THEME ISSUE

Cultural Sensitivity and Global Pharmacy Engagement in Africa

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Global engagement between schools and colleges of pharmacy in the United States and Africa is increasing. For a balanced and fruitful engagement, sensitivity towards the cultural and clinical needs of the people and professionals of the African region is critical. In this paper, we have divided the discussion into Southern, East, Central, and West Africa. General information about Africa, with unique aspects for individual subregions and countries, will be introduced. Stereotypes and misconceptions about the region and the people will also be discussed, along with recommendations for culturally sensitive engagement for pharmacy and other health care practitioners when hosting members from, or visiting this region. The paper is a resource for schools and colleges of pharmacy who are currently engaged or considering future outreach opportunities in Africa.

Keywords: Africa, global pharmacy education, World Health Organization, pharmacist, pharmacy technician

INTRODUCTION

While it is the second largest continent in the world, Africa is still largely viewed as a single country with a monolithic culture.¹ Foreigners often believe that people from Africa are all similar.¹ Although cultural practices in African countries have similarities, they vary significantly from country to country and within each country. Western media coverage of Africa has played a large role in depicting a region and people associated with famine, poverty, disease, war, and political corruption.^{2,3} This coverage has fueled a narrative among outsiders that Africa is not a place for investment and partnership, but rather a place worthy only of aid.³ Although the aforementioned problems exist variably depending on the country, and most of the countries face enormous challenges in addressing them, not every individual is in need and not every country is in a crisis.

Pervasive also is the notion that African civilization, including writing, literary traditions, nation-state governance, and trade economies began with European and Arab

colonization and conquest.¹ However, postcolonial African societies continue to uncover strong evidence of flourishing politico-cultural and economic centers that predate colonization.¹ Africa today has many cultures rooted in a history of African dynasties and belief systems that continue to promote and preserve humane living and health. Early concepts of health, of course, stemmed from beliefs that placed “spiritual health” above physical health.¹

Though heavy reliance on foreign aid remains an enormous issue, many African nations have worked diligently to leverage aid resources from global organizations such as the World Health Organization (WHO) and nongovernmental organizations (NGOs) to spur the growth of sustainable, tailored, self-reliant health care systems that have improved health care in their countries.⁴ The Rwandan government, for example, has made health care system investments over the past 10 years that have led to an 80% drop in Human Immunodeficiency Virus (HIV) tuberculosis (TB), and malaria-related deaths over two decades, and established a health insurance program that now covers 90% of its population at a cost of less than one eighth of the US economic output for health care coverage.⁵

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In light of the aforementioned growth, engagement of African nations by US schools and colleges of pharmacy has expanded steadily over the past few years. Areas of interest have varied widely and have included the development of advanced pharmacy practice experiences (APPEs), student medical missions, clinical research fellowships, clinical practice residencies, and capacity-building projects based upon partnerships between US institutions and those of African nations.⁶⁻⁸ These partnerships have been multifaceted and mutually beneficial, allowing pharmacy faculty members, students, and residents/fellows to exchange best practices.⁹ In this paper, authors from several disciplines, including pharmacy, medicine, and public health, have depicted the health care landscape in key nations on the African continent. The purpose of this paper is to provide insight into the overall health care infrastructure, the status of pharmacy practice, and the nature of pharmacy education in these nations, while also providing important considerations for pharmacists and pharmacy students planning to travel to, practice in, or partner with academic, health, and governmental entities of these nations. In doing so, schools and colleges of pharmacy in the United States who wish to engage the African region will have the necessary information to proceed with both knowledge and sensitivity.

METHODS

General methodology was discussed in the introduction paper for this special issue.¹⁰ A series of online encyclopedias were also searched.¹¹ Other keywords or terms used included: names of perspective countries, Africa, Economic Community of West African States (ECOWAS), Southern African Development Community (SADC), Global Pharmacy Education, United Nations (UN), and World Bank. Countries within four regions of Africa, including Southern, East, Central, and West, as defined by the United Nations, were selected based upon having an infrastructure that supported the dissemination of researchable information. Countries were also selected based upon availability and expertise of authors from the areas. The region of North Africa was excluded from this discussion, as it was covered in the section labeled the Arab World. Local authors and reviewers from Africa were also solicited for their contribution to the manuscript.

RESULTS

The Health Infrastructure in Sub-Saharan Africa

Though the health care infrastructure in Africa varies widely by region, country, and locality, the general structure and sources of health care in much of Africa can be divided into four main sectors: public, private, non-

governmental organizations (NGOs)/faith-based, and traditional/spiritual healers.¹²⁻¹⁴ The public health sector is made up of primary-level health clinics, which generally provide free services, secondary-level district hospitals to which patients are referred from primary clinics for more advanced care, and tertiary academic hospitals for advanced diagnostics and treatment, as well as training of health care professionals.¹⁴ Private sectors operate similarly to private clinics and hospitals in the United States. Individuals “subscribe” for services rendered by private physicians and hospitals.¹⁴ South Africa is currently undergoing a protracted implementation phase for a National Health Insurance program that will provide “universal health coverage” for its citizens by connecting public and private sectors.¹⁵ The NGOs and faith-based institutions in Africa mainly focus on specific health issues in the region, such as maternal and child health, HIV and Acquired Immunodeficiency Syndrome (AIDS), and tuberculosis (TB).¹⁴ In all regions, public institutions are accessed most frequently as sources of health services.¹² According to a WHO survey, there are some significant regional differences in use of the remaining sectors.¹² In East and Southern Africa (17.5%), faith-based health centers are used with much greater frequency than in West Africa (5%). In Central (18%) and West Africa (15%), patients may seek medicine from “informal drug sellers,” making these sellers another sector of the health care system. This practice is seen less frequently in East and Southern Africa.¹² Traditional and spiritual healers are accessed by peri-urban and rural patients in all African regions for health issues not addressed at health centers.¹² Informal drug sellers represent another non-institutional access point, mostly sought by urban dwellers in West Africa.¹² While many people in Africa agree that health systems are in place to help people, many site-specific problems such as high demand, low workforce, high fees, and various inefficiencies present major challenges to receiving quality care and appropriate services.^{12,13}

