

Nigerian Medical School Graduates and the U.S. Physician Workforce

Research and Data Resources

Foundation for Advancement of International Medical Education and Research

There are many differences in the way health care is funded and provided around the world. For quite some time, countries have struggled with the provision of accessible care to their populations, and health care workers have migrated, in part, to support these needs.¹ Because of the more critical health care needs in donor countries, migration of health workers to receiving countries like the United States and United Kingdom has been criticized.² In particular, examination of emigration from sub-Saharan Africa* has been of interest.^{3,4} Nigeria has, historically, been considered one of the leading countries in the export of physicians.⁵ In this context, we present our first FAIMER Short Report, which focuses on the demographic characteristics, examination performance, and practice profiles of graduates of Nigerian medical schools. In this report, we present information on medical education in Nigeria, including information on accreditation/recognition of medical education programs; an overview of undergraduate and postgraduate medical education; performance on examinations required for licensure in the United States; and practice information, including practice location and specialty. For further reading on this topic, an annotated bibliography of relevant academic publications is provided at the end of this report.

Accreditation

In Nigeria, the regulation and accreditation of undergraduate (basic) medical education is conducted jointly by two agencies, the Medical and Dental Council of Nigeria (MDCN) (<http://www.mdcnigeria.org/>) and the National Universities Commission (NUC) (<http://www.nuc.edu.ng>). These authorities each have their own focus, but they work in tandem. The MDCN concentrates on reviewing the adequacy of a medical education program's infrastructure, the quality of student selection, student performance, institutional funding, and other issues. The MDCN grants partial accreditation when a school first opens and full accreditation after students are in clinical training. Both the MDCN and the NUC publish information regarding curriculum content and courses of instruction, specifying what should be taught in the various years of medical training. In addition, the NUC reviews academic standards and higher education administrative issues for all institutions of higher education, including medicine.

The information above was obtained, in part, from FAIMER's Directory of Organizations that Recognize/Accredit Medical Schools (DORA). DORA can be accessed at <http://www.faimer.org/resources/dora/index.html>.

* We defined Sub-Saharan Africa as these 48 countries: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, the Republic of Congo, Cote d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Medical Education in Nigeria

As of July, 2013, there were 34 operational Nigerian medical schools listed in the *International Medical Education Directory (IMED)*,⁶ representing 21% of all operating schools in sub-Saharan Africa. During undergraduate medical education, preclinical training lasts 24 months, and clinical training lasts 36 months. A detailed discussion of medical education in the country can be found in a 2007 article written by Muuta Ibrahim in *Medical Teacher*.⁷

Postgraduate medical education is offered in 14 specialties, according to the National Postgraduate Medical College of Nigeria. Table 1 provides a listing of clinical specialties and the number of accredited postgraduate programs, as of June 2013.

Table 1: Postgraduate Medical Education in Nigeria†

Specialty (Faculty)	Number of Programs with 'Current' accreditation
Anesthesiology	24
Dental Surgery	11
Family Medicine (Government)	33
Family Medicine (Mission/Private)	33
General Dental Practice	7
Internal Medicine (Includes Cardiology, Clinical Hematology, Clinical Pharmacology, Dermatology, Endocrinology, Gastroenterology, General Medicine, Nephrology, Neurology, Pulmonology)	32
Obstetrics & Gynecology	20
Ophthalmology	15
Otorhinolaryngology	14
Pathology (Includes Anatomical Pathology, Chemical Pathology, Hematology, Medical Microbiology, Histopathology)	19
Pediatrics	27
Psychiatry	11
Public Health	14
Radiology	13
Surgery	29

† Source: http://www.npmcn.edu.ng/downloads/ACCREDITATION_STATUS_JUNE_2013.pdf

ECFMG Certification and the U.S. Physician Workforce

Deficits in the U.S. physician workforce have historically been filled by graduates of medical schools outside the United States and Canada (IMGs). IMGs constitute about a quarter of the physician workforce in the United States, and almost one-fifth of those physicians come from developing countries.⁸ Although there are concerns about the global migration of physicians from countries with fewer resources to those with more resources,³ physicians continue to seek opportunities for further education and practice in other countries. Researchers have investigated the demographic characteristics, performance profiles, and educational experiences of U.S. citizens educated outside the United States and Canada (US-IMGs), as well as international medical graduates who were citizens of other countries at that time they attended medical school.⁹⁻¹² Specifically, recent research has shown that IMGs in the U.S. physician workforce provide quality patient care comparable to that of U.S. graduates.¹³

