

Orthodontic Residency Training in Nigeria

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Abstract

Background: In Nigeria, residency training in orthodontics dates back as early as 1986 with initial accreditation of only one institution granted by the Medical and Dental Council of Nigeria. Presently however, there are about ten institutions where orthodontic treatment is offered and most of them are accredited to train orthodontists.

Results: In spite of the increase in the number of accredited training institutions, there is still a dearth of orthodontic practitioners with the ratio being 1:3.86 million Nigerians. Sadly, the total population of Nigerian orthodontists represents only 1% of all dentists in Nigeria.

The challenges of residency training in Nigeria are numerous. There is therefore a need to reexamine the objectives of training, reevaluate the programme as a whole and implement restructuring in order to improve the standard, make the programme more relevant to the need of the society, thus ensuring that graduates of the programmes are up-to-date and at par with their counterparts from across the globe and with the rest of the world.

Conclusion: while the purpose of residency training in orthodontics has largely been achieved in Nigeria, a lot remains to be done to propel it beyond its original state so as to make it compare favourably with similar dental postgraduate training programmes in other parts of the world. There is therefore a call for action for all stakeholders to propel the fortunes of residency dental training in Nigeria.

Keywords: residency training; orthodontics; challenges; Nigeria; postgraduate

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Introduction

Orthodontics is the dental specialty that includes the diagnosis, prevention, interception and correction of malocclusion. The specialty also includes dentofacial orthopedics and this includes as well as neuromuscular and skeletal abnormalities of the developing or mature orofacial structures. Orthodontics was a most neglected subject in the past but it started making its mark of recognition in Nigeria in the late 1970s¹ and today it is the most popular of all the dental specialties in Nigeria and the United States, receiving the highest percentage of applications from graduating dental students.²

History of Postgraduate Dental Education in Nigeria

West African College of Surgeons

The Association of Surgeons of West Africa (ASWA) was formed on the 3rd of December 1960, with the objective of promoting postgraduate education and research in surgery and related disciplines throughout West Africa. In January 1975, the College was by resolution inaugurated as a constituent College of the West African Postgraduate Medical College (WAPMC), an agency of the West African Health Community. Subsequently, the West African College of Surgeons kicked off with 6 faculties including Dental Surgery. The premiere examinations of the College took place in October 1979, with the specific objectives to advance professional education and training in all medical, pharmaceutical and nursing disciplines; promote and achieve a high standard of professional practice and competence among practitioners.

At the beginning

Few orthodontists were trained in the United Kingdom in the mid 1970s. However, with increased awareness which could be attributed to several factors, particularly an increase in the value placed on dental esthetics and physical appearance and interest shown by the Nigerian authorities, training of orthodontists began in Nigeria in 1986, over 30 years ago with the Lagos University Teaching Hospital, Lagos, being



Figure 1: Earlier accredited training institutions for orthodontic training in Nigeria



Figure 2: Additions of more accredited training institutions for orthodontic training in Nigeria

granted accreditation by the Medical and Dental Council of Nigeria (MDCN) to train specialist orthodontists.³ Subsequently, over a decade after, in late 1998, accreditation was extended to the teaching hospitals in Ibadan (University College Hospital, Ibadan), Ile-Ife (Obafemi Awolowo University Teaching Hospital, Ile-Ife) and Benin (University of Benin Teaching Hospital, Benin) respectively to carry on training of residents (*Figure 1*). Postgraduate orthodontic training was pioneered by Prof. M.C. Isiekwe in the 80s with the admission of 3 residents into the residency training programme at Lagos University Teaching Hospital (LUTH), Lagos. Dr. Simi Johnson was Nigeria's first female orthodontist to practice in the country.⁴ She taught undergraduate students and practiced orthodontics briefly in Lagos.

With a progressive increase in the number of orthodontists, the Nigerian Association of Orthodontists (NAO) was formed in April 2004 and in January 2005, the Association became the 96th affiliated organization of the World Federation of Orthodontists (WFO); a body charged with the promotion of the quality of orthodontic care around the world.

