted in looking for data for some meaningless, sham research.

Unlike a Master's degree or a research leading to a PhD degree awarded by a university Senate in a non-clinical discipline, meaningful clinical research may require animal laboratory attached to the hospital; research grant; and collaboration with international experts. All these may be available only to fully trained specialists with many years of independent surgical practice and research. They cannot be available to young doctors whose primary aim is to specialize, and working under the supervision of a senior colleague, especially since the hospital patients technically do not belong to the Residents. Meaningful clinical research can only yield dividends after many years of independent surgical practice. This is the type of research that gave rise to kidney transplantation, laparoscopic surgery, cardiac catheterization, robotic surgery etc.

Therefore, incorporating thesis/dissertation into the training of surgeons has a great negative effect on the final products and should be jettisoned if any progress is going to be achieved in the local RTP and surgical training in underdeveloped countries. There will be plenty of time for a research oriented surgeon to conduct research after qualifying as a specialist.

This idea most probably emanates from those that went to developed countries for postgraduate training but had to work as laboratory assistants for a Consultant while waiting for a placement.

Duration of training:

Since the primary aim of introducing the local specialist training is to retain the doctors trained locally and prevent them from going abroad to developed countries for specialization, the local program is designed with the local population in view. There is no uniformity in the period and mode of training in all the Third World countries engaging in RTP.

In the program of one country, RTP for three years leads to the award of Membership certificate. This allows the holder to serve as a specialist surgeon in many of the country's health institutions except the university teaching hospitals, and to perform only "limited surgical procedures". But an additional 2 to 3 years more leads to the award of Fellowship certificate. These are the doctors who are groomed to practice in a university set-up. (Unpublished data) This two-tier certification of Membership and Fellowship produces two cadres of specialists of different levels of expertise.

In the program of another country, after one year of specialist training the doctor is awarded a Diploma certificate. Then after an additional three years, he is awarded a Master's degree in Medicine (MMed). The fourth year is to be spent abroad for additional training. This fourth year is also to be spent in writing his thesis which will be defended in front of an external examiner. (Unpublished data)

In another developing country, ⁽¹⁾ ⁽²⁾ after two years of RTP, the candidates are expected to sit for an examination referred to as Part One Fellowship. This has now been re-named Membership. (Probably because the title "Part one" is not as highfalutin as "Membership"). Candidates have to pass this examination before they can be allowed to proceed to the next stage. After another two years (this may be more depending on the surgical specialty) they are then requested to it for another examination which is the final Fellowship examination. But even after passing this final Fellowship examination they are not regarded as being fully certified until they have submitted a thesis which is acceptable to the examiners⁽¹⁾⁽²⁾.

The flaw in all these programs is that at no time was emphasis placed on surgical skills and surgical management of patients.

Because of the misconception of what SRT program entails in the Third World countries, in addition to this thesis submission during the course of their training, they must also serve in a rural hospital, usually without any supervision. This is made compulsory for all Residents undergoing training even though this "rural posting" has nothing to add to the knowledge of the Residents, but probably does a lot of disservice to the rural dwellers being used as "guinea pigs".^{(1),(2),(2)}. The distorted rationale behind this is to "give service" to rural dwellers during the period of residency training programme, which is not within the scope of SRTP. To include this into the SRTP produces a "potpourri" form of program that lacks focus. Also, it mixes SRTP with a recently introduced Specialty of General Medical Practice which is designed to train her Residents to cater for patients in hospitals with minimal facilities before patients are sent to well established hospitals for specialist treatment ⁽¹³⁾(¹⁴⁾(¹⁵⁾(¹⁶⁾(¹⁷⁾(¹⁸⁾).

On a cursory examination one can see a lot of flaws in all these programs. What is difficult to assess are: what type of surgical

Volume-8 | Issue-11 | November - 2019

procedures are these various cadres of specialists performing during their training period? What is their complication rate? What is the mortality rate? These types of programs will probably meet the objectives of retaining surgeons in the area, but will it not be like sacrificing quality for quantity? A future study along this line will be very informative.

