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Anatomical Science in Nigeria: From the Past, Looking through the Present unto the Future

¹Tijani-Adekilekun A and ²Owolabi JO

¹Department of Anatomy, Faculty of Basic Medical Sciences, College of Medicine, Ekiti State University, Ado-Ekiti, Nigeria

²Department of Anatomy, Ben Carson (Snr) School of Medicine, BABCOCK University, Ilisan-Remo, Nigeria

Corresponding Author: Tijani AA

E-mail: tijani.adekilekun@eksu.edu.ng; +2348038063582

ABSTRACT

There have recently been debates as to whether anatomy is a science or a profession and yearnings for professionalism of Anatomy in Nigeria by students, graduates and some teachers of anatomy. The call by many, taking an evidently up-roaring dimension, is how students of anatomy will be trained in the B. Sc Anatomy program to become graduates who will be able to render series of anatomical services in healthcare sector and the nation at large, in addition to being able to teach and research which they are capable of as at now. The debates and yearnings led the authors of this article to have a critical look into what anatomy was in Nigeria in the past, what it is at the present moment and what it may become in the future. An electronic interview method of survey was conducted by the authors among Professors of Anatomy in the country who were randomly selected. Authors therefore define anatomy as a science that can be taught, studied and practiced and so are postulating that anatomy in Nigeria would have three eras; the past (subject), the present (program) and the future (profession) eras; while recommending that the profession era of anatomy be heralded.

INTRODUCTION

Yearnings for professionalism of Anatomy in Nigeria by students, graduates and some teachers of anatomy have taken an evidently up-roaring dimension in the recent time. The call by many is how students of anatomy will be trained in the B. Sc Anatomy program to become graduates who will be able to render series of anatomical services primarily in healthcare sector and secondarily the nation at large, in addition to being able to teach and research which they are capable of as at now.

Anatomy, to a layman, is a branch of biology that is concerned with the study of the structure of organisms and characterized by understanding of the structures and functions of organs of human body. It started in the ancient Greek with phenomenal anatomical observations of human bodies, achieved by cutting of cadavers (the so called anatomical examination) and has advanced to employ numerous 21st century anatomical techniques. Anatomy has recently been

defined by Owolabi ¹ as the purposeful study and exploration of the human body to understand and appreciate its absolute nature and structure in the normal living condition in order to apply such knowledge to improve living condition and solve problems of anomalies and diseased conditions.

Recent debate as to whether anatomy is a science or a profession led to the authors of this article to have a critical look into what anatomy was in Nigeria in the past, what it is at the present moment and what it may become in the future. An electronic interview method of survey was conducted by the authors among Professors of Anatomy in the country who were randomly selected (Table 1). Authors therefore define anatomy as a science that can be taught, studied and practiced and so are postulating that anatomy in Nigeria would have three eras; the past (subject), the present (program) and the future (profession) eras.

Table 1: summary of “subject” and “program” eras

Institutions	Programs	Year of Commencement
University of Ibadan	Intercalated B. Sc B. Sc MLT	1963 1967
Ahmadu Bello University	Intercalated B. Sc Regular B. Sc	1967
Obafemi Awolowo University	B. Med. Sc	1973
University of PortHarcourt	B. Med. Sc Regular B. Sc	1979 1990
University of Calabar	Regular B. Sc	1979

Table 2: The Laboratories of Anatomy

Laboratories	Description
Anatomy Museum and Workshop	serves teaching and research purposes in archaeology, anatomy museum techniques, comparative mammalian anatomy and human evolution
Animal Cell and Tissue Culture Laboratory	procedures carried out in embryology, cytology, stem cell biology, cancer research, basic molecular studies, in vitro cell studies, drug selection and toxicology studies, gene research, monoclonal antibody production, in vitro fertilization technology, and cryopreservation
Biological Anthropology and Forensic Anatomy Laboratory	dedicated for the teaching of courses in biological anthropology and techniques, biometry, human growth and ageing, forensic anatomy, anthropometry and somatotyping, a service laboratory when forensic anatomy (involving determination of species, sex, age, ethnicity, stature, lifestyle, injury and cause of death from bony remains) is predominantly carried out there
Clinical Embryology and Andrology Laboratory	traditionally serves the three functions of a medical laboratory with teaching and research in departments of anatomy, and services in hospitals and other health facilities
Cytogenetics Laboratory	a teaching laboratory where the structure and functions of cells, especially chromosomes are studied and predominantly a service laboratory where an extent of research is carried out when attached to a health facility
Histology and Histochemistry Laboratory	has basically been a teaching and research laboratory for students and staff of the Department of Anatomy
Mortuary and Gross Anatomy Laboratory	an ancient teaching and research laboratory with mortuary being established as its appendage nowadays to render services to the university community and the general populace in most Departments of Anatomy
Radiological Anatomy Laboratory	for the purpose of teaching and research in anatomy using radiological approach

THE PAST (THE SUBJECT ERA)

This is the period when anatomy was either a subject taught on program or was a specialization in a program. We refer to this as the subject era.