As the agency responsible for evaluating the qualifications of IMGs before they enter the medical profession in the United States, ECFMG has collected demographic and educational data on physicians since the 1950s. ECFMG's data on the distribution of graduates of Nigerian medical schools certified each year shows fluctuations over time. Such fluctuations could be attributed to several factors, including those that affect migration. Gender plays an important role in migration patterns^{14,15} and labor patterns.¹⁶ While the number of women enrolled in U.S. medical schools is increasing, the patterns differ

by ethnicity.¹⁷ For example, while 63% of Black (African-American) matriculants were women in 2011, only 43% of white matriculants were women. Given the influence of many factors on medical school composition and physician migration, we looked at whether there were changes in the composition of the Nigerian medical school graduates certified by ECFMG based on gender (Figure 1).

Although the total number of graduates of Nigerian medical schools certified by ECFMG has fluctuated over the past few decades, the proportion of graduates who are female generally increased over that time period.

Examination Pass Rates

As part of the ECFMG Certification process, all internationally educated physicians seeking entry into U.S. graduate medical education must pass a medical science exam. Since 1992, Step 1 and Step 2 of the United States Medical Licensure Examination (USMLETM) have been the medical science exams that fulfill this requirement. Figures 2 through 4 compare the first attempt pass rates of graduates of Nigerian medical schools with graduates of medical schools in other sub-Saharan African countries and all other IMGs on USMLE exams administered in the past 10 years.

The passing rate for the USMLE Step 1 examination, which tests knowledge and application of sciences basic to the practice of medicine,¹⁸ appears in Figure 2.

Figure 1

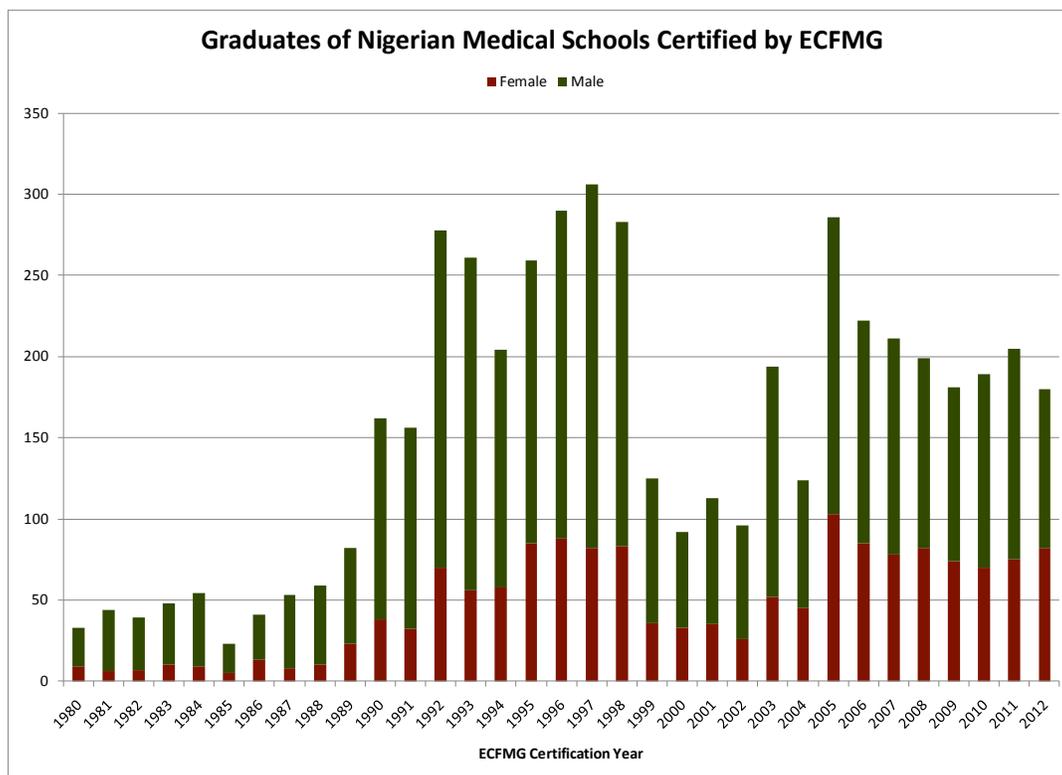


Figure 2 shows the variability in the performance of those IMGs taking Step 1 for the first time (first attempt) by the year the examination was taken. Although the pass rates changed over time, there was less variation in performance by group (Nigerian graduates, sub-Saharan medical school graduates, and graduates from other countries) than there was from year to year.