Current situation

Though an evolving specialty, Orthodontics has gone through remarkable advances in Nigeria. More institutions have been accredited for training of residents

Table 1: Status of orthodontic training institutions in Nigeria

Institution	Status
University of Nigeria Teaching Hospital, Enugu	Partial
University of Port Harcourt Teaching Hospital, Port Harcourt	Partial
National Hospital, Abuja	Partial
Lagos State University Teaching Hospital, Lagos	Partial
Aminu Kano University Teaching Hospital, Kano	Partial
University of Ilorin Teaching Hospital, Ilorin	Not accredited
University of Calabar Teaching Hospital, Calabar	Not accredited

Table 2: Number of Orthodontic Consultants at the various centres including private practice in Nigeria

Institutions	Male	Female	Total
LUTH	2	4	6
OAUTH	2	1	3
UCH	2	3	5
LASUTH	1	4	5
UPTH	1	2	3
AKTH	3	-	3
UBTH	1	2	3
UITH	-	1	1
UCTH	-	1	1
UNTH	-	2	2
NATIONAL HOSP	-	1	1
MILITARY HOSP.	1	2	3
PRIVATE	1	2	3
Total	14	25	39

in orthodontics at Enugu (University of Nigeria Teaching Hospital, Enugu), Port Harcourt (University of Port Harcourt Teaching Hospital, Port Harcourt), Lagos (Lagos State University Teaching Hospital, Lagos), Kano (Aminu Kano Teaching Hospital, Kano) and at Abuja (National Hospital, Abuja) (*Figure 2*).

There are more than ten (10) institutions all over Nigeria excluding the few private practices where orthodontic treatment is offered where orthodontic treatment is offered and most of these institutions are accredited to train orthodontists (*Table 1*).

From the early 1990s to the present, about 40

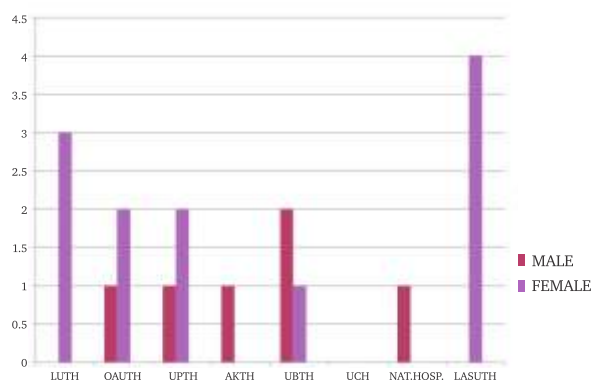


Figure 3a: Gender distribution of junior residents in orthodontic accredited training institutions in Nigeria

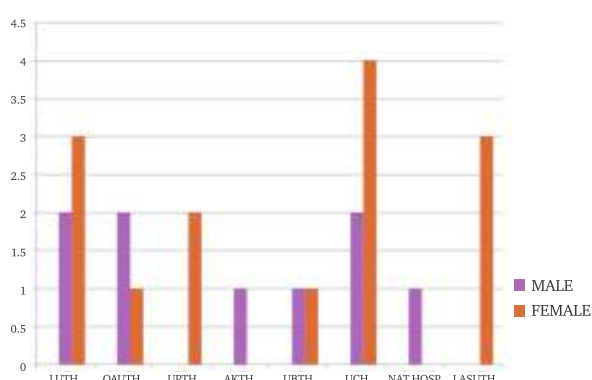


Figure 3b: Gender distribution of senior residents in orthodontic accredited training institutions in Nigeria

orthodontists have graduated from these residency programmes in Nigeria (Table 2). These orthodontists are saddled with the responsibility of carrying out orthodontic treatment for numerous Nigerians and foreigners alike. There is a dearth of orthodontic practitioners in Nigeria with the ratio being 1:3.86 million Nigerians. This is a far cry from what obtains in the US where there are 13,500 orthodontists to a population of 325.7 million Americans with a ratio of 1 orthodontist to 241,000 Americans.⁵ The total population of orthodontists in Nigeria represents only 1% of all dentists in Nigeria.

Currently, there are over 40 residents at different levels of training in Nigeria. Anecdotal report showed there are 19 junior residents (7 males and 12 females) and 23 senior residents (9 males and 14 females) (Figures 3a and 3b). There are more female residents (26; 62%) than male residents (16; 38%) in these institutions. In recent years, however, the number of women in dentistry and dental specialties, including orthodontics, has increased dramatically.⁶

It was reported that 34% of orthodontic residents in the United States were women in 1999,⁷ and by 2010, the proportion of female residents had increased to

39%.⁸ Similarly, this trend was observed in Canada where in 2006, 36% of orthodontic residents were women⁹; and this increased to 47% in 2013.

Postgraduate Dental Training

Postgraduate dental training is essential in the development of specialist manpower in dental health care delivery services. The orthodontic residency programme in Nigeria is a postgraduate dental training. It is a hospital based and not a university based programme and currently runs for a minimum of six years, culminating in the award of a Fellowship in Orthodontics of either the National Postgraduate Medical College of Nigeria or the West African College of Surgeons. These two bodies regulate and carry out trainings to produce specialists in all branches of Medicine and Dentistry.