Suggested program:

A four-year to five- year uninterrupted program is suggested here. That is, during the years of training, there should be no interruption by preparing directly for any written examination until the final year. This is because preparation for an examination after two years of training will temporarily divert the attention from the clinical duties but make the Residents concentrate on theoretical knowledge and rote learning so as to pass the examination, especially when it is realized that one cannot progress without passing the Part One (or Membership) examination. So there is no need for a two-tier certification. There is no such "mid-program examination" in some advanced countries that have the best Residency training programs in the world ⁽³⁾ The period for surgical training is usually 4 years in General Surgery, although it could be longer depending on the specialty. For example, it can be up to seven years for Neurosurgery and Cardiothoracic Surgery. In fact because of the overwhelming surgical advances nowadays, some have suggested that the 4-year period of General Surgery be extended to 5 years. (12)(13)(14)

The main aim of surgical postgraduate training is to produce accomplished specialists who can perform surgery and manage surgical patients and surgical complications successfully. This is the raison d'etre for surgical residency training programs⁽¹⁵⁾. After the completion of the specialist training, a specialist doctor can then engage in a meaningful clinical research to improve on surgical practice, and not for the sake of submitting a thesis, for the sake of showing that one is conducting research. Or for the sake of an MMed degree which is only given by a University Senate

Yearly progression in the program:

From the beginning of the program (year 1) to the end of the program (final year), the Residents should attend weekly the following clinical meetings: Journal Club, Radiology meetings, Pathology meetings, Morbidity and Mortality meetings, and Grand Rounds. These should be in addition to the regular Operating Room sessions, Outpatients clinics, endoscopic (colonoscopy, sigmoidoscopy, upper gastrointestinal endoscopy) sessions, and Outpatient surgery. Every morning, there should be a presentation of cases seen in the Emergency Room the previous night by the Unit on-call for discussion. A log book is to be kept by the Residents, and if the attendance at these meetings is not up to what it should be (e.g. 75% attendance) in the final year, the Resident should not be considered eligible to sit for the final examination.

In the first two years of the program, the residents should rotate through all the specialties of Surgery for a period of two to three months each. In the last two years of the training, the resident should be posted only to his chosen specialty. In his last year, he should function as the Chief Resident in that specialty, which means that he takes full responsibility for a ward. However, unlike an independent surgical practice, the Attending (Consultant) Surgeons will be available to him for help and consultation when occasion demands it.

The surgical procedures are to be performed by the Residents under the strict supervision of the Attending (Consultant) surgeon who should always scrub with the Residents in their junior years. The various surgical procedures to be performed by the Residents should be tailored to the years of training with increasing complex surgical procedure as the trainee progresses. This can be grouped as follows: ⁽²²⁻²⁵⁾ (a). Essential-common operation which is the frequently performed general surgical operations e.g. Breast lumps biopsy, herniorrhaphy, lipomectomy etc. (b). Essential-uncommon operations which are "uncommon, but often urgent operations seen in general surgical practice" like splenectomy, appendicectomy, typhoid perforation etc. and (c). Complex operations "not typically performed in general surgery practice" like Hassab's procedure ⁽²⁶⁾

There should be no interruption to the smooth flow of the program by sitting for any written examination during the course of the program. The only examination to be taken is at the end of the program. However, during the course of the training it should be made compulsory for the Residents to go abroad for a period of six months to one year to learn some aspects of advanced surgery and modern techniques that are not available in the locality. After all, how can anyone who has not seen laparoscopic cholecystectomy call himself a surgeon? Or someone who has not seen Endoscopic Retrograde Cholecysto-pancreatography (ERCP) regard himself as an Hepatobiliary surgeon? Or someone who cannot perform upper gastrointestinal endoscopy regard himself as a gastro-enterology surgeon?