The “prescription of medicine” is a major service sought by patients entering the health care system in Africa.¹² However, the shortage of pharmacists is pervasive and persistent across African regions. According to a global workforce analysis, most African nations have less than one pharmacist per 10,000 population.¹⁶ Contextually, the World Health Organization recommends at least one health care worker per 439 individuals. For this reason, workforce ratios for the African region reported as the number per 100,000 individuals may better delineate the impact of pharmacist shortages on the population. According to the same report, most pharmacists in Africa work in the private health sector in community pharmacies (40%), followed by public or private hospitals (20%).¹⁶ The majority of pharmacists also favor working

in urban centers rather than rural areas. Reasons for this uneven workforce distribution may include low wages in the rural public sector coupled with minimal support staff and high workload.¹⁶ Almost all countries in Africa have adopted a national Essential Medicines List based upon WHO recommendations. These lists are tiered according to the level of the health care facility: primary, secondary, or tertiary.^{14,15}

Southern African Region

General Information. The Southern African region includes Botswana, Lesotho, Malawi, Mauritius, Mozambique, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe. Most of the countries fall into what is termed the Southern African Development Community (SADC), which aims to provide socioeconomic, political, and security cooperation among member nations.¹⁷ The United Nations (UN), when categorizing geographic subregions, uses the term Southern Africa.¹⁸

The majority of countries within Southern Africa are English-speaking (anglophone), given that they were former British colonies. Mozambique is Portuguese-speaking (lusophone). Despite great linguistic diversity, English is the common language spoken, and most business transactions are conducted in English throughout the region. While Southern Africa is home to large capital cities, the majority of the population still resides in rural areas and speak indigenous languages. The major causes of death in Southern Africa are HIV/AIDS and TB. However, in recent decades, middle-income countries such as South Africa have seen rises in the number of deaths resulting from chronic disorders such cerebrovascular disease, diabetes, and hypertension.¹⁹⁻²²

Culture has perhaps the most significant impact on how Southern Africans experience their health care systems. Many Southern Africans have learned to distrust Western medicine, finding procedures and treatments to be expensive, impersonal, and rarely curative.^{23,24} This belief often leads to the refusal of clinic or hospital care, with people seeking consult from traditional healers instead. The elevated status of traditional healers, particularly among low-income residents of Southern Africa, has resulted from their availability, accessibility, familiarity with culture-bound syndromes (folk-illnesses), and relationships with patients and their families.²⁵ The use of herbal medication is the most common therapeutic method used by traditional healers.^{25,26}

Pharmacists, Pharmacy Education, and Regulation in Southern Africa

South Africa. South Africa is divided into nine provinces, with Pretoria, its administrative capital, located in

the country's central Gauteng province.²⁷ Its population is an estimated 50.5 million with over three-fourths of the population considered black, 10% of European origin, 3% Asian, and 9% of mixed race or "coloured."²⁸ There are 11 official languages in South Africa, including English.²⁷

Pharmacists in South Africa are registered by a national regulatory body, the South African Pharmacy Council. Eligibility to practice as a registered pharmacist involves completion of a four-year undergraduate degree, one year of pre-registration experience (internship), and one year of community service as a Community Service Pharmacist (CSP) in a public-sector facility.^{15,38} All accredited institutions now offer a four-year Bachelor of Pharmacy degree (BPharm), though Master of Pharmacy (MPharm) and Doctor of Pharmacy (PharmD) programs are now offered by universities in South Africa. There are presently eight accredited universities offering the BPharm degree in South Africa (Table 1).¹⁵

As of 2016, there were just over 15,000 registered pharmacy support personnel in South Africa, including pharmacy interns (completing one year of public sector service), assistants (trained at accredited health care facilities), and technicians (receive full-time training at an accredited tertiary teaching hospitals).¹⁵ There were approximately 27 pharmacists per 100,000 population, making the pharmacist workforce in South Africa one of the largest in Africa, despite its shortages.¹⁵ Most pharmacists (68%) were employed in urban, private-sector community pharmacies in 2015, followed by public-sector hospitals (14.4%).¹⁵ Most of the pharmacies in South Africa are either independent or chain drug stores, and dispense medications according to schedule (0-6) and in accordance with the Medicines and Related Substances Act of 1965.¹⁵ Schedule 0 products are sold over the counter and advertised directly to the public, schedule 1 and 2 products can be pharmacist-initiated orders, and schedule 3-6 products are distributed by prescription only and cannot be advertised directly to the public.¹⁵

Botswana. The capital city of Botswana is Gaborone. Both Setswana and English are official languages, with English mainly used in business and government.²⁷ There were 6.5 pharmacists and 13 pharmacy support personnel (technicians and assistants) per 100,000 population in Botswana reported in 2011.²⁹ Botswana's pharmacist shortage may result from the fact that the country has not yet graduated its own pharmacists. The University of Botswana accepted its first pharmacy class in fall 2018.³⁰ Though small in number, the pharmacists are organized. The Pharmaceutical Society of Botswana (PSB) is the nation's professional body for pharmacists.³¹ Membership in the PSB is made up of pharmacists

Table 1. Pharmacy Schools Within Southern and East Africa

School Name	Country	Degree ^a
Southern Africa		
Nelson Mandela Metropolitan University	South Africa	BPharm
North-West University	South Africa	BPharm
Rhodes University	South Africa	PharmD, BPharm
University of KwaZulu–Natal	South Africa	BPharm, MPharm ^b
University of Limpopo/Tshwane University of Technology	South Africa	BPharm, MPharm ^b
University of Pretoria	South Africa	BPharm
University of the Western Cape	South Africa	BPharm
University of the Witwatersrand	South Africa	BPharm, MPharm
University of Botswana	Botswana	BPharm
University of Zambia	Zambia	BPharm, MPharm ^b
University of Namibia	Namibia	BPharm, MPharm ^b
East Africa^a		
Addis Ababa University	Ethiopia	MPharm
University of Gonder	Ethiopia	BPharm, MS
Mekelle University	Ethiopia	BPharm
Haramaya University	Ethiopia	BPharm
Jimma University	Ethiopia	BPharm, MPharm ^b
Wollega University	Ethiopia	BPharm
Dilla University	Ethiopia	BPharm
University of Nairobi	Kenya	BPharm
Kenyatta University	Kenya	BPharm
Jomo Kenyatta University of Agric and Tech	Kenya	BPharm
Methodist University	Kenya	BPharm
Mount Kenya University	Kenya	BPharm
United States International University	Kenya	BPharm
Catholic University of Health and Allied Sciences	Tanzania	BPharm
Kampala International University Dar es Salaam College	Tanzania	BPharm
Muhimbili University of Health and Allied Sciences	Tanzania	BPharm
St. John's University of Tanzania	Tanzania	BPharm
Kampala International University	Uganda	BPharm
Mbarara University of Science and Technology	Uganda	BPharm
Makerere University	Uganda	BPharm, MPharm ^b

