A NEW DENTAL SCHOOL IN KANO, NIGERIA: THE ROAD MAP, CHALLENGES AND PROSPECTS.

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INTRODUCTION

Dentistry in Nigeria started at the then Lagos Medical School (now College of Medicine, University of Lagos) in 1967. This was the first school to train indigenous dental manpower south of the Sahara desert in Africa,1 and was, therefore, responsible for training Dental Surgeons for Nigeria and other African countries. The Universities of Ibadan, Ife and Benin established other dental schools about 1975, and have contributed their quota to the dental manpower need of the country.2-4 A second generation of dental schools sprung up from 2001, and these include Federal Universities (University of Maiduguri (NE Nigeria), University of Port Harcourt (SS Nigeria) and Bayero University Kano (NW Nigeria)) and State-owned Universities (Lagos State University (SW Nigeria), Delta State (SS Nigeria)).5

A dentist to population ratio of approximately 1:100,000 6 ranks Nigeria among the poorest in oral health manpower in the world. In Kano State, the dentist to population ratio is about 1:260,000 and this has confined oral health care delivery into the hands of quacks.2,7 This is aided by widespread illiteracy and poverty in the region.8 The Department of Dental and Maxillofacial Surgery was established in the year 2000 as a Specialty Department at the Aminu Kano Teaching Hospital. The major clinical service at the time was Oral and Maxillofacial Surgery and it soon obtained accreditation from both the West African and National Postgraduate Medical Colleges for residency training in the specialty. The success of the postgraduate residency training, the very low dentist to population ratio and the dearth of Northern indigenous dentists spurred the dream of establishing an undergraduate dental education program by the University.9

Aminu Kano Teaching Hospital (AKTH) is a tertiary health institution and it accommodates the College of Medical Sciences of the Bayero University Kano (BUK).10 The Dental School of the Bayero University assumed the responsibility of producing dentists for the NW region as most of the first generation dental schools were located in SW Nigeria.

The aim of this article is to outline the roadmap, and discuss the challenges and prospects of the Kano Dental School.

MATERIALS AND METHODS

This is a qualitative narrative review of the processes and challenges of starting a new dental school in Kano, Nigeria. The materials were derived from the policy papers of the Nigeria National University Commission (NUC) and the Medical and Dental Council of Nigeria (MDCN). These two bodies define the template and roadmap for founding a new dental school in Nigeria.

The guidelines on minimum standards and requirements for establishing a dental school in Nigeria are clearly defined by the medical and dental council of Nigeria. These guidelines are highlighted and reviewed. Also, the new dental education curriculum introduced by the National University Commission is reviewed. The impact and challenges to implementing this curriculum is discussed. Furthermore, the intricate relationship between the Teaching Hospital, responsible for patient care, and the University, responsible for dental education, is reviewed.

RESULTS

The Dental and Maxillofacial Department of the Aminu Kano Teaching Hospital received accreditation for oral and maxillofacial
surgery residency training from both the Nigeria Postgraduate Medical College (NPMCN) and the West Africa College of Surgeons (WACS) in 2004.

The close cooperation of the management of the Aminu Kano Teaching Hospital (AKTH) and the Bayero University, Kano (BUK) has helped in achieving the goal of oral health education and manpower development, and the University Senate, in 2008, approved the establishment of the Faculty of Dentistry. The University, in 2010, set up committees to implement the approval given by the Senate. The committees included: Establishment of Dentistry Faculty Committee and the Faculty of Dentistry Complex Committee. The former was responsible for securing approval of the National University Commission (NUC) and Medical and Dental Council of Nigeria (MDCN) and the recruitment of both academic and non-academic staff. The latter was responsible for identifying appropriate locations for building the pre-clinical/clinical complexes of the Faculty of Dentistry and recommending structures, plans and drawings for the complex. As part of the duties of the Committee on the Establishment of the Faculty, advocacy visits were made to the dental schools at Ibadan, Ille-Ife and Lagos. This yielded positive results and all the institutions visited expressed willingness to support and collaborate with the University in actualizing the program. Through these collaborations, the University gave visiting appointments to nineteen (19) academic staff for the five (5) core departments of the Faculty of Dentistry. By mid-2011, the NUC Resource Verification team visited the facilities of the new Faculty and gave approval for the program. The Bayero University Senate budgeted for the appointment of key Faculty Staff and Heads of Departments (Flowchart I).

The current existing members of staff of the hospital were considered for these appointments. The Faculty of Dentistry Complex Committee approved the design of a building to accommodate the offices of the Dean, Deputy Dean, Sub-Dean (Clinical and Non-Clinical), Faculty Officer, Faculty Examination Officer and five Heads of Departments; as well as a conference hall and other necessary facilities. The Complex fulfilled the accreditation requirements of NUC and MDCN for dental training in Nigeria and was commissioned on 21st June 2013.