A very common error is "splitting" the RTP into two, to have two cadres of specialists. This used to be the practice in Canada until 1971 when Specialist Certificate, Royal College of Surgeons, Canada (C.R.C.S) and Fellow, Royal College of Surgeons, Canada (F.R.C.S) were awarded. The Fellowship certification was of higher cadre than the "Specialist certification". But this dichotomy of certification was abandoned in 1972 and only Fellowship certification in now being awarded. (27). It is our assumption that this is what developing countries that award "Membership" and "Fellowship" copy, although even Canada jettisoned this idea as far back as 1972. Another reason for "splitting" SRTP into two categories is because the RTP in General Medical Practice is confused with SRTP in Surgery. This explains the reason for awarding "Membership" certification mid-way into the SRTP, or awarding a certificate just after 2 years of SRTP allowing the doctors with the certificate as "Specialists" of limited grade. But this bears no relevance to the SRTP as it is known in the International Community. This is the curriculum for doctors who do residency training program in the "Specialty of General Medical Practice." The idea is to have a cadre of specialists who can do "a bit of everything" like minor surgical procedure, minor Obstetrics and Gynaecology emergencies, and handle emergency Medical problems. They are best suitable, and are trained mainly for peripheral hospitals in the developing countries where there are no facilities for major medical treatment. The importance of this group is that they are trained to handle emergencies in a rural setting until patients can be transferred to a tertiary hospital for definitive treatment by the relevant specialists

The Final Examination:

After the completion of the four or five years of training, before a candidate is allowed to sit for the examination, he must have performed throughout his years of training, a certain number and a variety (to be determined by the examiners) of surgical procedures. He must have also performed certain numbers of upper and lower endoscopic examinations; laparoscopic surgery and other relevant procedures. If the number of his surgical procedures is not satisfactory, he is not allowed to sit for the examination until he has met the quota.

The Examination:

The only examination the Resident should sit for should be in his final year. This consists of (a) Theory paper (b) Clinical examination and (c) Orals. The theory paper should consist of Paper 1A, Paper 1B, Paper 2A and Paper 2B. Paper 1A should consist of 100 MCQs, 5-Choice item and One-Best-Answer. This should cover the gamut of Principles of Surgery and Surgical Infections. Paper 1B should also be designed like Paper 1A, but should cover Operative Surgery and Surgical Pathology. Paper 2A should be essay type of questions based on General Surgical problems while Paper 2B should also be essay type of questions but dealing with surgical sub-specialties like Urology, Orthopedics, Plastics Surgery and Pediatrics Surgery. Short Answer Questions (SAQ) format is not necessary here because it would have been taken care of in a properly constructed MCQ⁽¹⁰⁾

The clinical part of the examination should consist of one long case presentation, and about 3 or 4 Short cases. Then there should be two Oral examinations. Oral 1 should deal with Principles of Surgery and Surgical Infections and Oral 2 should deal with Operative surgery, Surgical Pathology and surgical sub-specialties⁽²⁸⁾

When feasible and if the facility is available, watching the candidates operating on selected cases in the operating room and scoring them accordingly will be an additional way of assessment of the competence of the candidates.

OSCE ⁽¹¹⁾ is not a suitable form of clinical examination for an "exit" postgraduate certification. The main reason for OSCE form of examination is for uniformity of assessment in clinical examination for all the participating candidates. But this is not always true in some instances. A bored patient may disrupt the smooth running by suddenly getting out of bed under the pretext of going to the rest room,

and then there has to be a hurried substitution of a similar (not the same) pathology. Or a rater may be temporarily distracted from observing how the candidate is examining a lump⁽¹⁰⁾⁽¹¹⁾. However, in cases where the selection of the best candidates is necessary, MCQ and OSCE can be used. But in Fellowship examination, what the examination tends to answer is, "Is this candidate ready for an independent surgical practice?" He does not need to be compared in terms of his academic performance with any of his colleagues. Also throughout his/her professional life, in dealing with patients, it is not OSCE he will be performing on them but a detailed history and examination

DISCUSSION:

Even though the main reason for introducing SRTP in the developing countries is to retain their doctors and prevent them from travelling to developed countries for specialization, because they might not come back, many of the local postgraduate training programs achieve this objective. But the negative side of this is that the programs fall far short of international acceptable standards. This is primarily due to two reasons. In the first case, the programs are greatly influenced by the government of the countries⁽¹⁾. The objective of the government is to retain the doctors locally more for economic reasons than for anything else. And as the saying goes, "He who pays the piper dictates the tune". Therefore the emphasis here is on quantity at the possible shortest time and not quality.