Inception

It started with the establishment of Yaba Medical College in 1930.²

Existed Anatomy Programs

According to Desalu³, anatomy program existed as

- Intercalated Bachelor of Science (B. Sc) program in which medical students with a distinction or high pass in anatomy at the first professional MB exams would be allowed to spend an extra year in anatomy before proceeding to the clinical program
- Bachelor of Science (B. Sc) in Medical Laboratory Technology in disciplines including Anatomy in which students were admitted, trained and certified as medical laboratory technologists with specialization in the discipline of anatomy
- Bachelor of Medical Science (B. Med Sc) with option in Anatomy Specialization: a revolutionary medical curriculum in which all medical student spent the first four years to obtain a B. Sc degree before proceeding to clinical sciences to complete MBBS

Philosophy of the Programs

The philosophy of such programs in this era according to Desalu³ was to train students who would be allowed to be demonstrators in anatomy during their clinical years as medical students and in so doing get them interested in lecturing anatomy as a career after graduation as medical doctors or with MLT degree.

Anatomy Practice in the Subject Era

The work of Tijani *et al.*⁴ revealed that the enacted "Anatomy ACT" of 1933 (three years after the start of anatomical education at Yaba Medical College) made room for the practice of Anatomy in Nigeria in this era while making it lawful for anatomy practitioners to be licensed by the Minister of health but limited the practice of anatomy to only carrying out anatomical examination on cadavers in the course of research and teaching anatomy

Career engagement of Anatomists in the Subject Era

As the main goal of training students in anatomy was to improve the strength of the staff in the Departments of Anatomy of Nigerian Universities and with the constitutional provision in the Laws of Nigeria, the only career engagement for graduates of anatomy was lecturing (teaching and research) in medical schools.

THE PRESENT (THE PROGRAM ERA)

This is the period when anatomy becomes a program (a course of study), in addition to being a subject taught on

other programs. We refer this as the program era

Inception

It started when University of Calabar floated a pure B. Sc Anatomy degree program.⁵

Existing Anatomy Program

The Bachelor of Medical Science (B. Med Sc) degree of the subject era still existed in the early part of this era. Pure Bachelor degree in anatomy now exists either as B. Sc (Anatomy) or B. Tech (Anatomy) in many universities over the country. It is a program in which students are admitted, trained for four or five academic sessions and certified as anatomists on graduation.

Philosophy of the Program

Benchmark Minimum Academic Standard (BMAS) of Nigerian Universities' Commission (NUC)⁶ revealed that the philosophy of B. Sc Anatomy program is to make knowledgeable and efficient personnel who should possess the right type of knowledge and skills in human anatomy necessary for

- training of health personnel in the various fields of health sciences
- research
- complement ancillary laboratory medical services and
- develop entrepreneurial expertise in related disciplines

Anatomy Practice in the Program Era

Remains the same as for the Subject Era as the law of the federation establishing the practice has not changed in content and context.

Career engagement of Anatomists in the Program Era

As the constitutional provision in the Laws of the Federation remains the same with that of Subject Era despite the change in the philosophy of anatomy program, the career prospect remains lecturing (teaching and research) in medical schools even when graduates who are capable of providing medical and anatomical services in hospitals and other related establishments in the country are produced in thousands.

Documented Research Opinions on this Program Era

The work of Owolabi *et al.*⁷ which assessed the level of motivation towards the study of Anatomy among students in south-western Nigeria Universities documented that the level of motivation is affected negatively by initial lack of interest in anatomy as a course of study by these students, lack of clear cut policies about the professional roles of anatomy in health and other relevant sectors and poor career recognition. Similarly, the work of Tijani *et al.*⁸ on perception of anatomy as an undergraduate degree program among stale students of B. Sc Anatomy

program documented that students perceived anatomy as a vital and indispensable basic medical science degree program and as relevant and important to medical sciences, research and health professional practice while they saw the standard of professional training in the course of B. Sc Anatomy program and career prospects upon graduation as unsatisfactory.

Another work by Tijani *et al.*⁹ investigated the interest of newly admitted B. Sc Anatomy students in their course of study and documented that there is generally low primary interest as just 1/3 are originally interested in studying anatomy while the remaining 2/3 have secondary interest by accepting the offer of admission. This low primary interest in this work was attributed to lack of knowledge and proper career counseling related to anatomy as a degree program.

THE FUTURE (THE PROFESSION ERA)

By the yearnings for professionalism of Anatomy in Nigeria by students, graduates and some teachers of anatomy, the future is the coming years, the period when there will be a professionalized anatomy. The era we refer to as the **profession era**.

Inception

This is yet to be known and can only begin when Anatomists in Nigeria desire and are determined to herald it.

Existing Anatomy Program

Bachelor degree in anatomy should exist either as B. Sc or as B. Tech Anatomy degree program. Subspecialties of anatomy such as medical embryology and andrology, cell and tissue biology, forensic anatomy and anthropology, clinical anatomy and so on may also exist as independent degree programs.

Philosophy

This may remain as it is for the present era or may be more than what we have in this era subject to the desire and determination of Nigerian anatomists.