^a Both Ethiopia and Kenya each have greater than 20 pharmacy programs. Many were not included on the list

^b Master of Pharmacy degree is offered in clinical pharmacy

practicing in the community as well as professionals from the hospital, regulatory, research, academic, marketing/sales, and distribution sectors.³¹ The PSB represents the interests of pharmacists to the government, other health professionals, and the general public. It also provides a forum through which knowledge and experience in pharmacy can be shared through conferences and training events. The PSB aids in the development of partnerships between private and public health sectors to enhance access to pharmaceutical services for persons in Botswana.³¹ Like South Africa, most pharmacists in Botswana are employed in private sector community pharmacies.

Zambia. Zambia has a population of approximately 15.5 million. While English is the official language, over 70 local dialects are spoken.²⁷ The country is mostly com-

prised of people of African descent with a small Asian and European minority.²⁷ Zambia's infant mortality rate, at 75 deaths per 1000 live births, is more than double that of its bordering Southern African nations.²¹

The total number of pharmacists licensed and registered to practice in the country was 309 in 2009. This number more than tripled by 2016, bringing the number of pharmacists per 100,000 population from 2.4 to 7 during this time period.³² Strong efforts were undertaken by the University of Zambia (UZAM) and the regulating pharmacy council to enhance and support its pharmacy workforce during this period. The Pharmacy Council of Zambia, the regulatory pharmacy council, provides oversight for the practice of pharmacy professionals in Zambia. The Zambian Medicines Regulatory Authority was established in 2013 to regulate and control the

manufacture, storage, distribution, supply, and use of medicines in Zambia, similar to the FDA in the United States.³³ Its presence and oversight has helped to provide quality controls for the distribution of medicines within the supply chain through development of sound guidelines and reports, including a Pharmacovigilance Reference Manual.³³

Namibia. Namibia has a population of approximately 2.3 million despite its large land size.^{27,28} Namibia received its independence in 1990, after its native population suffered from nearly a century of genocide and systematic oppression mostly by German settlers.³⁴ Thousands of indigenous people were “exterminated” during the early 20th century.³⁴ The population and its health care system has seen a slow but steady recovery since that time. Many of the country’s surviving native populations still remain in poverty, leaving many people unable to combat HIV/AIDS, Namibia’s most pressing health issue.²²

Namibia has a pharmacist ratio of 1/10,000 people, according to the World Health Organization.³⁵ After much planning and a strong recognition of the value of pharmacists in the country, the University of Namibia (UNAM) accepted its inaugural class of BPharm students in 2011.³⁶ The UNAM regularly undergoes rigorous accreditation processes implemented by both the Health Professions Councils of Namibia and the Pharmacy Council of Namibia.³⁶ The Pharmacy Council of Namibia regulates the registration of practicing pharmacists and technicians. It also specifies the education, training, and qualifications of persons practicing such professions.³⁷ Similar to in the United States, once degreed and registered, pharmacists within Namibia have a wide array of areas and specialties in which to practice, including ambulatory care, nuclear, managed care, hospital, and veterinary pharmacy, among others.³⁶

Status of Postgraduate Pharmacy Education in Southern Africa

In 2015, UNAM approved the postgraduate MPharm clinical pharmacy training program in Namibia.³⁶ Its three-year part-time MPharm program emphasizes infectious diseases, but also allows for exploration of various fields within clinical pharmacy, with the final year focusing on research principles.³⁶ Since 2010, UZAM has offered a masters in clinical pharmacy program.³⁹ The University of KwaZulu Natal in South Africa offers an online MPharm program that has two tracks: pharmacoeconomic evaluations and clinical pharmacy practice (drug utilization reviews).⁴⁰ The University of Witswatersrand in Johannesburg, South Africa, offers a one-year full-time or two-year part-time MPharm degree program by disser-

tation.⁴¹ Rhodes University in Eastern Cape, South Africa, offers a three-year full-time PharmD degree that is both clinical and research based.³⁸ Pharmacy practice residencies and fellowships have not been formalized in the region. No pharmacy organizations recognize or accredit these programs, presenting a major opportunity for the development of postgraduate pharmacy practice training within these countries for US schools and colleges of pharmacy.

East African Region

General Information. East Africa is comprised of several nations that include Kenya, Uganda, Tanzania, Eritrea, Somalia, and Ethiopia. Key nations Tanzania, Uganda, and Ethiopia are classified as low-income economies according to the World Bank, while Kenya is middle income.³² The health care systems in this region suffer from poor infrastructure, leading to lack of resources (such as essential medicines) and the continuous “brain drain” of highly-skilled health care workers. Because of these limitations, health care needs are generally not met for many persons living in East Africa.⁴² The burden of disease is similar in the region and includes a combination of communicable and noncommunicable diseases. The leading cause of death in three of the four countries is HIV. Infectious diseases, while improving, remain the most common cause of death in all four countries, although each country also reflects a growing pattern of noncommunicable diseases within the top 10 causes of death. These common causes of noncommunicable death include heart disease, stroke, and cancer.⁴³ Traditional medicine is commonly used and may be used first for serious conditions in some societies.^{44,45}

When discussing factors that influence health behaviors, it is important to consider the impact of language and religion. Swahili is a unifying language for several East African nations.^{28,46} A brief introduction to Swahili or full course prior to visiting the region may be helpful for representatives from the United States. Many religions are practiced across East Africa, but the most common are Christianity and Islam.²⁸

Pharmacists, Pharmacy Education, and Regulation in East Africa

Ethiopia. Ethiopia is one of the most populated countries in Africa with 105 million people. Other than a brief Italian occupation from 1936-1941, Ethiopia was the only African country to avoid colonial rule.²⁸ As a result, there is great linguistic diversity within the country. Amharic is the official language of Ethiopia, and Oromo is spoken among 33% of the population, followed by several other languages. Forty-three percent of the people are Orthodox Christians and 34% are Muslims.²⁸