The second reason is because many organizers of the programs equate SPGT to a PhD degree program in Arts and Sciences based in the Universities. They therefore try to organize SPGT to conform to university Senate requirements for a PhD degree in Arts and Sciences. After the first qualifying medical degree from the university, postgraduate training in clinical medicine takes a different route from the university postgraduate training in Arts and Sciences. The clinical postgraduate training is no more under the umbrella of any university Senate, since university Senate does not award Fellowship certification. But this is probably not considered by many organizers of clinical postgraduate training, because in the Third World countries, it is considered "prestigious" to be employed as a university lecturer or to be associated with a University establishment one way or the other. That is why in the developing countries, some postgraduate training in surgery award Diploma certificate, Master's degree (MMed) and Membership degrees. To justify university appointment for Fellowship certification, some insist that the candidates must also submit dissertation before full certification. The negative effect of this is that the time the Residents should have been used to improve their surgical skills, and manage surgical problems is wasted in collecting useless data for a useless research and for a sham thesis. As far back as 1939, many experts involved in surgical residency training programs have concluded that no meaningful clinical research can emanate from doctors undergoing RTP⁽²²⁾ because of the logistics involved which favor only qualified experts with many years of experience and who are engaged in independent surgical practice. To expect thesis presentation from Residents in surgical training is to expect them to write thesis just for the sake of writing thesis, and a way of trying to ingratiate SRT program with university PhD degree program.

Residency training program introduced by William Stewart Halsted in Johns Hopkins in 1889 and modified by Edward Churchill at the Massachusetts General Hospital as "rectangular residency" ^{(8) (23)} has stood the test of time. If any innovation must be introduced at all, it should be to improve on this established form of training specialists.

After SRT program, there is ample opportunity, time, and materials for any specialist interested in meaningful clinical research. And this should be encouraged during independent surgical practice.

CONCLUSSION:

What can be concluded from this study is that under-developed countries place more emphasis on theoretical knowledge, titles and rote learning than surgical skills improvement and performance. It is also concluded that in the developing countries, it is considered that every specialist must aspire to work in a university set-up, which is considered "prestigious". Paradoxically all these make surgical post graduate programs in undeveloped countries fall far short of internationally acceptable standards.

It is also concluded that while local residency training programs may achieve their objective of retaining doctors in the locality, and preventing migration to developed countries, the process has its own negative effects because the standards fall far short when compared with global best practices.