In addition to USMLE Step 1, IMGs take USMLE Step 2 Clinical Knowledge (Step 2 CK) to be certified by ECFMG. Step 2 CK measures knowledge and application of clinical science in support of patient care and counseling.¹⁹ First attempt pass rate by examination year for Step 2 CK are provided in Figure 3.

Figure 2

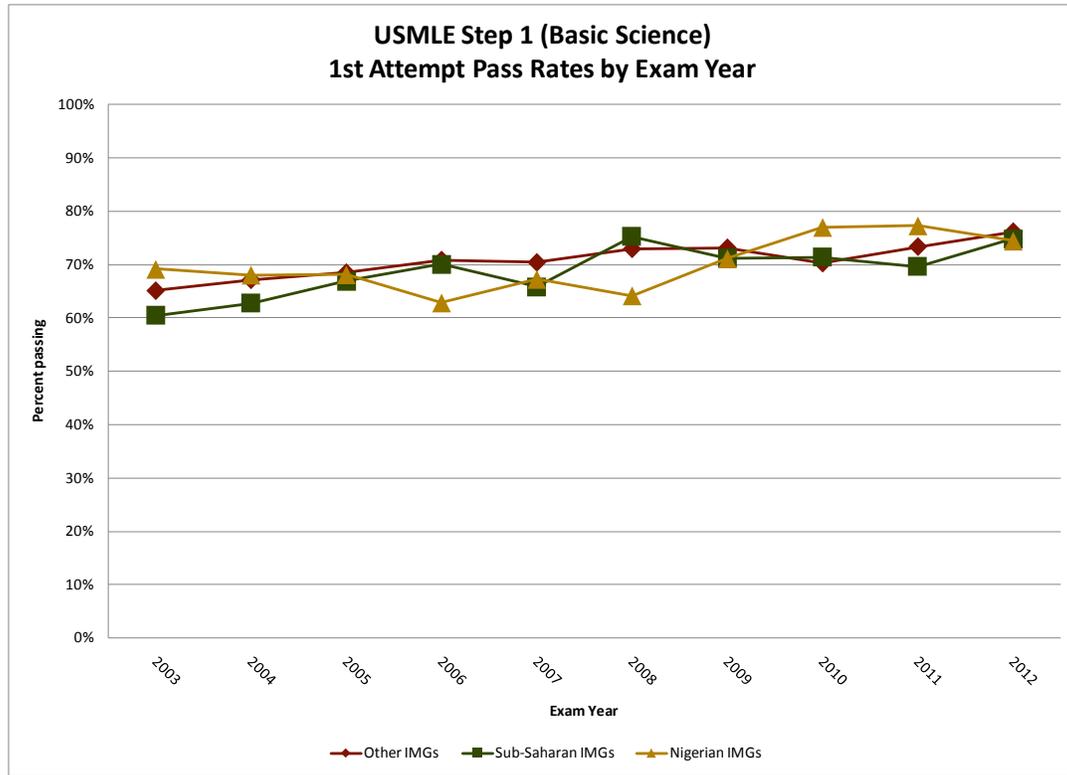
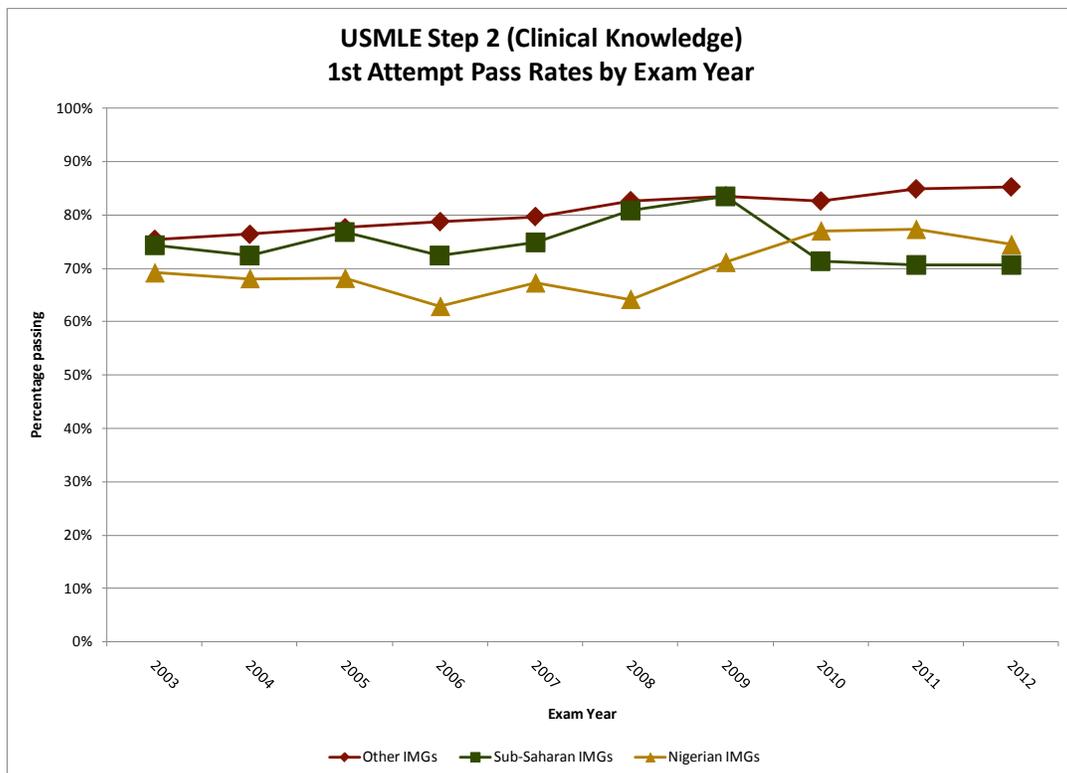