The West African College of Surgeons experience

The residency programme in orthodontics in the West African Subregion is supposed to prepare competent individuals to practice orthodontics and dentofacial orthopedics with the objectives to provide them with an in-depth education in biological and biomechanical principles related to orthodontics; to diagnose, plan, and deliver comprehensive orthodontic health care service; and to develop research and service skills. Opportunities are also made available for research in biomechanics and craniofacial growth, surgical orthodontics, cleft lip and palate treatment, speech pathology, animal experimentation, and human growth.

Phases of Orthodontic residency training in Nigeria

The pattern of residency training in Nigeria has not changed since it first debuted in the late 1970s and early 1980s. Recently however, modifications were made to include the “Membership Pathway” of the West African College of Surgeons. There are 3 phases:

Phase I

The primary examination is the first entry point with applicants being dental graduates completing their National Youth Service Corp or a Senior House Officer. No formal teaching or structured courses are featured for this examination by the West African College of Surgeons. In contrast, candidates are expected to prepare for the examinations in their spare time, but revision courses are organized to prepare candidates for the primary examination which usually consists of largely basic medical and dental sciences in

related disciplines, above the undergraduate level, and is to determine a candidate's level of preparedness for postgraduate residency training. A pass in the primary examination is now a prerequisite for admission into residency training in hospitals approved for training throughout the country.

Phase II Junior Residency (Registrar Grade): Membership Training in Dental Surgery

The objective of this phase (Junior Residency) is to train the resident to acquire relevant competencies for routine management of all common oral health conditions at a level higher than that of the post house officer and youth corp graduate experience to provide middle level manpower in the dental specialties. It is also to prepare candidates for the Membership Examination and is undertaken in hospitals or institutions recognized and accredited by the Faculty of Dental Surgery of the West African College of Surgeons. This phase commences after the trainee must have successfully passed the primary examinations in basic medical and dental sciences, or must have been exempted from that examination by the College. The Membership (MWACS), practically, a patient-based program will enable candidates to acquire skills and knowledge in a structured and progressive manner through rotating through prescribed 36 months (3 years) in the specified specialties (departments) of medicine and dentistry. Thereafter, the Membership Examination is taken any time after. Success in the examination will result in the award of the title of a Specialist in Dental Surgery of the West African College of Surgeons (MWACS).

Candidates who pass the Membership examination are then promoted to the post of Senior Registrars (or Senior Resident) and may choose to either exit the Residency Training Programme and continue working in a Private or Government Health Institution with this added professional qualification or continue to the Senior Residency (Phase III)

Phase III Senior Residency (Senior Registrar Grade) Final Residency Training

Since the Membership is not specialty specific, it only means a resident whose goal is to be trained as an orthodontist would begin the orthodontic training proper after spending 36 months of rotation in different specialties (departments) and having passed the Membership Examination. Such candidate would progress to a Specialty Specific Fellowship in Dental Surgery (FWACS).

The objective of this phase of the training

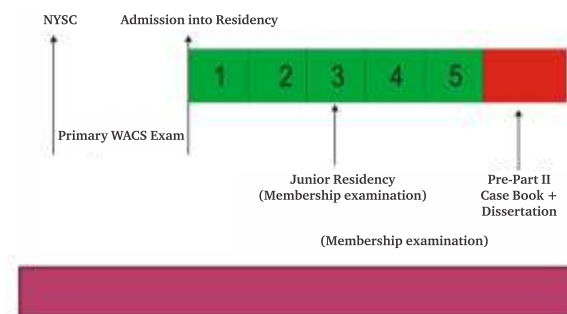


Figure 4: Phases of residency training programme in orthodontics in Nigeria

programme (Senior Residency) is to acquire competence to the level of a consultant in a chosen specialty, for example Orthodontics, in a teaching and research or health services institution over a period of 36 months.

The Fellowship examination may be taken any time after completion of the prescribed 36 months (3 years).

The candidate would prepare a book of clinical cases, conduct a research and write a dissertation on a subspecialty topic before they can be eligible for the Part II Final examination. Upon passing the Part II (Final) examinations, candidates are now immediately appointed Consultants in Teaching and Specialist Hospitals where appropriate vacancies exist.

Figure 4 shows a summary of the phases of residency training programme in Dental Surgery (Orthodontics).