There are roughly 3 pharmacists per 100,000 people in Ethiopia. Roughly half of all pharmacists work in or near Addis Ababa, the capital, leaving great disparities in the rural areas.⁴⁸ The Federal Ministry of Health (FMOH) is a governmental regulating body for all health care sectors in Ethiopia.⁴⁹ The Food, Medicines and Health Care Administration Authority (FMHACA) is a regulatory authority included under FMOH.⁴⁹ The FMHACA regulates the safety and quality of pharmaceutical products and health care services through licensing, registration, and inspection of health care facilities.⁴⁹

A number of postsecondary public and private institutions in Ethiopia offer diploma and bachelor's degree programs in pharmacy. Basic pharmaceutical education in Ethiopia started in 1943 with the hospital dispensary certificate program.⁴⁹ In 1961, the first school of pharmacy was established at Addis Ababa University (AAU).⁴⁹ In 2008, the pharmacy curriculum at AAU was revised to focus on clinical pharmacy or patient-centered training.⁴⁹ This led to the development of a five-year bachelor of pharmacy (BPharm) program that included a one-year internship in various pharmacy settings.^{49,50} As of 2013, nine public universities offered a pharmacy degree program.⁵¹

Kenya. Approximately 47.5 million people live in Kenya, with most clustered in or around the capital city of Nairobi.²⁸ English and Kiswahili are the official languages, though there are numerous indigenous languages. The majority of the people (83%) are Christian and 11% are Muslim.²⁸

There were five pharmacists per 100,000 people in Kenya in 2012, with 86% of them working in the private sector.⁵² Pharmacy in Kenya is regulated by the Commission for University Education and the Pharmacy and Poisons Board (PPB).⁵³ Approval of programs is the responsibility of the Commission for University Education.⁵³ The PPB is responsible for making sure that graduated pharmacists meet the qualifications and prerequisites for becoming registered pharmacists.⁵³ About 70% of pharmacists in Kenya work in hospital settings, while 17% work in community pharmacy settings, which is very different from most Sub-Saharan African countries where most pharmacists work in community settings. The role of the pharmacist in Kenya is transitioning to include the provision of more clinical care services.⁵⁴

The first BPharm degree program in Kenya was started at the University of Nairobi in 1978 in response to the critical need for growing a locally trained pharmaceutical workforce.⁵⁵ Today, there are over 20 pharmacist training programs in Kenya (Table 1).

Tanzania. Tanzania has a population of roughly 54 million. Ninety-nine percent of this population is of Bantu

African origin, while 1% are Asian, European, or Arab. In Zanzibar, there is a large Arab and mixed African and Arab population.^{27,28} The majority (61%) of people in Tanzania are Christian; however, there is also a sizeable Muslim population at 35% and Zanzibar is almost entirely Muslim.

There is a severe shortage of trained pharmacists in Tanzania (2/100,000 people) with a flatlining in pharmacist growth occurring between 2009 and 2012.⁵⁶ Roughly 44% of the people work in the public sector.⁵⁷ Generally, most pharmacists work in urban centers, leaving the rural pharmacist posts unfilled.⁵⁸ The Pharmacy Council of Tanzania is in charge of registering and licensing pharmacists, while the Pharmaceutical Society of Tanzania is the professional body for pharmacists, pharmacy technicians, and pharmacy assistants, similar to the American Pharmacists Association in the United States.^{59,60}

Pharmacy education in Tanzania has recently transitioned from a focus on training students to dispense drugs to a focus on clinical care. At the Muhimbili University of Health and Allied Sciences (MUHAS), for example, the curriculum was modified to include interactive learning and clinical pharmacy exposure.⁶¹ While MUHAS was the country's first university to offer the BPharm degree in 1974, pharmacists can now pursue a BPharm degree at three other universities in Tanzania (Table 1).⁶¹

Uganda. The official language in Uganda is English. Among its population of 40 million, 45% are Protestant Christian, 40% are Roman Catholic, and 14% are Muslim. The capital city is Kampala.

The number of pharmacists in Uganda rose steadily between 2005 and 2012 from 162 to 550, but experienced a steep decline in 2015 to 45 pharmacists (less than one pharmacist per 100,000 people), exacerbating what was already one of the most severe shortages in Africa.⁶² Reasons for this decline are unclear. However, literature suggests that the persistence of low workforce capacity resulting in slow uptake of trained pharmacists into jobs has contributed greatly to the decline.⁵⁶

While the National Drug Authority licenses pharmacies, the Pharmaceutical Society of Uganda is responsible for ensuring standards for the practice of pharmacy through licensure of all qualified pharmacy candidates.⁶³ The Council of the Pharmaceutical Society of Uganda governs this Society.⁶³ Major responsibilities of the council include regulation of the practice of pharmacy by pharmacists and their assistants, accreditation of training institutions and approval of courses of study for pharmacy students, and publishing/updating a register of pharmacists.⁶³

Three universities in Uganda offer pharmacy programs (Table 1). Makerere University (MU) is recognized

for its partnerships with international pharmacy programs. The university's basic training in pharmacy includes the Essential Medicines List (EML), use of Standard Treatment Guidelines (STGs), drug information, clinical pharmacology, and medicines supply management. Prior to starting their one-year postgraduate internship, students must take an eligibility examination.^{62,63} This examination also allows the council to evaluate the use of pharmacy curricula throughout the region and provide feedback for improvements.⁶³ Students must then take a preregistration examination that assesses knowledge and skills prior to being registered as a pharmacist. There is a mandatory annual continuing education requirement for Ugandan pharmacists.⁶³

Status of Postgraduate Pharmacy Education in East Africa

Addis Ababa University offers a wide range of Doctor of Philosophy (PhD) programs related to pharmacy for those who have successfully completed their master's degrees. Makerere University in Uganda and the University of Nairobi in Kenya offer a Master of Science in Clinical Pharmacy.⁶¹ Makerere University partners internationally to offer its graduate program. The focus of MU's educational programs is patient care rather than research and development.⁶¹