Figure 3



The passing rate of Nigerian medical school graduates has fluctuated over time, with slight improvement in 2008 and 2009. During the same time period, passing rates of graduates from other sub-Saharan countries showed a slight decline, while rates have been relatively stable for IMGs from other countries. It is important to note that the score required to pass Step 2 CK increased from 174 in 2003 to 196 in 2012. Despite these changes, the passing rates for IMGs have been fairly stable for this examination.

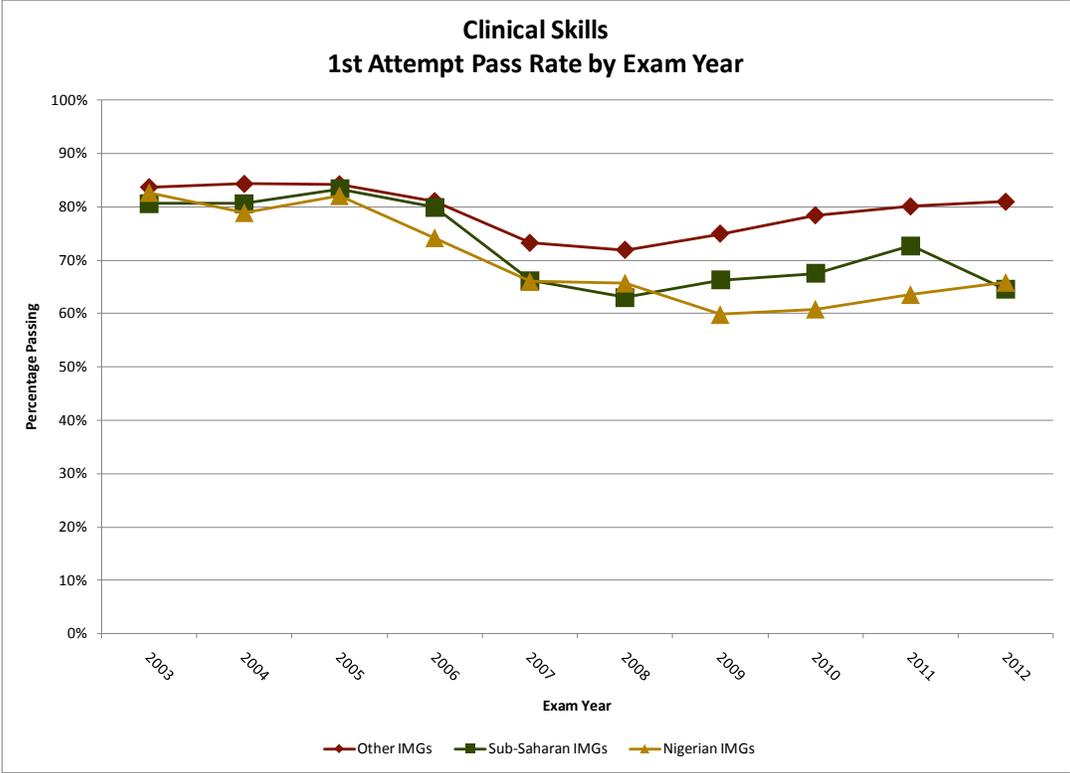
In order to determine whether IMGs have the skills to collect patient information, communicate effectively with patients, and perform physical examinations, testing with standardized patients is used.^{20,21} Since 1998, IMGs have been required to pass a standardized patient-based exam of clinical skills. The clinical skills examination requires that examinees pass all assessments components including competency in clinical encounters (history-taking, physical examination,