What are the lessons learnt

The specific purpose of this presentation is to highlight and identify the developments of orthodontic residency in Nigeria and look at the lessons we can learn since its evolvement over about four decades ago. Although there are great developments over about four decades; from the 1970s till now, there are still some challenges confronting orthodontic residency training in Nigeria. These are highlighted below:

1. Programme Organization

- a). This period in the residency training in Orthodontics in Nigeria is the era of "Super Generalists" and this should be over by now in Nigeria considering the current trend in the world of training highly specialized professionals. The duration of the training programme is unnecessarily too long. There is a need to reexamine the objectives of orthodontic training in

Nigeria and reevaluate the programme as a whole. This would help to improve the standard, make the programme more relevant to the need of the community/society. The programme needs to be better structured and up-to-date so that our graduates can be at par with the rest of the world. The restructuring should be implemented and made relevant.

- b). Nonreview of training curricular by Faculty of Dental Surgery. Although a lot of changes have taken place in many programmes internationally and in dental knowledge and skills in particular, not many changes have taken place in training curricular in this country over the last couple of years. New trainers are being recruited who may not have had the required skills and knowledge to participate in training and in examinations. In particular, the training remains focused on passing examinations without substantive efforts made to purposefully train the candidates to address the peculiar orthodontic health challenges in the region.
 - c). Duration of the rotational postings at the Pre Part I period should be shortened to cover only key disciplines relevant to the specialty and the Post Part I period should rather be extended. One primary reason for extending this is to enable residents to treat and observe cases longitudinally from beginning to end and to finish many more of the orthodontic patients commenced on treatment. This would greatly improve their clinical skill and also patient care. It will allow for more scholarly work such as research to be carried out. It was postulated that it would be impossible for anyone, faculty or resident, to ever see and treat all possible variations of malocclusion during his or her lifetime.¹⁰
 - d). Log book/Record of training/Case book (Observed/Assisted/Performed)
The current state of the Log book or Record of training or Case book for orthodontic residents in needs to be reviewed, revised and redesigned to reflect their core competencies in clinical orthodontics procedures by each resident.
2. Poor monitoring and evaluation of training programme and even the graduates of the programme
A major challenge facing residency programme in Nigeria is the lack of effective monitoring and assessment of trainees and trainers. Even health institutions are also not assessed nor monitored

adequately. Some of the most innovative methods in teaching methodology include the integration of methods that assesses not only the students but also where students have the possibility to assess their teachers. To date, there are no known methods designed by either of the Colleges to monitor the performance of the graduates from the programme, neither do they have an approach for assessing the trainers and even health institutions participating in the programme. Attaining regional and global relevance are therefore impossible.

3. Informal status of residency training in teaching hospitals
Unfortunately, the teaching hospitals in which residency training are domiciled pay little or no attention to the trainees so much so that residents are treated as part-time workers, who are considered only for clinical services they provide rather than agents to be trained to enhance improved work outputs. There are no structured curricular for the training of residents, no didactic teaching schedules. Many hospitals do not have dedicated seminar rooms, reading rooms, libraries or furnished offices for residents in training.
4. The noninvolvement of Universities in residency training is a major problem in Nigeria
Universities traditionally provided undergraduate dental education in Nigeria. Teaching hospitals were set up to provide clinical support for the basic training offered by Universities. It is absurd that residency training is located solely within teaching hospitals without the inputs of universities. One of the benefits derivable from involving Universities in residency training would have been assistance in curriculum design and implementation because Universities have the required infrastructure for post-graduate training which would be useful. The Teaching Hospitals have no experience to implement this. With Universities involvement, this would have enabled dentists undergoing residency training to gain experience and exposure to other fields such as anthropology, law, public administration etc. This would enable the residents in Nigeria to be at par with others around the world since postgraduate training are domiciled mostly in Universities internationally.
5. Redistribution of training institutions/influx of prospective residents into non accredited institutions

Gender distribution of orthodontic residency programme shows that the percentage of female residents has risen slightly with about 26 (62%) of orthodontic residents being females (*Figures 3a and 3b*). Majority (38, 90.5%) of the orthodontic residents are located in institutions in the southern part of Nigeria with very few in the northern parts of the country (4, 9.5%). There is a need to allocate more training slots to those institutions located in the northern parts of Nigeria. That by extension all means that more qualified orthodontists should migrate to the northern parts of the country to take up employment as consultants so that recommended ratio for training institutions can be met. There is a need by the monitoring body to ensure access and availability of orthodontic care in suburban and rural underserved areas, either by accepting residents from these areas who plan to return to these communities to practice or by developing outreach programmes in these area with the residents providing necessary orthodontic services as part of a social obligation to address access to care issues. This might instill in residents a sense of social responsibility for ensuring access of care to all people.¹¹ Many prospective residents are absorbed into non accredited institutions and are then secondarily posted out for training in accredited institutions. This ultimately will create an artificial surge in number in such accredited institutions overloading the trainers and putting undue pressure on the facilities/resources available on ground for effective training of these additions. There is a recommended consultant/resident ratio by accrediting bodies. The average class size was difficult to determine in this report, however, there are a minimum of 2 residents with a maximum of 8 residents in each class set.