Central African Region

General Information. The Central African region includes Burundi, Central African Republic, Democratic Republic, Chad, and Rwanda. When categorizing geographic subregions, the United Nations uses the term Middle Africa and includes Angola, Cameroon, Central African Republic, Chad, the Republic of the Congo, the Democratic Republic of Congo, Equatorial Guinea, Gabon, and Sao Tome and Principe.¹⁸

With the exception of Rwanda, which has integrated English as the official and instructional language, and Cameroon whose Western region is anglophone, other countries in the region remain largely francophone or lusophone. Hundreds of local languages and dialects have also endured.²⁸ Catholic and Protestant religions are most dominant in the region. Islam is the predominant religion in Chad.²⁸

HIV transmission rates are high amongst certain small rural populations when exposed to larger populations. For example, with condom use reported at less than 25% and HIV testing rates at less than 15%, the Pygmy population, a remote and small indigenous group dispersed throughout the Central African rainforests, may be at higher risk for HIV than other populations.^{64,65} Economic development has been limited over the past three

decades because of armed conflicts in different parts of the region. These conflicts have also affected health systems, which remain largely ineffective at responding to population needs. Primary causes of death include malaria, HIV/AIDS, TB, and sleeping sickness.⁶⁶⁻⁶⁹

Pharmacists, Pharmacy Education, and Regulation in Central Africa

Angola. Angola has a population of 27.5 million. The official language is Portuguese, though over 100 local dialects are spoken.²⁸ Angola's health sector was disrupted by almost two decades of civil war, ending in 1997. Afterwards, diamond and oil industries helped to create funding streams to improve the health sector.²⁷

The number of pharmacists registered in Angola in 2009 was 127 (7/100,000 people) according to the most recent data from the SADC.⁷⁰ In Angola, pharmacy activities are regulated by Presidential Decree.⁷¹ According to the decree, the Ministry of Health is responsible for the organization, legislation, and oversight of pharmacy activity.⁷¹ For its operation, all pharmacies are required to have a pharmacist or pharmacy technician present who is responsible for good pharmacy practice. By law, if the pharmacy has no pharmacist, it can be managed by a pharmacy technician, but he or she must be supervised by a pharmacist located nearby. There are 1,261 pharmacies in Angola, covering the entire country.⁷¹

In Angola, to practice as a pharmacist, a five-year pharmacy degree is required.⁷² There were seven pharmacy schools located mainly in the capital city of Luanda as of 2015, six of which were established within the last 10 years.⁷² Newly established pharmacy schools and degree programs have provided increased opportunities for students pursuing careers in pharmacy. Students are required to write a dissertation (which is presented to a scientific committee) and complete a "unique placement" in a professional setting for successful completion of the program.⁷² Pharmacy schools are regulated by the Ministry of Higher Education, and most pharmacy schools are publicly funded. None of the universities offers a postgraduate pharmacy program.⁷²

Rwanda. Rwanda's population of roughly 12 million consists of three major ethnic groups: the Hutu, Tutsi, and Twa. There are almost equal numbers of Protestant Christians and Roman Catholics in Rwanda. The official languages are French and English, though Kinyarwanda and Swahili are spoken heavily throughout the country.

There were 717 pharmacists (6/100,000) registered with the National Pharmacy Council (NPC) of Rwanda in 2017.⁷³ This registry, which also includes pharmacy technicians, is updated and published annually. The NPC is accountable for the regulation of registered pharmacy

professionals, and it plays an advisory role to the Ministry of Health and pharmacy training institutions.⁷⁴ In the past, pharmacists registered with the Ministry of Health. However, since 2013, pharmacists register with the NPC.⁷⁴ After completion of a four-year bachelor's degree in pharmacy, an aspiring pharmacist must take an examination before being accredited and registered to practice.⁷⁴

The Ministry of Health and the Rwanda Biomedical Centre (RBC) import all medications, which they then distribute to health facilities nationwide.⁷⁴ Pharmacies in Rwanda will soon be required to decentralize to rural areas, since Parliament passed a bill establishing regulations on food supplements, medicines, medical devices, poisons, cosmetics, herbal medicine, and other health-related commodities.⁷⁴ This increased the need for pharmacy practice to become more widespread throughout the remaining portions of the nation. Partnership with US institutions may assist with this process.^{74,75}

Democratic Republic of Congo (DRC). French is the official language of the DRC, though Lingala is the lingua franca of the country. The population of the DRC is just over 83 million and is approximately 50% Roman Catholic, 20% Protestant Christian, 10% Kimbanguist, and 10% Muslim.

There were three pharmacists per 100,000 people registered in the DRC in 2009.⁷⁶ This severe shortage prompted the formulation of a strategic plan by the DRC and its partners. The Faculty of Pharmaceutical Sciences (FOPS) of the University of Kinshasa (UOK) officially presented its first-ever strategic plan to the Ministry of Higher Education in 2015.⁷⁶⁻⁷⁸ The strategic plan lays out a FOPS curriculum for the 2016-2020 period and was developed with the technical and financial assistance of the US Agency for International Development (USAID).⁷⁶⁻⁷⁸ The plan's development was based on recommendations of the Accreditation Council for Pharmacy Education (ACPE), which conducted the evaluation of FOPS in July 2014.⁷⁷ The FOPS is motivated to work with other pharmacy stakeholders in the DRC to develop a nationally regulated and quality-assured accredited system of continuing education (CE) and professional development (CPD).⁷⁷

The current six-year curriculum at UOK is designed to prepare graduates to practice in three distinct professional areas: community and hospital, pharmaceutical industry, and medical biology. Prior to beginning the professional part of this PharmD curriculum, students complete at least two years of preprofessional courses that involve a mix of the sciences and general education.⁷⁸ As a result of the collaborative efforts underway in the DRC, patient care provided by pharmacists has been demonstrated to have favorable effects across various patient

outcomes, health care settings, and disease conditions for the population in DRC.⁷⁹

Cameroon. Cameroon has a population of approximately 25 million, and is both francophone and Anglophone. Religious groups include Roman Catholics, Protestants, and Muslims, with similar numbers of each.