communicating with the health care team) and doctor-patient communication (interpersonal skills and spoken English proficiency). Figure 4 shows the performance of Nigerian medical school graduates, sub-Saharan graduates, and other IMGs on the clinical skills examinations administered between 2003 and 2012.[†]

Passing rates on the Clinical Skills examination show more variation than Step 1 or Step 2 CK. While there was a drop in pass rates, for all groups between 2005 and 2008, most likely due to changes in requirements to pass the examination, pass rates have rebounded since 2009, particularly for Nigerian and Other IMGs.

[†] ECFMG administered the Clinical Skills Assessment (CSA) from July 1998 through April 2004. USMLE administered the Step 2 Clinical Skills examination beginning in June 2004.

Figure 4



Nigerian Medical School Graduates in the U.S. Physician Workforce

Using data from the ECFMG applicant database in combination with the 2012 American Medical Association (AMA) Physician Masterfile,²² the practice patterns of IMGs in the United States can be examined. The AMA Masterfile consists of information about physicians in the United States, whether they are in full-time patient care or in other roles. Data are collected annually by the AMA through an online process, where physicians can see and edit their professional information.²²

The AMA Masterfile contains information on physicians' clinical specialties, professional activities, and practice location. Table 2 compares practice data for Nigerian graduates and all physicians.

The counts (and percentages) reported in Table 2 exclude 442 graduates of Nigerian medical schools and 65,835 graduates of other medical schools whose professional activity category was 'not classified'. Physicians classified as 'inactive' include those who are retired, semi-retired, part-time, temporarily not in practice, or not active for other reasons. Most of the Nigerian graduates who are in the United States are providing direct patient care (i.e., hospital staff or office-based practice) or pursuing postgraduate training (residents/fellows).