The Complex houses facilities such as an e-library; a phantom laboratory equipped with thirty (30) phantom units; a multipurpose student laboratory for all restorative dentistry and prosthodontic processes; a modern student common room; two lecture rooms with capacity for forty students each; an adjoining lecture theater that can accommodate a hundred and fifty (150) students; and an academic office block of ten offices. The complex also has dedicated water and electricity supply.

The Federal Ministry of Education, through the NUC, developed a new curriculum for dental education in 2012. The new curriculum aims at producing dental graduates who will be proficient, independent, humane, research-focused, problem-solving, and business-oriented practitioners, able to cope with the challenges of the community, and who will be trained to international standards in skills critical to oral health.11 This new curriculum has been adopted by the new Faculty. The Faculty currently has a hundred and three (103) dental students. The distribution by year of study is shown in Table 1.

### TABLE 1: THE DISTRIBUTION OF DENTAL STUDENTS BY YEAR OF STUDY

<table>
<thead>
<tr>
<th>Year of Study</th>
<th>Number of Students</th>
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<tbody>
<tr>
<td>1st</td>
<td>50</td>
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<tr>
<td>2nd</td>
<td>25</td>
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<td>3rd</td>
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<td>4th</td>
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## DISCUSSION

**Road map**

The Medical and Dental Council of Nigeria (MDCN) laid down the guidelines on minimum standards for the establishment of a Dental School in Nigeria. The guidelines indicate that a training institution for dental surgeons must be of the status of a School or Faculty and should not exist as a department in a School or Faculty of Medicine.12 [MDCN RED BOOK, CHAP XV, PAGE 114]. Once the proposal to establish a dental school in a University is formalized, the Vice-Chancellor should communicate this proposal to the Registrar of MDCN at the same time as to the National University Commission (NUC) and directorate of planning of the Federal Ministry of Health (FMOH).12 [MDCN RED BOOK, CHAP XVI, PAGE 115] The MDCN and NUC will then make multiple visits to the new Faculty before approval is given for admission of undergraduate dental students.12 [MDCN RED BOOK, CHAP XV1, PAGE 115-116]

At the Bayero University, Kano (BUK), the steps to establishing a Faculty of Dentistry began with the submission of a proposal for dental education program to the Academic Development Committee of the University (Flowchart II). This was then presented to the University Principal Officers (Vice-Chancellor, Deputy Vice-Chancellor, Registrar, Bursar and Librarian). The University Management Committee then prepared a memo and presented before the University Senate for approval. This proposal was subsequently presented to the MDCN and the NUC. In Nigeria, the Medical and Dental Council is an establishment under the Ministry of Health, while the National University Commission is under the Ministry of Education. The MDCN stipulates that the Dental School be located within the Teaching Hospital Complex and the Hospital provides all consumables for clinical services and be solely responsible for patient matters. “It is expected that dentistry must enjoy separate and direct funding from two sources, namely, the University and the Teaching Hospital.”12 [MDCN RED BOOK, CHAPTER XIV, PAGE 113].

Following the approval given by the Bayero University Senate, a proposal for the establishment of clinical dental training was submitted to the Management Board of the Aminu Kano Teaching Hospital (AKTH). Once the proposal was approved, the Hospital Management presented this to the FMOH and appropriate budget allocations were made for the project. This required meticulous and
detailed planning. The proposal included the requirements for a dental hospital, which included human resources and physical facilities. “The standard of training in a Dental School depends on, among other factors, the availability of physical facilities specifically designed and built for dentistry.” 12 [MDCN RED BOOK, CHAP XI, PAGE 106] These facilities are both extensive and expensive and limited by the availability of financial resources. The development of the dental hospital was planned in three phases – short term: 2010-2012, intermediate term: 2012-2014, and long term: 2014 and beyond.

The Kano Dental School thus, owes its origins to the employment in 2001 of the sole Oral and Maxillofacial Surgeon who was responsible for both clinical services and the training of Residents for the Fellowship examinations of the West African and National Postgraduate Medical Colleges, and eventual preliminary work to begin the dental school. The rapid growth of the postgraduate education and successes by Residents at the Fellowship Examinations created a base for the eventual desire to establish a dental school in Kano.