In Cameroon, there are approximately 600 pharmacists (3/100,000) and over 300 private pharmacy outlets, with most operating in the private sector.^{80,82} Pharmacists in Cameroon are registered with the National Council of the Pharmaceutical Society of Cameroon (Conseil National de l'Ordre des Pharmaciens du Cameroon or CNOP).^{81,82} No person may practice pharmacy unless he or she is registered with the CNOP.⁸¹ Pharmacists play a major role in medication adherence within this country and this requires a larger number of providers in practice. Thus, pharmacist shortages in this country pose a significant challenge. Cameroonian pharmacists receive different forms of continuing education, such as in HIV, diabetes, and many other chronic disease states, though it is not yet required for continuation of licensure.⁸³

Status of Postgraduate Pharmacy Education in Central Africa

Currently postgraduate training in Central Africa is not well developed. Most pharmacy training programs focus on training for supply chain functions. However, through partnerships such as those between the Accreditation Council on Pharmaceutical Education (ACPE) and the Democratic Republic of the Congo (DRC), programs are expected to become increasingly more clinical in focus.⁷⁹

West African Region

General Information

The West African region is comprised of the countries of Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo.¹⁸ Most of these nations are francophone, though five are anglophone.²⁸ Major communicable and non-communicable causes of death in West African countries include lower respiratory tract infections, stroke, malaria, diarrheal diseases, and HIV/AIDS.⁸⁵

Although West African health care is improving, many of its countries still struggle with insufficient funding, small health care workforces, poorly organized systems, and lack of structure for a private health care market. The governments of these countries offer state-sponsored health care but available resources are unable to meet demand.⁸⁶ The Sierra Leone government only spent \$14 per person on essential health services

compared with the \$86 suggested by the WHO.⁸⁷ In addition, care in government facilities is often substandard, leading patients to seek care in private institutions. Because of the inability to perform post-care billing, patients are usually asked to pay for care in advance and are burdened with unaffordable out-of-pocket expenses.⁸⁶ For example, intravenous ceftriaxone may cost \$6 per day in a country where the per capita income is about \$1600 per year.⁸⁸ In Ghana, one of the leading countries in West Africa, a national medical insurance system exists but does not cover the cost of lifesaving therapy such as dialysis, antiretrovirals, or transplant medications.⁸⁸ Health care providers often seek employment in urban areas where care is subsidized, compounding the problem of access to care in rural areas. As a result, many countries depend on foreign health care workers to temporarily fill voids when issues arise. This continued cycle hinders a steady and reliable health care structure in West Africa.⁸⁶ About two-thirds of West Africans surveyed by WHO reported dissatisfaction with the public sector health facilities and the way health care is provided by their governments.¹² Over 85% of West African patients reported purchasing medications without reimbursement and 90.6% reported being uninsured, despite the presence of free drug programs.¹²

Pharmacists, Pharmacy Education, and Regulation in West Africa

There are over 40 pharmacy schools in West Africa (Table 2).⁸⁹ American International University, open since 2011 and located in Gambia, had the first college of pharmacy in Africa that was structured after the Doctor of Pharmacy (PharmD) programs in the United States.⁹⁰ As basic competencies and pharmacy practice are unsatisfactory in West Africa, the West African Health Organization (WAHO) put together a document to assist in harmonizing pharmacy curricula in the Economic Community of West African States (ECOWAS) region.⁹¹ This document provides recommendations regarding admission requirements, courses, student and program evaluation, as well as requirements for staff and infrastructure. The document suggests a six-year duration for PharmD training programs, with attainment of the West African Senior Secondary School Certificate (similar to a high school diploma) as a minimum requirement for application (Table 2).⁹¹

Ghana. Ghana's official language is English, though many indigenous languages are spoken such as Asante/Twi, Ewe, and Fante. A majority (71%) of the people are Christian and 17% are Muslim.^{28,92} The country had an estimated population of 27 million in 2014.⁹² There were approximately 2900 licensed pharmacists (12/100,000)

and 1126 pharmacy technicians and assistants (5/100,000) registered in Ghana in 2011.⁹³ Ghana experienced one of the most rapid increases in pharmacy personnel in the African region between 2009 and 2011.⁵⁶ Over 370 of the country's pharmacists work in the public sector.⁹³ Though there is no governing body that monitors or promotes rational drug use, continuing education regarding rational drug use is mandatory for pharmacists licensed in Ghana.⁹³

There are eight pharmacy schools in the country that have graduated 265 students in the past two years, and accreditation standards are in place for regular review of the school curricula. Both Kwame Nkrumah University of Science and Technology (KNUST) and the University of Ghana, Legon, offer a six-year PharmD program.⁹⁴ The Ghana College of Pharmacists was established by Act 833 in 2011 to promote specialized training in pharmacy and to promote continuous professional development. As one of its main objectives, the College promotes enhanced competencies among pharmacist to advance pharmaceutical care delivery and public health for Ghana.⁹⁵

Nigeria. Nigeria is the most populated African nation with over 190 million people comprised of over 250 ethnic groups.^{28,92} English is the official language, and the dialects of some of the most populous groups include Hausa, Yoruba, Igbo, and Fulani among over 500 dialects spoken in the country. About 50% of the people are Muslim, 40% are Christian, and 10% have indigenous beliefs.²⁸

Over 13,000 pharmacists (7/100,000) are registered in Nigeria and 2051 work in the public sector.⁹⁶ There are 5483 pharmacy technicians and assistants and 3601 licensed pharmacies.⁹⁶ The majority of pharmacists are employed in or own private community pharmacies, leaving a severe public sector shortage. No special populations are able to obtain medications free of charge. Only malaria, TB, HIV treatment, and children's vaccines are provided at no cost. Nigeria has more pharmacy schools than any other African nation.⁸⁹ There are currently two PharmD programs in Nigeria.⁹⁷ Most of the pharmacy schools have increased to four-year programs with the exception of the PharmD programs, which are six years in duration.⁹⁷⁻⁹⁹ These programs are approved by the National Universities Commission (NUC), an agency within the Federal Ministry of Education. Accreditation is managed by both NUC and the Pharmacists Council of Nigeria (PCN).⁹⁷ The PCN stated in the 1980s that clinical pharmacy practice should be emphasized in pharmacy education.⁹⁷ The school curricula are designed to meet international competencies stressing clinical practice. Graduates from Nigeria have ranked highest in the Foreign Pharmacy Graduate Equivalency Examination to