REFERENCES

- Decree 67 of 1979, now Cap. N59 Laws of the Federation of Nigeria 2004.
- Curriculum of West African College of Surgeons Carley Contraction (Contraction of the Contraction of the Contracti 3.
- 4. Sun, S., & Hamed, O. H. (2013). 100 years of surgical education. The past, present and future. Bull Am Coll Surg, 98(7), 22-27.
- Bell, R. H., Banker, M. B., & Rhodes, R. S. (2007). Graduate medical education in surgery in the United States. Surg Clin North Am, 87, 811-823. 5.
- 6. DuCoin, C. (2004). Five-year general surgery residency: reform or revolution? Bull Am Coll Surg, 99(11), 20-25.
- Consug, 59(11), 2022. Mohebali, J. (2014). Reformation of current surgical residency and fellowship training is the best solution. Bull Am Coll Surg, 99(11), 23-25. Grillo, H. C., & Edward, D. (2004). Churchill and "rectangular" surgical residency. 7.
- 8. Surgery, 136, 947-952. Ajao, O. G., Ajao, O. O., Ugwu, B. T., Yawe, K. D. T., & Ezeome, E. R. (2014). Factors 9.
- determining the results of the examination of West African College of Surgeons in general surgery. J West Afr Coll Surg, 4(4), 1-26. Ajao, O. G. (2008). Multiple Choice Questions in Surgery: A Guide for the Examiners
- 11.
- Alao, O. G. (2008). Multiple Choice Questions in Surgery: A Guide for the Examiners and Examinee. Part II (2nd ed). Ibadam: Spectrum Books Ltd. Ajao, O. G., & Alao, A. O. (2008). Objective structured clinical examination (OSCE) revisited: a viewpoint. J Surg Surg Sci, 1(2), 1-4. Caron, N. R., Kennedy, C. M., & Warnock, G. L. (2013). Rural surgery in "the great White North"–universal care or universal challenge? Bull Am Coll Surg. 98(10) 50-56. Michael K Lings: "Concern Structured Theorem Concern Structured Participation 2015. 12.
- 13
- Michael Kleinman. On-line 'General Surgery Digest' Tuesday, November 10, 2015. Busch, K. M., Keshava, H., Kuy, S. R., Nezgoda, J., & Allard-Picou, A. (2015) Teaching in the OR: new lessons for training surgical residents. Bull Am Coll Surg, 100(6), 29-34.
- Ajao, O. G., & Alao, A. (2016). Surgical residency training in developing countries: West African College of Surgeons as a case study. J Natl Med Assoc, 108(3), 173-179. 15.
- Ajao, O. G. (1990) General practitioners in peripheral hospital. World Health Forum. 11, 16. 433-434.
- 17. Ajao, O. G. (April, 1982). Measurement of intra-operative blood loss in a rural setting. Trop Dr. 12, 29-31.
- Ajao, O. G., & Adeloye, A. (1977). The importance of spinal anaesthesia in the surgical 18. practice in Tropical Africa. J Trop Med Hyg. 80(6), 126-128.
- Ajao, O. G. & Ladipo, O. A. (April, 1978). Local anaesthesia for emergency abdominal surgery. Trop Dr. 8, 73-75 Ajao, O. G. April, 1979). Thyroidectomy under local anaesthesia. Trop Dr. 9, 73-75 19.
- 20 Ajao, O. G. & Hawtin, J. G. (1980). Snakebite and snake venom ophthalmia. J Natl Med 21.
- Assoc. 72(10), 961-964. Klingensmith, M. E., & Malangoni, M. A. (2013). Score provides residents with web-22.
- based curriculum for developing key competence. Bull Am Coll Surg, 98(10), 10-15. Surgical Council on Resident. SCORE Curriculum outline. Available at : 23.
- http://surgicalcore.org/public/curriculum; Accessed 12.08.13. 24
- Allen, D. P. (1907). The teaching of surgery. Trans Am Surg Assoc, 25, 1-14. McGreeny, J. M. (2012). Maximizing postgraduate surgical education in the future. Bull
- Am Coll Surg, 97(2), 19-23. Ajao, O. G., Ajayi, O. O., Soyannwo, O. A., Ladipo, J. K., Nkom, E. S., & Fatade, A. O. 26. (1995). Cup-and-spill gastric deformity following Hassab's procedure for esophageal varices: A case report. East Afr Med J, 72, 468-470.
- Variets, Acase (Ppin, LasAn, Medy, 72, 406476).
 Ajao, O. G. & Ugwu, B. T. (2012). A case against the Membership programme proposal of the West African College of Surgeons. J West Afr Coll Surg, 2(3), 78-82
 Ajao, O. G., Ugwu, B. T., Ajao, O. O., & Yawe, K. D. T. (2013). What should constitute
- the clinical component in fellowship examination in surgery. J West Afr Coll Surg, 3(4), 15 - 28
- A manual of graduate training for surgery (general surgery and surgical specialties): an elaboration of the proposed minimum standard or criteria. Bull Am Coll Surg, XXIV, 29
- [1939], 7-11.
 Potts, J. R. (2018). Shifting sands of surgical education. (Charles G. Drake history of surgery lecture). JAm Coll Surg, 227(2), 151-162 30