Kano State, Nigeria, is one of the most populous States in the country, certainly the most populous and most economically viable in Northern Nigeria. The dearth of indigenous dental manpower and poor dentist-to-population ratio created the drive for the political and administrative steps taken to establish a Dental School in Kano. The Faculty of Dentistry, like any University Faculty, is able to effectively organize its programs and steadily work towards its set goals and development. This is despite the usually few students that can be admitted for training at inception. This limited number that can be admitted despite the huge financial commitment involved makes it imperative to gain the support of both the University and Teaching Hospital Managements to start and sustain the project. When viewed from a fiscal perspective, the number of students admitted cannot sustain a Dental School, but for the fact that University Education is very heavily subsidized by the Government of Nigeria. The benefits of capacity building in oral health manpower in this region, however, are overwhelming.

The FMOH, through the NUC, is responsible for University Education Curriculum in the country. The Bayero University was represented on the committee set up to formulate and implement a New National Curriculum Template for Undergraduate Program in Dentistry by the Dean of the new Faculty - the foundational oral and maxillofacial surgeon who began the residency training. The undergraduate dentistry curriculum at the new Faculty is patterned after this new template, which demands a similar course of study to conventional medicine in the preclinical years in contrast to the erstwhile curriculum. The new curriculum creates an inevitable learning curve for both old and new academic staff in implementing a program that has not been, otherwise, tested.

In order to implement the Guidelines of the MDCN and NUC for the establishment of a Dental School, BUK identified three phases of development of the Faculty of Dentistry as:

1. Immediate phase - within six months
2. Intermediate phase - within one-two years
3. Long term phase - two years and beyond.

The activities for each phase are as detailed below:

a. Immediate Phase
   - The organization and establishment of University posts for both academic and non-academic staff of the faculty
   - Collaboration with AKTH to expand the scope of accreditation for the dental residency-training programme to all specialties in dentistry.
   - Immediate appointment of four (4) visiting consultants in Orthodontics, Restorative Dentistry, Oral Medicine and Periodontology.
   - Immediate employment of ‘supernumerary’ residents in other specialties of dentistry except Oral and maxillofacial surgery
   - Immediate procurement of digital Orthopantomography and cephalometric x-ray machines.
   - Immediate procurement of Orthodontic hand instruments and consumables.
   - Selection of students with emphasis on indigenous capacity development and quality for post graduate studies
   - Development of a curriculum that is contemporary and sustainable

b. Intermediate Phase
   - Provision of Phantom units and accessories
   - Office accommodation and lecture halls
   - Library
   - Equipment, instruments and consumables

b. Long term Phase
   - Faculty building with adequate, standard facilities
   - Dental hospital
   - Postgraduate academic programs
   - Further collaboration with institutions like AKTH and KMUTH to implement the development of specialty programmes.

The planning was phased such that the long-term-phase was completed as the 4th year Dental students are coming into the dental clinics in the penultimate and final (5th & 6th) years of their training. Although dental education is generally five years in Nigeria, students undergo a one-year pre-dentistry program and only students who are successful at this level progress into dental training. Often, students count this preliminary year as part of their dental education. In essence, though, dental education is five years in Nigeria. 12 [MDCN RED BOOK, CHAP VII, PAGE 97]
Challenges

Starting a new dental school is a big challenge, especially in an economy that is underdeveloped and private investment in dental education is limited. There is a near total reliance on Government for the funding of tertiary education in Nigeria. The usually unpredictable nature of fund release from the Government makes sourcing funds to execute the project imperative, as total reliance on government often leads to a stall of project execution in Nigeria.

The Medical and Dental Council of Nigeria (MDCN) recommends that Dentistry must enjoy separate and direct funding from two sources, namely the National University Commission (NUC) and the Federal Ministry of Health (FMOH). "Funds for the provision of pre-clinical facilities should be provided by the NUC through the University, funds for clinical facilities should be provided by both the NUC and FMOH, while the recurrent budget for consumable dental materials should be the responsibility of the FMOH through the Teaching Hospital." [MDCN RED BOOK, CHAP XIV, PAGE 113]

The University was able to address the challenge of establishing a dental school through grants [MacArthur Foundation Grant, Tertiary Education Trust Fund (TETFUND), Educational Trust Fund, (ETF)], and direct budgeting by the Federal Government, while the Hospital relied on internally generated revenue of the Hospital and Public-Private-partnership (PPP) Agreements in developing the new dental center and procurement of hospital consumables. There is a great need for good understanding between the University and the Teaching Hospital in the meticulous planning and execution of a Dental Training Program. This understanding is also imperative to the accreditation exercise conducted by the NUC.

"Academic staffing is a major and critical determinant for the achievement of high standards of training." [MDCN RED BOOK, CHAP XIII, PAGE 112] The solution to the problems of staff shortage is to expand the postgraduate facilities in all the existing institutions and to encourage suitable candidates to undertake their training in this country. It is thus obvious that the National Postgraduate Medical College (or West African Postgraduate College) training program is the biggest potential source of staff development for the country. [MDCN RED BOOK, CHAP XIII, PAGE 112]

The dearth of academic and non-academic dental manpower for the dental school project was addressed by engaging the services of 19 visiting professors and 14 new resident doctors. The employment and training of residents is a long-term goal of solving the manpower shortage for the new school. The residents are presently mid-way in the postgraduate Fellowship training. Many of them should have qualified as trainers by the year 2017.