Table 2. Pharmacy Schools Within Central and West Africa

School Name	Country	Degree ^a
Central Africa		
Jean Piajet University	Angola	Not available
Jean Piajet de Benguela Higher Polytechnic Institute	Angola	Not available
Atlântida Higher Polytechnic Institute	Angola	Not available
Agostinho Neto University	Angola	Not available
Private University of Angola	Angola	Not available
Malanje Higher Polytechnic Institute	Angola	Not available
Ekuki II Humanities and Technology Higher Polytechnic Institute	Angola	Not available
University of Rwanda-Department of Pharmacy	Rwanda	BPharm
University of Kinshasa	DRC	Not available
Université de Douala; Douala, Cameroon, Africa	Cameroon	Not available
Universite de Dschang	Cameroon	Not available
Université des Montagnes, Bangangte, Cameroon, Africa	Cameroon	Not available
University of Yaounde I; Yaounde, Cameroon, Africa	Cameroon	Not available
West Africa		
Kwame Nkrumah University of Science & Technology	Ghana	PharmD
University of Ghana, Lagon	Ghana	PharmD
University of Health and Allied Sciences	Ghana	BPharm
Central University College	Ghana	BPharm
Ahmadu Bello University	Nigeria	BPharm
Delta State University	Nigeria	BPharm
Madonna University	Nigeria	BPharm
Niger Delta University	Nigeria	BPharm
Nnamdi Azikiwe University	Nigeria	BPharm
Obafemi Awolowo University	Nigeria	BPharm
Olabisi Onabanjo University	Nigeria	BPharm
Igbinedion University	Nigeria	BPharm
University of Jos	Nigeria	BPharm
University of Lagos	Nigeria	BPharm
University of Maiduguri	Nigeria	BPharm
University of Nigeria, Nsukka	Nigeria	BPharm
University of Port Harcourt	Nigeria	BPharm
University of Uyo	Nigeria	BPharm
Usmanu Danfodiyo University	Nigeria	BPharm
University of Ibadan	Nigeria	PharmD
University of Benin	Nigeria	PharmD
Universite Cheikh Anta Diop de Dakar	Senegal	BPharm
Universite de Gaston Berger	Senegal	Not available
University of Sierra Leone	Sierra Leone	BPharm

^a Data is presented in Table 2 only if available in English

practice in the United States.⁹⁷ Despite these educational strengths, Nigerian pharmacists do not provide significant patient-oriented services because of infrastructural barriers, as well as both intra- and interprofessional resistance. Hospital pharmacist roles are mainly to dispense, compound, and procure medications, and to provide drug information.¹⁰⁰

Senegal. Senegal has a population of approximately 15 million. It is also among the top 10 fastest growing economies in Africa. The official language of Senegal is French, though Wolof is the lingua franca of the population.

More than 5% of its population is of European or Lebanese descent.²⁸ The overwhelming majority of the people are Muslim (96%), with a very small Roman Catholic minority (4%).²⁸

There are approximately 875 registered pharmacists (72 in the public sector) and 20 pharmacy technicians or assistants in Senegal.¹⁰¹ This amounts to roughly six pharmacists and less than one pharmacy support personnel per 100,000 population. While the EML is a core component of pharmacy training, along with drug information and clinical pharmacology, training on the use of STGs and continued

education on rational drug use is not required.¹⁰¹ Cheik Anta Diop University in the capital city of Dakar offers a BPharm as part of its greater medical program (Table 2).

Sierra Leone. Sierra Leone only has approximately six million residents, having suffered a great loss in population due to death and emigration during the Ebola outbreak in 2014.²⁸ Though English is the official language of the country, its use is relegated to an educated minority. An English-based creole is the primary language of 10% of the population, but it is understood by over 95% of the population.²⁸ Nearly 80% of the population is Muslim and 20% are Christian.²⁸

The number of pharmacists in Sierra Leone is 259 (4/100,000) with 30 working in the public sector.¹⁰² The number of pharmacy technicians and assistants is almost double that of pharmacists at 441.

While the pharmacy schools in Sierra Leone must meet accreditation standards, the curriculum is not regularly reviewed.¹⁰² The University of Sierra Leone has the nation's only pharmacy training program. A program called the King's Sierra Leone Partnership will provide support for curricular development and more advanced training of pharmacy practitioners at the nations medical teaching hospital, Connaught Hospital starting in 2018. The University's College of Medical and Allied Health Sciences (COMAHS) introduced the country's first objective structured clinical evaluation (OSCE) to pharmacy and medical students in February 2016. This is a first step in achieving one of COMAHS' strategic goals of training the country's first clinical pharmacists.¹⁰³

Status of Postgraduate Pharmacy Education in West Africa

The West African Postgraduate College of Pharmacists (WAPCP) was established in 1991 in Accra, Ghana, with admission of their first fellows in 1997.¹⁰⁴ West Africa has graduated over 550 fellows since 1997.¹⁰⁴ Registered pharmacists in a member country of WAHO who have at least three years of experience may apply for a fellowship program through the WAPCP. Before starting the fellowship phase (during the primary level), pharmacists must complete a year of courses, attend at least two update lectures, and pass the primary examination before moving on to part 1 of the fellowship. Update lectures are held twice annually during this phase at various study centers: six in Nigeria and one each in Ghana, Sierra Leone, and Liberia. Part 2 of the fellowship program requires completion of at least two years of courses. Fellowship examination centers include: Accra (Ghana), Abuja, Benin City, Enugu, and Ibadan and Lagos (Nigeria), and Free-town (Sierra Leone). Completion of residency must occur prior to part 2 of the program.¹⁰⁴ Residency programs exist

in community, hospital, and industry settings where six months are spent in training, and reports are written afterwards regarding the experiences during the six months.¹⁰⁴

Recommendations for Culturally Sensitive Engagement With African Countries

Language, Cultural Practices, and Perceptions.

Health care professionals should learn the customs and traditions of the region. This will assist with deepening professional ties with partners, while increasing patient satisfaction when service is rendered. For example, public displays of anger or frustration are reviewed as inappropriate and should be avoided when hosting students or faculty members from Ethiopia.