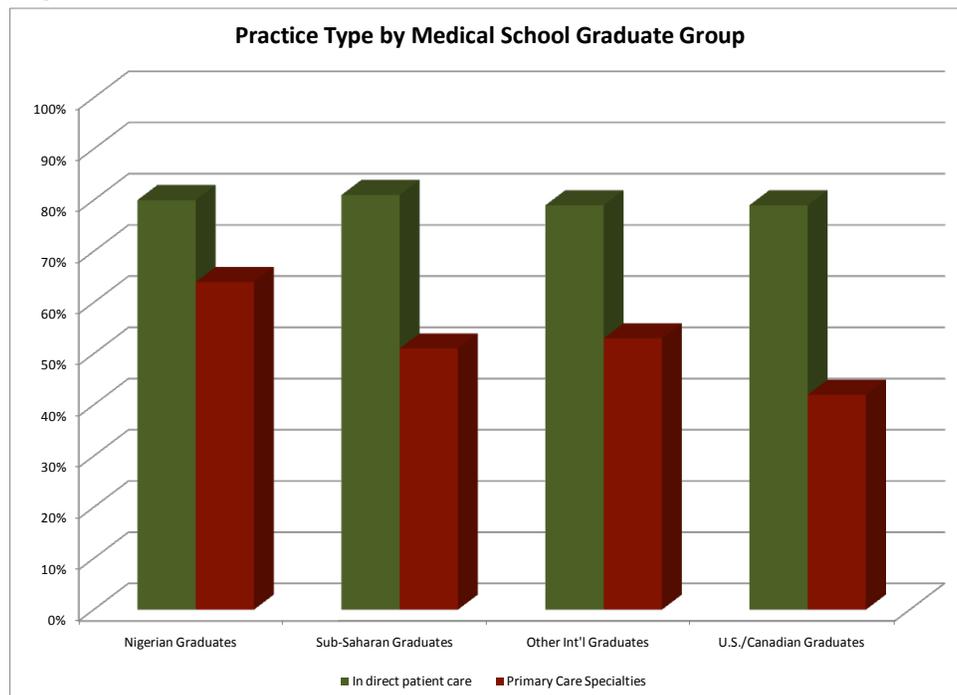
Population growth and aging, along with changes in health insurance, have highlighted a need for additional primary care providers in the United States.²³ To examine the extent to which graduates of Nigerian medical schools fill primary care needs, Figure 5 compares the patient care activities and specialties of four cohorts of physicians, excluding those in postgraduate training (residents), those over 80, and those whose affiliation was 'Federal Government'.

Table 2: Major Professional Activities*

Activity	Nigerian Educated (n=3,310)	Sub-Saharan Educated (n=4,558)	Other IMG (n=240,763)	U.S./Canadian Educated (n=790,062)
Administration	0.5%	1.2%	0.7%	1.6%
Hospital Staff	10.9%	10.6%	9.3%	8.1%
Inactive	1.5%	7.6%	15.0%	14.0%
Locum Tenens	0.4%	0.2%	0.1%	0.1%
Medical Teaching	0.9%	1.0%	0.7%	1.1%
Office-based Practice	68.6%	65.5%	59.5%	61.8%
Other	0.3%	0.5%	0.4%	0.5%
Research	0.6%	1.6%	1.0%	1.4%
Resident/Fellow	16.2%	11.8%	13.3%	11.4%

*Major professional activity categories are reported in the AMA Masterfile, based on physicians responses to the 'Physician Practice Arrangements' questionnaire.²²

Figure 5



Primary Care Practitioners include non-Federal doctors of medicine (M.D.) and doctors of osteopathy (D.O.) providing direct patient care who practice principally in one of four specialties: general or family practice, general internal medicine, pediatrics, and obstetrics and gynecology. Within each physician group, the percentage providing direct patient care shows little variation; about 80% of each of the groups provides direct patient care. In contrast, 64% of physicians educated in Nigerian medical schools reported that they specialized in primary care, compared to 42% of U.S./Canadian educated physicians. Table 3 provides information by clinical specialty and cohort group for physicians providing direct patient care.

Internal Medicine is reported as a specialty by higher percentages of Nigerian graduates, sub-Saharan graduates,

and other IMGs than graduates of U.S./Canadian medical schools. A higher percentage of graduates of Nigerian medical schools report Pediatrics as a primary specialty as well (12%), with Family Medicine the third most common specialty for this cohort. A slightly higher percentage of U.S./Canadian graduates report Family Medicine as their primary specialty. A greater percentage of Nigerian educated physicians reported Nephrology as their primary specialty, when compared to the percentages of each of the other groups.

Based on the address reported in the 2012 AMA Masterfile, location of practice can also be compared among these physician groups. Table 4 reports the top 10 states, based on the percentage of Nigerian graduates' addresses in the Masterfile.

Table 3: Clinical Specialty by Country of Medical School

Clinical Specialty	Nigerian Graduates (n=2,580)	Sub-Saharan Graduates (n=3,392)	Other IMGs (n=160,443)	U.S./Canadian Graduates (n=534,154)
Internal Medicine	32%	23%	21%	11%
Pediatrics	12%	8%	8%	7%
Family Medicine	12%	10%	11%	14%
Psychiatry	5%	4%	6%	4%
Obstetrics/Gynecology	3%	3%	3%	6%
Nephrology	3%	2%	2%	1%
Anesthesiology	3%	6%	5%	5%
Cardiovascular Disease	2%	3%	4%	3%
General Surgery	2%	2%	2%	3%
Gastroenterology	2%	2%	2%	2%
Other	25%	38%	36%	46%