6. Research

Although the development of a dissertation is one requirement for obtaining a fellowship along with clinical orthodontic training, the dissertations are often not purposefully designed, often depend on repetitive or retrospective data and are not rigorous enough to enable publication in high ranking international journals. How relevant are the research works to the clinical orthodontic practice? Trainers' attention is drawn to the malady prevalent in this area of our training. This is a big challenge that needs to be addressed in the orthodontic residency training in Nigeria. The development of any discipline depends on well-planned scientific

research. It is important to value the importance of research and to conduct research in an orthodontic training programme to ensure the development of an ability to answer clinical and practical questions related to the practice of orthodontics. The purpose of any research is to add to knowledge and so residents research work should be publishable in renowned peer reviewed journals. Researches should have a clinical application. Substantial funds should be provide support for orthodontic resident research projects.

7. Lack of standard of care

Many of the cases presented at the Final examination of the WACS lack good finishes. Trainers/consultants are to be held accountable for such presentations. Cases that are not properly finished should be discarded from the records. Optimal orthodontic care should be the goal for treatment in a residency training programme of accredited institutions and standard of care must be established and the quality of orthodontic practice and care maintained. However, not every treatment plan can be perfect during every resident's training and in particular situations, less than optimal care i.e. compromise treatment can be tolerated if the case is a difficult one. Residents should become competent at orthodontic diagnosis and limited treatment. Residents must be taught ideals in treatment planning and in force system delivery. The Nigerian Association of Orthodontists (NAO), with the vision of excellence in the advancement and promotion of orthodontic practice in Nigeria and throughout the world, should be given the mandate to develop structural criteria/guidelines for quality assessment of orthodontic care in Nigeria to assess the success the level of treatment. An audit is necessary to establish any standard of care. One element that defines a profession is that it establishes and enforces its own standards. Reports of randomized clinical trials (RCTs) are known to produce valid results and so are either case reports or at best case series studies.¹³ Case series and case study however, though often thought-provoking, are prone to over-interpretation, especially by their authors should not be overinterpreted, since it can lead to false conclusions.¹⁴

In Nigeria, we lack comprehensive data of the epidemiologic variability of malocclusions treated in our centres/practice, starting ages treatment methods used, length of treatments, treatment phases, various appliances used, and so on. There

are no records of large groups of patients treated for malocclusion in a community-based study. No study has been done of treatment methods and outcomes for even the most serious malocclusion types.

Competence of resident's training in the theoretical and practical aspects of any technique used must be quantifiable and should be judged by the faculty by exit case presentation examinations, and carefully monitored treatment planning of several new patients before graduation.

8. Poor funding

Although the National and West African College of Surgeons are parastatals of government, there is almost no dedicated budget for actual postgraduate training viz a viz programme implementation, teaching, and research related to residency training. Thus, residency training in Nigeria is almost left as an ad hoc or passive service without the financial support to enable it gain the needed momentum.

9. Inadequate orthodontic and general consumables/ lack of infrastructures and facilities

Orthodontic materials are in epileptic supplies if at all. Lack of suitable dental equipment, dental units, light cures units etc. Obsolete laboratory equipment. Non availability of functional cephalometric and panoramic machines. No 3D imaging equipment in any of the training institutions. Computers are not in use in any of the residency training programmes for cephalometric tracing or analysis, for facial imaging, growth prediction and for treatment records. Lack of computers for practice management, patient scheduling and patient education should be noted. Internet access was generally not at its best in many of our institutions.

Conclusion

There can be no doubt that postgraduate dental education has gained considerable momentum and ascendancy in Nigeria. However, the quality of its development has not matched the enthusiasm with which it was begun several years ago. The lessons enumerated in this paper suggest that while the main purposes of postgraduate dental education have largely been achieved in Nigeria, a lot remains to be done in propelling it beyond its original vision to enable it compare favourably with similar dental postgraduate training programmes in other parts of the world. There is therefore a call for action for all stakeholders to do everything possible and with great

determination and commitment to propel the fortunes of postgraduate dental training in Nigeria.

Contributors

Sanu OO and Akeredolu MO contributed to the design, data collection, analysis and writeup of the manuscript.

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Conflict of Interests

Nil

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