Culturally appropriate etiquette should be learned and adhered to where possible. Though acceptable dress varies widely based on ethnicity, religion, and local culture, conservative dress is favored by a large portion of African society. Skirts and dresses should cover the knee and tight-fitting clothes should be avoided. Camouflage-patterned clothing is generally only sanctioned for military personnel; thus, civilians should avoid wearing it. When eating or handing something to someone, the right hand should be used as use of the left hand is discouraged throughout much of Africa. It is often considered impolite to refuse food or drink, so a guest should try to eat at least a small portion of whatever is offered. For West Africans, it is important to accept food or drink with both hands as a sign of respect. Proper titles should be issued based upon rank, age, or profession when addressing professionals from Africa (ie: Mr, Ms, Dr, or Professor). Concepts of time and punctuality may vary. Kenyans, for example, feel that being 30 minutes late to a meeting is acceptable, while Tanzanians may feel beginning a meeting very late is acceptable. Ethiopians may adhere to the Gregorian calendar, while Tanzanians may adhere to Swahili time (based on the day starting at sunrise rather than 12 midnight).

Official languages in Africa vary greatly. Learning the basics of communication in the language spoken in the area to which visitors plant to travel will help them adapt. Though English is commonly spoken among Africans, it is important to understand that it is based on British English, so terms and pronunciation may be different than that of the United States. Although official languages such as English and French are widely spoken, there are numerous indigenous languages and dialects that exist, and some patients may not necessarily understand or speak their country's official language. A patient's command of the official language may be a function of education level, socioeconomic factors, and geographic location.

The approach to executing a task may be different for African practitioners than for Western practitioners. If the

overall plan deviates too far from the cultural standard, then local workers may not adopt the method. When implementing change, have a programmatic approach, set realistic goals, and have patience.

In general, avoid topics of religion, politics, and ethnicity in conversation. For Ethiopians, in particular, many people are influenced by the suppression of ideas that was common during the “Dergue” government (1973-1991), and this has influenced cultural practices.¹⁰⁵

Role of Spirituality. Religious and traditional beliefs play a significant role in health care. Though some form of Christianity or Islam is practiced throughout most of Africa, many other religions and traditional belief systems shape patients’ ideas about health and interaction with the health care system. Spiritual care, in many situations, should be included to optimize whole-person care. For example, the majority of people from West Africa are practicing Muslims and, therefore, may reject medication formulations that include alcohol. Orthodox Christians in Ethiopia do not eat meat on Mondays or Fridays, which are fasting days. Such practices should be respected and incorporated into care plans for patients in Africa.

Local medical staff members, patients, and/or family members may believe that nothing occurs without God’s approval. Therefore, all outcomes, good or bad, are God’s will rather than based solely on the act of the caregiver. Thus, in some cases, personal accountability may be removed from a situation.

Patients often prefer traditional and religious intervention in addition to allopathic medicine. Health care practitioners in the region are often open to these practices as a means of ensuring adherence to the treatment plan. It is important for visiting health care providers to familiarize themselves with methods to integrate religious and traditional beliefs into patients’ treatment plans.

Education and Pharmacy Practice. When traveling to an African country, it is advisable to observe closely how pharmacy is practiced in the region and be able to blend principles from the United States with those of the host country. To provide more fitting and valuable services while in Africa, students and/or faculty members should research information on the area they will be traveling to, communicate with local practitioners about their expectations, and conduct a needs assessment.

Visiting health care professionals should guard patients’ privacy, autonomy, dignity, and decision-making rights. They should exercise the highest level of moral and ethical principles, as exploitation is a sensitive and significant issue within the region. Adherence to guidelines based on the host nation’s strategic pharmacy plan for treatment, as well as use of the country’s drug formulary (often derived from the WHO Essential Medicines List) is extremely im-

portant. Visiting health care providers should be aware that the level and nature of education for health care professionals may be different in each region of Africa. Additionally, some pharmacy schools offer PharmD programs while others offer an MPharm or BPharm.

Visitors should be aware that methods for drug monitoring learned in the United States may not be available in some African countries. In Sierra Leone, laboratory testing in some hospitals does not include basic metabolic panels or liver function tests. Many areas may not have reliable electricity, which means special considerations must be made for medication formularies and safe medication storage for drugs such as insulin.

Western practitioners will likely be perceived as experts and rarely corrected by visitors from Africa or practitioners in the region. Therefore, pharmacists from the United States are encouraged to ask local practitioners to offer their opinions prior to adding their own perspective. It would also be inappropriate for a visiting health care provider to imply or state that a local practitioner is wrong or has committed an error in a group setting. This would be considered the ultimate embarrassment. Instead, the visiting pharmacist should find a way to privately provide clarification or facts without blatantly embarrassing the individual or “calling him out.”

Affiliation Agreements and Memorandums of Understanding. Affiliation agreements or memorandums of understanding that take into account both modern sensibilities and historical sensitivities of African nations are most favorable when partnering. As such, the approach to formulating an agreement should involve equal input from both the US institution and the African entity where possible. Agreements should be constructed in a manner that regards African nations as equal partners who make substantial contributions, rather than high-needs affiliates. Therefore, clauses that speak of mutual research, personnel exchange, and protection of intellectual property on both sides will usually be desirable components.

CONCLUSION

Despite great economic, political, and social developments on the continent, misconceptions and stereotypes about Africa still exist. The persistence of these stereotypes and misconceptions has prevented some US schools and colleges of pharmacy from choosing to establish global partnerships with African countries. For pharmacy programs in the United States, this means overlooking meaningful opportunities for partnerships in Africa.

Based on the information provided in this paper, Africa is fertile with opportunities to grow, develop, and innovate within pharmacy practice. Additional

opportunities for consideration in Africa may include expansion of PharmD programs, creation and credentialing of fellowship and residency training programs, and the development of more extensive clinical opportunities for pharmacists at health facilities such as primary clinics and hospitals.

Engaging in student or professional exchanges can be beneficial for both the African and the US institution as idea-sharing and common research objectives can often be identified. However, US pharmacists should keep in mind the great diversity of the continent and its people and devise collaborative approaches that are tailored to the needs of the particular country or locale they will be visiting. When sending students to Africa, faculty members should discuss the history, cultural norms, and cultural sensitivities of the local people they will be visiting. This information may be best illuminated through active-learning exercises that help to bolster students' cultural awareness, cultural competency, and confidence prior to departure.

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