Table 4: Location

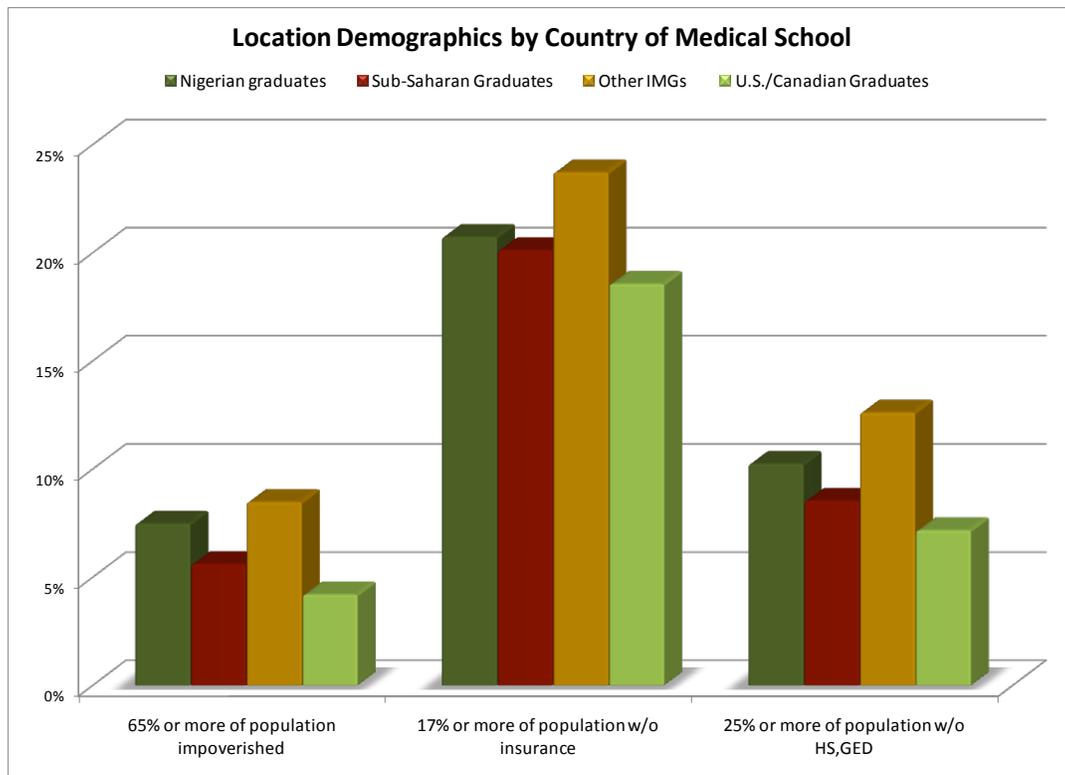
State	Nigerian Graduates (n=2,580)	Sub-Saharan Graduates (n=3,392)	Other IMGs (n=160,443)	U.S./Canadian Graduates (n=534,154)
Texas	11%	7%	6%	7%
Georgia	9%	4%	2%	3%
New York	8%	8%	12%	6%
Maryland	6%	6%	3%	2%
North Carolina	5%	3%	2%	3%
California	5%	10%	12%	12%
Illinois	5%	4%	5%	4%
New Jersey	4%	3%	6%	3%
Ohio	4%	4%	4%	4%
Florida	4%	7%	9%	5%
Other	38%	45%	39%	52%

The highest percentage of Nigerian graduates reported living in Texas, while greater percentages of the other groups listed California as their address. Georgia was also a much more common location for Nigerian graduates than other groups. The 10 states shown in Table 4 accounted for 62% of the Nigerian educated physicians in the AMA Masterfile.