The vision is clear. The next challenge will be retaining the residents, upon completion of their programs, in Kano, as they are essential to the vision of a new dental school. The major challenge to retaining the residents is the security situation in the Northern part of Nigeria. This also hinders International and National support for the new school. “Boko Haram,” as the security challenge is called, is an extremist religious group that causes sporadic unrest and a great deal of instability in Northern Nigeria.

The new National Curriculum for Undergraduate Program in Dentistry, adopted by the NUC and the FMOH and replacing the 40 year old erstwhile curriculum - is both a challenge and an advantage. The challenge is in the inevitable learning curve for both old and new academic staff in implementing a new curriculum; while the advantage is that the new dental school will start from scratch with a new national curriculum that meets the revised vision and goal of dental education in Nigeria.

CONCLUSION

This new dental school hopes to be a world-class, oral health-training institution that is committed to the promotion of oral health through the excellence of its learning, service and research; producing the oral health manpower need that will address oral health issues in Nigeria and beyond. Kano has a pride of place in North-western Nigeria as having a population representative of the wider Nigerian population. It is also the most economically viable State in Northern Nigeria. The success of a new dental school in Kano will have a significantly positive impact on the region, both in terms of health-care service delivery and capacity development.

In Nigeria, Oral Health is very low on the list of health priorities and receives very little attention. Its growth in terms of meticulous organization and management has been haphazard and, at best, minimal. Majority of patients present with late stages of oral diseases and the Health Insurance scheme is still at its infantile stage. This new dental school has the potential to address this oral health manpower imbalance, especially for Kano and Northern Nigeria, by training dentists that understand the local culture and practices of the community and producing indigenous dentists that will sustain the oral health need of the region. The school’s facilities can currently train thirty dentists yearly though the current quota from MDCN is twenty five.

The school is the first in Nigeria to operate the new National Curriculum Template for Undergraduate Programme in Dentistry (BDS). This is a great advantage, as its students will follow an improved, more streamlined template. An opportunity to evaluate the merits and demerits of the curriculum is also provided.

The school aims to be in the forefront of efforts at taking dentistry out of the traditional clinic setting to the community where majority of
By starting a community oral health project aimed at implementing the Basic Package of Oral Health Care (BPOC) as an oral care model in the primary level of health care in Nigeria, the major barriers to the inclusion of oral care services into the Primary Health Care (PHC) system can be broken.

BPOC was developed to adapt conventional dentistry to the philosophy of PHC, with the latter’s leading principle of basic oral care for all, and its emphasis on prevention and affordable, sustainable service.  

It originated from a charge delivered by the Oral Health unit of the World Health Organization (WHO) to the WHO Collaborating Centre for Oral Healthcare Planning and Future Scenarios in Nijmegen, Holland, to compile a report on the establishment of priorities in Oral health care for deprived communities, based on proven and effective oral health measures. 

BPOC has three (3) main components: the Oral Urgent Treatment (OUT), Atraumatic Restorative Treatment (ART) and Affordable Fluoride Therapy (AFT).  

OUT involves emergency treatments such as tooth extractions that are performed to relieve patients’ pain. The AFT involves provision of fluoride toothpaste for prevention of dental caries. The ART comprises a treatment procedure using hand instruments to excavate decayed part of the tooth, which is then filled with an adhesive material. 

If properly used, the BPOC model increases the effectiveness of community health visits, by combining primary, secondary and tertiary levels of oral disease prevention with oral health education. 

The BPOC has been implemented in many countries in the world and in Africa, and has been proven to work in third world countries such as the Cambodia and the Philippines with great success. 

The project also aims to modify the BPOC modalities to include a fourth component, scaling; as periodontitis, which can largely be prevented by regular scaling and improved attention to oral hygiene is proven to be a major cause of tooth loss in Nigeria. The community project is currently in its third and penultimate phase, with completion expected within the current year.

The prospects of this school are, therefore, immense. Despite the multiple challenges that have been surmounted and those being tackled, the momentum has not waned and opportunities for development abound. This should serve, not just as a template, but also as inspiration for multiple other similar projects all over the country.

Figure 1: Frontage of the Faculty of Dentistry, Bayero University, Kano

Figure 2: Phantom Head Laboratory of the Faculty of Dentistry, Bayero University, Kano

References

9. Bayero University, Kano, Faculty of Dentistry Undergraduate Handbook. 2011/2012 Ed.