Documented Regulation and Research Insight into the Profession Era

In the 2014 draft BMAS of NUC for programs in Medical and Health Sciences (under which we have Anatomy), the discipline is designed to contribute to the health and socioeconomic well-being of the nation through the following objectives:

- prepare students with sufficient theoretical scientific knowledge base and practical skills that enable them assume professional positions.
- develop students in the relevant practical and technological competence in practice at primary, secondary and tertiary levels of health care.
- assist students in the development of interpersonal skills necessary to function as members of the health team.

This is an obvious indication that Anatomy as a program has been designed and backed up by regulation to move from its program era to its profession era. It all depends on anatomists to determine when they want anatomy to be developed to its full blown capacity of being practiced in the country.

In an attempt to unveil the hidden potential of anatomy getting professionalized, a paper by Tijani *et al.*¹⁰ on "The laboratories of anatomy and the standard practices therein" identified eight laboratories of anatomy which could function in any capacity of a medical laboratory as a teaching or a research or a service laboratory. These laboratories as service laboratories will in no doubt play vital roles in medical and health practices. The authors of this paper recommended that

- HODs should ensure establishment and optional functionality of these laboratories, working in hand with the leaderships of their institutions
- concerned bodies of anatomists should work on the curriculum of B. Sc Anatomy to develop workforce for these laboratories
- anatomists should equip themselves to develop the many fields of research, teaching and services in which these laboratories function

There have also been few documented research reports and propositions on the need for establishment of laws to regulate the various "anatomical practices."^{9,11,12}

Anatomy Practice in the Profession Era

With a changing mind and concerted effort of the Anatomists in Nigeria towards heralding the future era of Anatomy, Anatomy practices would include but not limited to

- i. Training of Anatomists and Anatomy Technicians in Nigerian Universities at all levels.
- ii. Teaching of Anatomy to anatomical, medical and allied health students in post-secondary institutions of learning.
- iii. Carrying out anatomical examinations in Anatomy laboratories in Nigeria.
- iv. Carrying out Mortuary and Anatomy Museum services in Hospitals, Research Institutes and Tertiary Institutions of learning, Mortuary and Funeral Homes and Public Anatomy Museums in Nigeria.
- v. Carrying out Embryology and Cytogenetics procedures in Hospitals, Research Institutes and Tertiary Institutions of learning in Nigeria.
- vi. Working as Scientists and Anatomy technicians in the various laboratories of Anatomy in the country.
- vii. Working as Morticians, Curators, Sports and Exercise Anatomists, Forensic Anatomists and Anthropologists in relevant laboratories, hospitals, Military and Paramilitary security services.

Career engagement of Anatomists in the Profession Era

From the forgoing, career engagement of anatomists in the profession era will be that of a professional cum scientist.

RECOMMENDATIONS

- Having postulated that Anatomy in Nigeria has the subject, the program and the profession eras, we wish to recommend that Nigerian Anatomists should be desirous of and get well determined to herald the future era of anatomy in the country when anatomy will become lucrative and anatomists become professionally more relevant in nation's development. Relevant steps should be taken to improve the professional content and context of anatomical education, research and practice in the country (as further recommended below) and to amend the existing "Anatomy ACT" that regulates the practice of Anatomy in Nigeria.
- We wish to also recommend that societies of anatomists in Nigeria should work together and establish an institute (Institute of Anatomists) whose purpose shall be to advance anatomical education, research and practice in the country and duties shall include but not limited to
 - ✓ Advising on the establishment of the laboratories of anatomy and approving same for academic and professional training of anatomists in the country
 - ✓ Overseeing the professional training and certification of anatomists in the country
 - ✓ Conducting professional training and examinations for admittance of anatomists into different cadres of its membership (Table 3).

Table 3: Scheme of Professional Training, Examination and Membership of the "Institute of Anatomists"

Professional Stage/ Membership	Pre-Requite/ Requirement	Further Training	Qualifying Exam	Certification
I/Technical Membership (TM) Stage	Diploma in Mortuary and Anatomy Laboratory Techniques	-	TM Exams	<i>TMI_{oA}</i>
II/Graduate Membership (GM) Stage	B. Sc Anatomy	-	GM Exams	<i>GMI_{oA}</i>
	<i>TMI_{oA}</i> Certification	GM training	GM Exam	<i>GMI_{oA}</i>
III/Junior Professional Membership (JPM) Stage	M.Sc Anatomy	-	JPM Exam	<i>JPMI_{oA}</i>
	<i>GMI_{oA}</i> Certification	JPM training	JPM Exam	<i>JPMI_{oA}</i>
IV/Senior Professional Membership (SPM) Stage	Ph.D Anatomy	-	SPM Exam	<i>SPMI_{oA}</i>
	<i>JPMI_{oA}</i> Certification	SPM training	SPM Exam	<i>SPMI_{oA}</i>
V/Fellowship (F) Stage	Attainment of Professorial seat OR Six (6) years of professional experience as a <i>SPMI_{oA}</i>	-	-	<i>FI_{oA}</i>

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