Several studies have documented the extent to which IMGs disproportionately serve U.S. communities with the greatest need of health professionals, where the patient population faces challenges such as unemployment, lack of health insurance and low education.^{24,25} To examine the extent to which Nigerian educated physicians practiced in such areas, characteristics of regional U.S. patient populations were collected from the U.S. Bureau of Health Professions' Area Resource File²⁶ and combined with the ECFMG and AMA Masterfile data. Figure 6 shows a comparison of patient

characteristics by the country of medical school of their local physicians. Of physicians providing direct patient care, 35,632 (5%) were in areas where 65% or more of the residents were unemployed. Comparatively, 7% of Nigerian graduates, 6% of sub-Saharan graduates, 8% of other IMGs, and 4% of U.S./Canadian graduates were in those locations. Amongst Nigerian educated physicians, 21% were located in areas where 17% or more of the population was uninsured. In contrast, 20% of sub-Saharan trained physicians, 24% of IMGs educated in other countries and 19% of U.S./Canadian educated physicians were in these locations. A greater percentage (10%) of Nigerian graduates are located in areas where 25% or more of the community did not have a high school education or GED, compared to 7% of U.S./Canadian graduates and 9% of sub-Saharan medical school graduates. Amongst IMGs educated in other countries, 13% were located in communities with low education.

Figure 6



Summary

Despite postgraduate educational opportunities in Nigeria, graduates of Nigerian medical schools sought ECFMG Certification, training, and careers in the United States. Although small in number, these physicians provide patient care to Americans, with 80% of Nigerian medical school graduates serving as hospital staff or in office-based practice. In contrast, 70% of U.S./Canadian education physicians are in these practice settings. In addition, Nigerian graduates choose to specialize in general internal medicine, family medicine/family practice, pediatrics, and obstetrics and gynecology; 64% of Nigerian graduates practice in these specialties compared with 42% of U.S./Canadian educated physicians. A greater percentage of Nigerian graduates are located in areas where 25% or more of the population do not have a high school education or its equivalent.

When considering global workforce needs, the migration of physicians from poorer to richer countries is often cited as a major concern (e.g., Mullan et al.).³ However, African physicians have noted that important factors in migration of healthcare workers are often overlooked.²⁷ We must consider the opportunity for professional development in the sending and receiving countries, the condition of the health system, and the economic conditions in the sending country.²⁷⁻²⁹ Graduates of Nigerian medical schools providing direct patient care disproportionately serve vulnerable populations in the United States. Since graduates of international medical schools train in primary care specialties, and provide direct patient care in communities with higher unemployment, lower education rates, and those who are more likely to be uninsured, it is important to consider the IMG impact when planning approaches to meet projected physician workforce needs in this country. Although enrollment in U.S. medical schools has expanded, the demands of the implementation of the Affordable Care Act³⁰ make it likely that international medical graduates will continue to play a role in U.S. health care, because they serve underserved communities.

Annotated Bibliography

To learn more about medical education in Nigeria, we suggest the following articles:

Adebayo, O., Omoruyi, L., Labiran, A., Ebhodaghe, O., Agu, O., Emokpere, H., & Isibor, E. (2013). Pattern of Spread of Medical Schools in Nigeria. *Developing Country Studies*. 3(3): 160-165.

Using data from the National Population Commission of Nigeria and the Medical and Dental Council of Nigeria, the authors determined that the distribution of medical schools in the country is not optimal. Based on population statistics, the northern country zones have below the national average of medical schools, while the southern country zones have above the national average. In addition, the number of

medical schools in each zone is related to the secondary school completion rates. The authors argue that physician availability and retention in their primary area of education could be improved by the creation of more medical schools, and improvements in secondary school completion rates, in the country's northern zones.

Ibrahim, M. (2007). Medical Education in Nigeria. *Medical Teacher*. 29(9): 901-905.

Malu, A.O. (2010). Universities and Medical Education in Nigeria. *Nigerian Medical Journal*. 51(2): 84-88.

These articles each provide a history and detailed description of the current status of medical education in Nigeria. The authors outline potential problems facing medical education in the country, including outdated and ineffective curriculum and assessment methods, staff shortages and lack of staff training, and poor infrastructure. The authors each conclude by highlighting numerous areas for concentration with the goal of improving the country's medical education in the future.

Omigbodun, A.O. (2010). Quality Assurance in Medical Education: The Nigerian Context. *Nigerian Medical Journal*. 51(2): 70-77.

This article provides a comprehensive overview of quality assurance in general medical practice and education, including a description of the generic standards and protocols used around the world in medical education across the learning continuum (basic medical education, graduate medical education, continuing medical education). Within the context of this global description, the author depicts the current situation of quality assurance of medical education in Nigeria, and attempts to explore the linkage of these protocols to improved outcomes in the country.

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